



46th Annual Conference
of the
Indian Association for the Study of Population (IASP)
on the theme
**People, Planet, Prosperity: Demographic Drivers
of India's Inclusive Growth**
Organised Jointly with
National Atlas & Thematic Mapping Organisation (NATMO)
in Collaboration with
Anthropological Survey of India (AnSI)



SOUVENIR AND BOOK OF ABSTRACTS

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Foreword

Andrea M. Wojnar

UNFPA Representative, India



It is an honor to contribute this foreword to the proceedings of the 46th Annual Conference of the Indian Association of the Study of Population (IASP), held in partnership with the National Atlas & Thematic Mapping Organisation (NATMO) and the Anthropological Survey of India (AnSI) in Kolkata.

UNFPA India shares a longstanding partnership with this community of scholars and institutions, rooted in a common conviction: that evidence-led research, robust demographic analysis, and high-quality data are essential to shaping policies that leave no one behind. For decades, we have collaborated on population studies, reproductive health research, and the critical work of making the invisible visible through data. This conference is both a continuation of that partnership and a testament to its enduring value.

The conference theme—*“People, Planet, Prosperity: Demographic Drivers of India’s Inclusive Growth”*—is both timely and urgent. With over 600 million people under 25, India stands on the cusp of a historic demographic opportunity. Yet this potential is not guaranteed; it must be earned through sustained investment in health, education, skills, and rights. Every year, 12 million youth enter the workforce, but 85 million remain outside employment, education, or training. If healthy, skilled, and empowered, they could add 2 percentage points to GDP growth annually for two decades. Yet 85 million youth are currently not in employment, education, or training. The difference between potential and outcome lies in investment in health, education, skills, and rights.

Further, raising women's labor force participation by just 10 percentage points could boost GDP by 16 percent. Every rupee invested in family planning returns eight rupees in economic and social benefits. Consider aging: by 2050, India's over 60 years of age population will double to 20 percent, adding 190 million older persons in 25 years. How India prepares today determines whether this demographic transition becomes a crisis or strength.

Behind these figures are real people—a young woman in Odisha dreaming of engineering, a farmer in Punjab adapting to climate change, a nurse in Assam saving lives. Data is ultimately about justice; it reveals who is left behind and why.

Research institutions and demographic scholarship transform lived experiences into actionable knowledge, turning evidence into rights. As you deliberate, do remember: demography is not destiny—it is the map by which destiny is made. Let this gathering inspire research that transforms lives and ensures that India’s demographic advantage becomes the foundation of a society. When future generations look back, may they say that India harnessed its demographic potential to build a nation where every individual thrives, the planet flourishes, and prosperity is shared by all.



Prof. Suresh Sharma
President, IASP

Message from the President, IASP

It gives me great pleasure to extend my warm greetings to all delegates, participants, and partners attending the 46th Annual Conference of the Indian Association for the Study of Population (IASP), being held at the Anthropological Survey of India (AnSI), Kolkata, jointly organized with the National Atlas & Thematic Mapping Organisation (NATMO).

Since taking over as President of IASP, I have been deeply committed to revitalizing the association's academic and professional engagements. It has been a matter of great satisfaction to revive the Regional Conferences and to organize a wide range of activities, including World Population Day observances, pre-conference workshops, and thematic seminars, to strengthen research and capacity-building efforts in population studies.

A major milestone during this period has been the successful launch of the IASP Distinguished Lecture Series, which has so far featured 31 eminent speakers from across the globe through virtual sessions. These lectures have greatly enriched academic discourse and fostered global collaboration in the field of population and development.

In recognition of scholarly excellence, IASP has also instituted two prestigious awards—the Prof. P. P. Talwar Award for Women in Technical Demography and the Prof. Sudesh Nangia Essay Competition Award—to encourage innovation and excellence in demographic research and writing.

The theme of this year's conference, “People, Planet, Prosperity: Demographic Drivers of India's Inclusive Growth,” is timely and significant, emphasizing the critical linkages between population dynamics, sustainable development, and inclusive progress.

I sincerely thank NATMO, AnSI, the Organizing Committee, and all contributors for their efforts in hosting this important event. My best wishes for a successful and enriching conference and for the continued growth of the IASP community.

Prof. Suresh Sharma

President *Indian Association for the Study of Population (IASP)*



Dr Anil Chandran S
General Secretary, IASP

Message from the General Secretary, IASP

I am delighted to extend my warm greetings to all delegates, invited speakers, collaborators, and participants of the 46th Annual Conference of the Indian Association for the Study of Population (IASP), being held at the Anthropological Survey of India (AnSI), Kolkata, in collaboration with the National Atlas & Thematic Mapping Organisation (NATMO).

The theme of this year's conference, "*People, Planet, Prosperity: Demographic Drivers of India's Inclusive Growth*," reflects the essence of our times. As India pursues pathways of sustainable and equitable development, it is vital to explore how population dynamics interact with environmental sustainability, health, and social equity. This conference provides a valuable platform for demographers, social scientists, and policymakers to deliberate on these interconnections and contribute towards evidence-based and inclusive growth strategies.

IASP continues to play a pivotal role in promoting scientific inquiry, interdisciplinary collaboration, and dialogue among professionals working in the fields of population, health, and development. Over the years, the Association has evolved into a vibrant network of scholars and practitioners committed to advancing demographic research and its applications in national planning and policy.

I take this opportunity to express my sincere appreciation to NATMO and AnSI for their excellent collaboration and support in organising this conference. I also convey my heartfelt thanks to the local organising committee and all members of IASP for their dedication, teamwork, and enthusiasm in making this event possible.

I hope this *Souvenir cum Abstract Book* will serve not only as a record of the scholarly contributions presented at the conference but also as a source of inspiration for continued research and collaboration in the field of population studies.

I wish the conference every success and look forward to meaningful deliberations that strengthen our collective commitment to people-centred and sustainable development.

Dr. Anil Chandran S
General Secretary, IASP



Dr. Jeetendra Yadav
Treasurer, IASP

Message

The 46th Annual Conference of the Indian Association for the Study of Population (IASP), organized in collaboration with the National Atlas & Thematic Mapping Organisation (NATMO) and the Anthropological Survey of India (ANSI) from November 27–29, 2025, stands as a significant milestone in our collective pursuit of advancing research and dialogue in the fields of population, health, and development.

The Indian Association for the Study of Population (IASP) has long served as a vibrant academic platform that brings together scholars, policymakers, and practitioners to deliberate on pressing issues in demography, epidemiology, and public health. Through its conferences, thematic meetings, and scholarly publications, IASP continues to foster collaboration and evidence-based research that inform public policy and programmatic action.

I would like to take this opportunity to convey my sincere gratitude to all Life and Annual Members of IASP for their continued participation and contribution to the association's activities. I also extend heartfelt appreciation to the Executive Committee and the Board of Trustees (BOT) for their constant encouragement and guidance.

My special thanks to NATMO, and ANSI, for graciously joining hands with IASP in hosting this conference. Their collaboration has been central to making this academic gathering possible. I also acknowledge the dedicated efforts of the local organizing committee and the conference coordinators, whose meticulous planning and hard work have ensured the smooth conduct of this event.

I wish to extend my appreciation to all presenters, discussants, panellists, rapporteurs, and session chairs for their valuable contributions that enrich the scientific deliberations. I am equally grateful to our sponsors and institutional partners for their steadfast support.

With warm regards and best wishes for a successful and enriching conference.

Dr. Jeetendra Yadav, Ph. D
AcSIR Assistant Professor in the Faculty of Medical Research
Technical Officer-C
ICMR-National Institute for Research in Digital Health and Data Science

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About Indian Association for the Study of Population (IASP)

The Indian Association for the Study of Population (IASP) is a professional organisation that brings together population scientists, demographers, economists, statisticians, health professionals, development researchers, social scientists, and other related experts. IASP is dedicated to advancing demographic, health, and development research, addressing emerging population and health issues, and advocating for policies and programmes with central and state governments. The association collaborates with national and international professional and academic bodies, fosters discussions on critical issues, and publishes the peer-reviewed journal *Demography India*.

IASP was established in response to a longstanding need for a professional association for Indian demographers. This need was realised in 1970, with significant guidance, encouragement, and support from Prof. Ashok Mitra and Shri A. Chandrasekhar, who served as successive Registrar Generals and Census Commissioners of India. The association was formally registered in February 1971 under the name Indian Association for the Study of Population (IASP). The first ad-hoc Executive Committee was formed with Prof. Ashok Mitra as President and Prof. Ashish Bose as General Secretary. *Demography India*, the official journal of IASP, was registered in 1972. The association's inaugural seminar was held at the Institute of Economic Growth (IEG) in Delhi, focusing on the results of the 1971 census. A duly elected Executive Committee took over in 1973, and the first full-fledged IASP conference was held at the International Institute for Population Sciences (IIPS) in Mumbai that same year. Since then, IASP has consistently organised annual conferences across India.

About Collaborating Institutions

National Atlas and Thematic Mapping Organisation (NATMO)

Headquartered in Kolkata, the National Atlas and Thematic Mapping Organisation (NATMO), under the Department of Science & Technology, Government of India, has been a pioneer in thematic mapping since its inception in 1956. Originally established as the National Atlas Organisation under Prof. S.P. Chatterjee, a visionary geographer, NATMO played a crucial role in India's planning and development by producing the first 'National Atlas of India' within nine months of its formation. Renamed in 1978 based on a government review, NATMO has since published over a hundred atlases, 500 thematic maps, and 200 monographs, covering topics like agriculture, environment, health, archaeology, climate, tourism, and natural hazards. It offers more than 50 cartographic services, including district planning maps and a unique upcoming atlas on women's empowerment. Equipped with the country's largest repository of spatial and non-spatial data, NATMO adopts advanced technologies like GIS, GPS, and remote sensing, and recently launched a state-of-the-art data centre providing 24x7 online map services compliant with OGC standards. Through its geoportal, users can access e-atlases and digital maps freely. NATMO not only expands the relevance of geography beyond academia but also trains students, researchers, and professionals in modern cartographic tools and digital mapping, including services for the visually challenged.

Anthropological Survey of India (AnSI)

Headquartered in Kolkata and functioning under the Ministry of Culture, the Anthropological Survey of India (AnSI) is the premier institution in India for anthropological research, established in 1945 with a mandate to document and study the diverse biological and cultural fabric of the country. As the only government body exclusively dedicated to both physical and cultural anthropology, AnSI plays a crucial role in understanding India's rich ethnic, linguistic, and social diversity through field-based research

across tribal and non-tribal communities. With seven regional centres, one sub-regional centre, and three field stations across India, AnSI conducts in-depth studies on topics like genetic diversity, gut microbiomes, livelihoods, health, disaster resilience, and cultural heritage, often informing national development and tribal welfare policies. The organisation has embraced modern tools such as GIS, remote sensing, and genomic analysis, while also maintaining a robust archive of ethnographic films, monographs, and cultural documentation. Through partnerships with institutions like NITI Aayog and its own training programmes, AnSI also supports capacity-building in ethnographic and development research. As a knowledge hub, it continues to contribute to evidence-based policymaking and inclusive growth by promoting a deeper understanding of India's human and cultural landscape.

The Overarching Theme of the 46th Annual Conference

According to the United Nations Population Fund (UNFPA, 2023), population dynamics lie at the heart of sustainable development, shaping how nations grow, adapt, and respond to shifting needs and challenges. The theme of the 46th Annual Conference—*People, Planet, Prosperity: Demographic Drivers of India's Inclusive Growth*—underscores this interplay and the need to examine how climate change, health, and social equity intersect with fertility, mortality, migration, and other demographic transitions in India. The growing threat of climate change is not just an environmental crisis—it is a demographic challenge. The Intergovernmental Panel on Climate Change (IPCC, 2022) highlights that India is among the countries most vulnerable to rising temperatures, extreme weather events, and environmental degradation. These climate shocks have direct implications for public health, migration patterns, and livelihoods, especially for those in rural and low-income urban areas. According to the *Lancet Countdown on Health and Climate Change* (2023), climate-sensitive health outcomes—such as heat-related illnesses, vector-borne diseases, and malnutrition—are projected to rise sharply, disproportionately affecting children, the elderly, and low-income communities. These vulnerabilities are compounded when viewed through the lens of India's complex population dynamics.

India is particularly vulnerable to climate change. According to the Intergovernmental Panel on Climate Change (IPCC, 2022), extreme weather events, rising temperatures, and ecosystem degradation threaten millions, especially in rural and low-income urban areas. The *Lancet Countdown* (2023) warns of increasing climate-sensitive health outcomes—malnutrition, vector-borne diseases, and heat stress—that will disproportionately affect children, the elderly, and socioeconomically marginalized groups. Climate risks are thus not just environmental—they are fundamentally demographic, disrupting lives, health, and mobility.

While India's Total Fertility Rate (TFR) has declined to 1.94 (SRS, 2023), below the replacement level, state-level disparities remain stark. Fertility in Bihar (2.8) contrasts with Kerala and Tamil Nadu (below 1.6). Similarly, although the Infant Mortality Rate (IMR) has dropped to 28 per 1,000 live births, maternal mortality remains high in states like Assam (MMR 195) and Madhya Pradesh (173), reflecting persistent health system inequities. Data from NFHS-5 show gaps in antenatal care and iron supplementation coverage, especially in tribal, remote, and adolescent populations.

Migration is a critical driver of demographic change. Over 450 million internal migrants (Census 2011) reshaped India's urban and rural landscapes. Increasingly, migration is driven by environmental shocks such as droughts, crop failure, and coastal erosion. Migrant women and youth often lack access to education, healthcare, and housing, and face heightened risks of exploitation and exclusion. This demands urgent alignment of demographic data with urban planning, social protection, and climate adaptation efforts.

Education is central to inclusive growth and demographic resilience. While enrolment has improved, learning outcomes remain uneven, and dropout rates rise sharply after the upper primary—particularly for girls from disadvantaged communities. The National Education Policy (NEP) 2020 offers a holistic

roadmap that emphasizes equity, inclusion, foundational learning, and flexible pathways across school, vocational, and higher education systems. These provisions are vital for India's 253 million adolescents.

Investing in life skills is key to preparing young people for a complex, changing world. Skills like problem-solving, decision-making, and self-efficacy help adolescents navigate transitions in health, relationships, and livelihoods—especially in fragile settings affected by climate stress or social vulnerability. Integrating life skills education, as outlined in NEP 2020 and Samagra Shiksha, is not just a pedagogical reform but a demographic imperative.

Gender inequality remains a significant demographic and development concern. The Sex Ratio at Birth (SRB) is skewed at 929 females per 1,000 males (NFHS-5), falling below 900 in states like Haryana. These patterns reflect deep-rooted son preference and have long-term implications for marriage systems, workforce participation, and social cohesion. Empowering girls and women through education, economic opportunities, and access to health and rights-based services is critical to redressing these imbalances.

Adolescent health remains under-addressed. Nearly half of adolescent girls are anaemic, and only a minority receive comprehensive reproductive health information. The unmet need for contraception among young women is 9.4%. Intersectional vulnerabilities—linked to caste, disability, and location—amplify these challenges. Age-appropriate, culturally sensitive, and accessible SRHR services are essential to building demographic resilience.

India is also confronting emerging demographic-health-environment linkages. Rising zoonotic diseases like Nipah and avian flu, coupled with antimicrobial resistance, point to ecological stress. The One Health approach—endorsed by WHO and the Government of India—advocates for integrated human, animal, and environmental health systems, which are vital in the face of growing demographic pressure and environmental degradation.

At COP28 (2023), India reaffirmed its commitment to just, people-centric climate action. The COP agreements emphasized the need to align climate adaptation with public health and social equity, ensuring no group is left behind. India's National Adaptation Communication called for localized, data-informed strategies that integrate population planning with sustainable development goals (SDGs).

The 46th Annual Conference invites scholars, practitioners, and policymakers to engage with this critical nexus of population, climate, education, health, and equity. It is a call to reimagine inclusive growth not just as economic expansion, but as a holistic model of shared prosperity—where people thrive, the planet is protected, and no one is left behind.

Themes and Sub-Themes

1.	Nuptiality, Fertility, Infertility and Family Planning
1.1.	Trends in fertility levels, preferences, and determinants
1.2.	Shifts in age at marriage and delayed marriages
1.3.	Marriage dissolution, remarriage, and family formation
1.4.	Infertility: prevalence, socio-cultural drivers, care-seeking
1.5.	Teenage pregnancy and its socioeconomic impact
1.6.	Unmet need, postpartum contraception, contraceptive dynamics
1.7.	Innovations in contraceptive technologies and outreach
1.8.	Role of men and digital platforms in FP decision-making
2.	Mortality, Longevity and Morbidity
2.1.	Life expectancy trends by region and gender
2.2.	Lifecycle mortality: infants to elderly
2.3.	COVID-19 and mortality shocks
2.4.	Healthcare access and mortality reduction
2.5.	Epidemiological transition and causes of death
2.6.	Maternal and child mortality: gaps and solutions
2.7.	Role of NRHM, ICDS, community-based care
2.8.	Traditional practices affecting mortality
3.	Reproductive and Sexual Health

3.1.	SRHR of adolescents and youth
3.2.	Access to SRH services and socioeconomic determinants
3.3.	SRHR during COVID-19 disruptions
3.4.	Reproductive rights, justice, and legal frameworks
3.5.	SRH for men and marginalised groups
3.6.	Use of digital tools and helplines
3.7.	Equity in SRH service delivery
3.8.	Disability inclusion in reproductive care
4.	Urbanisation and Rural Demography
4.1.	Urban-rural population shifts and planning
4.2.	Emerging rural-urban continuums
4.3.	Urbanisation and infrastructure stress
4.4.	Rural deprivation and basic services access
4.5.	Migration-driven urban growth
4.6.	Disparities in demographic transitions
4.7.	Urban poverty, slums, and informal settlements
4.8.	Governance challenges in growing towns
5.	Poverty, Income Inequality and Health
5.1.	Health and financial vulnerability
5.2.	Out-of-pocket expenditure and insurance gaps
5.3.	Food insecurity, nutrition, and poverty traps
5.4.	Vulnerable groups: tribal, migrants, disabled
5.5.	Role of Ayushman Bharat and DBTs
5.6.	Intersection of poverty with caste, gender
5.7.	Access to digital health and telemedicine
5.8.	Regional health-poverty disparities
6.	Ageing and Generational Dynamics
6.1.	Regional trends in population ageing
6.2.	Elderly access to healthcare and long-term care
6.3.	Economic vulnerability and pensions
6.4.	Morbidity, NCDs, and mental health in old age
6.5.	Family dynamics and caregiving roles
6.6.	Elderly women: widowhood, dependency
6.7.	Financial and digital inclusion of the elderly
6.8.	Role of Indira Gandhi National Old Age Pension Scheme (IGNOAPS) and state programs
7.	Migration and Development
7.1.	Rural-urban migration patterns and drivers
7.2.	Climate-induced and distress migration
7.3.	Role of remittances in regional economies
7.4.	Social integration and service access for migrants
7.5.	Gender roles, children, and migration impacts
7.6.	Internal displacement, trafficking, and safety
7.7.	COVID-19/pandemic and reverse migration
7.8.	Migration policy frameworks and gaps
8.	Adolescence and Human Development
8.1.	Access to adolescent health and SRHR
8.2.	Mental health, substance use, emotional wellbeing
8.3.	Role of education and life skills
8.4.	Gender norms, menstruation, safety, mobility
8.5.	Boys and masculinities: promoting gender equality
8.6.	Transition to adulthood: employment, education
8.7.	Influence of digital media and identity
8.8.	Disabilities, social inclusion, and services
9.	Public Health and Nutrition
9.1.	Undernutrition in early childhood and the role of Anganwadi Centres
9.2.	Anaemia, stunting, and wasting over the life-cycle
9.3.	NCDs and nutrition transitions
9.4.	Immunisation, coverage gaps and hesitancy
9.5.	Food fortification and nutrition security

9.6.	Adolescent nutrition: gender and school programs
9.7.	Climate, agriculture and food-nutrition linkages
9.8.	Public distribution system and ICDS role
10.	Tribal Health and Demography
10.1.	Health and nutrition inequalities among tribals
10.2.	Cultural barriers to healthcare in tribal areas
10.3.	Maternal and child health in tribal populations
10.4.	Urbanisation, displacement and tribal health
10.5.	Traditional food systems and health
10.6.	Government schemes for tribal health
10.7.	Gender roles and reproductive health
10.8.	Tribal youth: education and access
11.	Demographic Approaches to Sustainable Development
11.1.	Population dynamics and SDG goals
11.2.	Regional demographic diversity and planning
11.3.	Demographic dividend and economic productivity
11.4.	Urbanisation and demographic adaptation
11.5.	Environment-population interactions
11.6.	Health system resilience to demographic stress
11.7.	Role of education and skill-building
11.8.	Sustainability and resource distribution
12.	Climate Change and Population
12.1.	Health impacts of extreme weather (heat, floods, storms)
12.2.	Climate-induced displacement and migration
12.3.	Air pollution and demographic consequences
12.4.	Climate-related disease pattern shifts
12.5.	Gendered vulnerabilities in climate events
12.6.	Sustainable, climate-resilient health systems
12.7.	Inequities in health outcomes from climate risks
12.8.	Demography and climate action modelling
13.	Gender and Development
13.1.	Gender gaps in health, education, and labour
13.2.	Child marriage, GBV and safety
13.3.	Women's economic empowerment and credit access
13.4.	Education access, gender norms, and skilling
13.5.	Gender equality indicators and measurement
13.6.	Gender and disability intersection
13.7.	Role of Panchayats, SHGs, and local institutions
13.8.	Transgender and LGBTQI+ inclusion
14.	Education, NEP 2020 and Life Skills
14.1.	NEP reforms and school-level inclusion
14.2.	Early childhood education and foundational learning
14.3.	Gender disparities in educational access
14.4.	Life skills and employability pathways
14.5.	EdTech innovations and digital learning divide
14.6.	Adolescent education, re-entry for girls
14.7.	Integration of SRHR and life skills in curriculum
14.8.	Vocational education and youth aspirations
15.	Data for Development
15.1.	Use of AI/ML in demographic analytics
15.2.	Innovations in surveys, censuses and data quality
15.3.	Linking administrative, big data and health records
15.4.	Monitoring and evaluation for SDGs
15.5.	Open data platforms and decentralised planning
15.6.	Challenges in data ethics, consent and privacy
15.7.	Community-level data systems
15.8.	Disaggregated data for gender and inclusion
16.	Economic Development
16.1.	Regional disparities in development outcomes

16.2.	Structural shifts in employment and economy
16.3.	Linking demographics with GDP and labour force
16.4.	Informal sector and social security gaps
16.5.	Harnessing demographic dividend effectively
16.6.	Youth skilling and entrepreneurship
16.7.	Financial inclusion and economic security
16.8.	MSMEs and sectoral growth with population strategies
17.	Miscellaneous
17.1.	Cross-cutting population research innovations
17.2.	Behavioural insights in demography
17.3.	Experimental models and case studies
17.4.	Population ethics, inclusion and surveillance
17.5.	Lessons from global demographic trends
17.6.	Culture, values, and fertility transitions
17.7.	Transdisciplinary and participatory methods
17.8.	Forecasting demographic futures

Awards

The Annual Conference of IASP offers several awards to **young researchers** for their outstanding papers. Descriptions of these awards are provided below.

PROF. CHANDRASEKHARAN AWARD

The Professor Chandrasekharan Award recognizes single-author papers on the conference theme or sub-themes, submitted by young scholars under 30 years of age. A committee will select papers, and their authors will be invited to present them at the annual conference. These selected papers will then be honored with the Prof. Chandrasekharan Award during the event. Please remember that only single-authored papers are eligible for this award. More details regarding paper submission will be available soon in a separate flyer on the IASP website at www.iasp.ac.in

PROF. KB PATHAK AWARD

The annual award in memory of Prof KB Pathak will be presented at the annual conference of IASP to the author of the best paper in the field of Population and Health with a significant contribution in terms of methodological innovation. The papers must have been published in any refereed journal on Population/Demography and Health during the past two years. A separate flyer indicating details of the submission of papers will be published later on the IASP website www.iasp.ac.in

PROF. K. SRINIVASAN AWARD

The Professor K. Srinivasan Award will be presented to the authors of the best technical and substantive papers published in Demography India during the period of July 2024 to June 2025. This includes papers from the July-December 2024 and January-June 2025 issues. The selection of the winning papers will be made by a dedicated committee, and the award will be formally presented at the annual conference.

PROF. SN SINGH AWARD

This award honors the legacy of Professor S.N. Singh and is presented to the author(s) of the best poster(s) showcased during the poster sessions at the annual IASP conference. The recipient(s) will be selected by the chair committee, recognizing their exceptional contribution to the conference through their poster presentation.

PROF. SUDESH NANGIA ESSAY COMPETITION AWARD

The Professor Sudesh Nangia Essay Competition aims to foster insightful deliberations among students by encouraging them to explore the multifaceted issues of population dynamics, their intricate complexities, and far-reaching implications. Participants will have the opportunity to contribute valuable perspectives and innovative solutions to some of the world's most pressing demographic concerns, addressing both the challenges and opportunities presented by population phenomena. The students securing the first and second positions in this competition will earn the opportunity to compete at the national level. Winners will be recognized with cash prizes and certificates. Further details regarding the competition, including specific themes and submission guidelines, will be published in a separate flyer on the IASP website at www.iasp.ac.in.

PROF. PP TALWAR AWARD FOR WOMEN IN TECHNICAL DEMOGRAPHY

IASP is proud to announce the Prof. P.P. Talwar Award for Women in Technical Demography, instituted to recognize and encourage excellence among women scholars in the field of technical demography. This prestigious award will be presented to the best woman demographer whose paper demonstrates outstanding technical rigour, innovation, and relevance in the domain. Submissions will undergo a rigorous peer-review process, and shortlisted candidates will be invited to present their work in a special session at the conference. Final selection will be based on both the quality of the submitted paper and the effectiveness of the presentation. We encourage eligible women researchers to participate and showcase their contributions to advancing demographic science. More details regarding paper submission guidelines, eligibility and evaluation criteria will be announced in a separate flyer that will be published later on the IASP website www.iasp.ac.in

CONFERENCE PROGRAMME

DAY 1: 27 November 2025**Inauguration Session Venue: AnSI Auditorium**

Time	Activity
08:00-09:00	Registration
09:00-10:00	Inauguration
09:00 AM - 09:02 AM	Invocation and Lighting of Lamp
09:02 AM - 09:06 AM	Welcome Address Dr. Binod Singh , Director, NATMO
09:06 AM – 09:10 AM	Overview of the Conference Dr Anil Chandran S , General Secretary, IASP
09:10 AM - 09:17AM	Address by the IASP President Prof. Suresh Sharma , President, IASP
09:17 AM - 09:25 AM	Inaugural Address by the Chief Guest Prof. K. N. Singh , Hon'ble Vice-Chancellor, Central University of South Bihar
09:25 AM – 09:33 AM	Address by the Guest of Honour Shri Vijay Bharti , IAS, Secretary to the Govt. of West Bengal
09:33 AM - 09:49 AM	Keynote Address Ms Andrea M. Wojnar , Representative India and Country Director, Bhutan, UNFPA
09: 49 AM - 09:52 AM	Release of Souvenir, Demography India and Books written by IASP members
09:52 AM - 09:56 AM	Special address Prof. BV Sharma , Director, Anthropological Survey of India (AnSI)
09:56 AM – 10:00 AM	Vote of Thanks Dr. Jeetendra Yadav , Treasurer, IASP
10:05 AM-11:30 AM	Felicitation of International Union for the Scientific Study of Population (IUSSP) on Receipt of the UN Population Award (Institutional Category), 2025 for Promoting Population Research and Collaboration Among Demographers by UNFPA Chair: Andrea M. Wojnar , UNFPA India Representative and Country Director Bhutan Session Coordinator: Dr AG Khan Rapporteur: Dr Bindya Kumari
10:05 AM – 10:10 AM	Welcome Prof. Suresh Sharma , President, IASP
10:10 AM – 10:20 AM	Chair: Andrea M. Wojnar , UNFPA India Representative and Country Director Bhutan Opening Remarks and Felicitation
10:20 AM-10:28 AM	Address by Shireen Jejeebhoy , President, IUSSP
10:28 AM-10:35 AM	Remarks by Mary Ellen Zuppan , Executive Director, IUSSP
10:35 AM-11:15 AM	Panel Discussion (Moderated by Shireen Jejeebhoy) Panel: 1. Prof. K Srinivasan , Former Director, IIPS, Mumbai and winner of IUSSP Laureate Award (2023) (Virtual) 2. Dr. Kajori Banerjee , ISI Kolkata 3. Dr. K G. Santhya , Former Senior Associate, Population Council 4. Dr. Niranjan Saggurti , Director, Population Council
11:15 AM-11:25 AM	Reflection from the Participants
11:25 AM-11:30 AM	Vote of Thanks - UNFPA
11:30 AM-12:00 NOON	Hi Tea

12:00 PM-01:30 PM	Session by Population Foundation of India (PFI) Session Coordinator: Dr Rahul Kumar Rapporteur: Dr Kiran Sharma Part A 1. Welcome and Context Setting Ms. Poonam Muttreja, Executive Director, Population Foundation of India 2. Release of the study, <i>Unravelling India's Demographic Future: Population Projections for States and Union Territories, 2021-2051</i>, by Dr. Shireen Jejeebhoy, President, IUSSP 3. Presentation by Prof Irudaya Rajan, Chair—The International Institute of Migration and Development (IIMAD) <i>Unravelling India's Demographic Future: Population Projections for States and Union Territories, 2021-2051</i> 4. Remarks by Dr. Shireen Jejeebhoy on the study findings 5. Release of the study, <i>Exploring Linkages Between Women's Empowerment, Workforce Participation, and Population Dynamics in the Indian Context - A Comprehensive Macro-Micro Analysis</i>, by Ms. Andrea M Wojnar, Resident Representative, UNFPA India and Country Director, Bhutan 6. Presentation by Population Foundation of India and IWWAGE <i>Exploring Linkages Between Women's Empowerment, Workforce Participation, and Population Dynamics in the Indian Context - A Comprehensive Macro-Micro Analysis</i> 7. Remarks by Ms. Andrea M Wojnar on the study findings Part B Panel discussions Moderated by: Mr. Anand Sinha, Regional Advisor to the Global Reproductive Health initiative at The David and Lucile Packard Foundation 1. Dr. Niranjan Saggurti, India Country Director, Population Council 2. Mr. Sanjeev S. Ahluwalia, Distinguished Fellow, Chintan Research Foundation 3. Ms. Poonam Muttreja, Executive Director, Population Foundation of India
01:30 PM-02:30 PM	Lunch
02:30 PM-04:00PM	Panel Discussion on Issues and Challenges in Building Demography – Geography Ecosystem in India to Support Local Level Decision Making
2.30 PM – 2.35 PM	Dr. Binod Kumar Singh , Director, NATMO, Department of Science & Technology, Govt. of India. <i>Welcome Address</i>
2.35 PM – 2.50 PM	Prof. Aalok Ranjan Chaurasia - <i>Keynote Speaker and Chairman</i> MLC Foundation and 'Shyam' Institute, Bhopal
2.50 PM – 3.00 PM	Sr. Prof. K. K. Singh - <i>Speaker</i> Department of Statistics, Banaras Hindu University
3.00 PM – 3.10 PM	Dr. Dewaram A. Nagdeve - <i>Speaker</i> Director & Sr. Professor (Additional Charge), IIPS, Mumbai
3.10 PM – 3.20 PM	Prof. V. C. Jha - <i>Speaker</i> Former Dean, Dept. of Geography, Visva-Bharati, Former Director, NATMO
3.20 PM – 3.30 PM	Prof. V. K. Tripathi - <i>Speaker</i>

	Head, Department of Geography, Banaras Hindu University
3.30 PM – 3.40 PM	Prof. Sumana Bandyopadhyay - Speaker Head, Department of Geography, University of Calcutta
3.40 PM– 3.50 PM	Prof. A. K. M. Anwaruzzaman - Speaker Head, Department of Geography, Aliah University
3.50 PM – 4.00 PM	Dr. Prithvish Nag - Valedictory Speech and Concluding Remarks Former Vice-Chancellor, Former Surveyor General of India
04:00 PM - 04:15 PM	Tea
04:15 PM - 05:30 PM	Awards cum Felicitation Ceremony Awards Presentation Prof Sudesh Nangia Award Prof KB Pathak Award Prof K Srinivasan Award Felicitation of Senior Demographers Prof KK Singh Dr Reena Basu Dr Jayanta Kumar Basu Dr Bashir Ahmad Bhat Dr Prasanta Pathak
05:30PM - 06:30PM	George Simmons Memorial Lecture Session Chair – Dr Suresh Sharma, President, IASP Session Coordinator: Dr Ajay Kumar Singh Rapporteur: Perna Rai & Dr Kasturi Mondal Memorial Lecture – Dr Niranjan Saggurti, Director, Population Council
06:30 PM - 07:30 PM	Cultural Programme
07:30 PM onwards	Dinner

DAY 2: 28 November 2025

Time	Activity
09:00 AM – 10:30 AM	Panel Discussion on <i>Geo-spatial Vulnerabilities of Persons with Disability in India: Breaking the Barriers</i>
09.00 AM– 09.05 AM	Dr. Binod Kumar Singh - Welcome Address Director, NATMO
09.05 AM – 09.45 AM	Prof. S. K. Singh - Keynote Speaker and Chairman Former Director, International Institute of Population Science, Mumbai
09.45 AM – 09.55 AM	Prof. S.C. Rai - Speaker Former Head, Department of Geography, Delhi University
09.55 AM – 10.05 AM	Prof. A. K. M. Anwaruzzaman - Speaker Department of Geography, Aliah University
10.05 AM – 10.15 AM	Smt. Upali Roy Mukherjee - Speaker Commissioner of Disabilities, Govt. of West Bengal
10.15 AM – 10.25 AM	Shri Prabhat Kumar - Speaker Social Policy Specialist, UNICEF, Kolkata
10.25 AM – 10.30 AM	Dr. Raghubansh Mani Singh - Speaker Assistant Director, DCO Madhya Pradesh, Bhopal
10:30 AM -11:00 AM	Tea
11:00 AM – 12:30 PM	Technical Session 1A Fertility, Family Planning & Reproductive Health

11:00 AM – 12:30 PM	Technical Session 1B Maternal & Child Health Interventions
11:00 AM – 12:30 PM	Technical Session 1C Mortality, Morbidity & Non-Communicable Diseases
11:00 AM – 12:30 PM	Technical Session 1D Reproductive Rights, SRH & Legal Frameworks
11:00 AM – 12:30 PM	Technical Session 1E Gender, Socio-Economic Inequalities & Empowerment
12:30 PM – 02:30 PM	Poster Presentation 1
12:30 PM – 01:30 PM	Plenary Session by Population Council on “Adolescents in Transition: Integrating Nutrition, Mental Well-being, and Social Contexts for Holistic Health” Chair: Dr Subrato Mondal, Former MLE Advisor, USAID Moderator: Dr Punit Mishra, Lead Partnerships, Population Council Consulting (PCC), India Session Coordinator: Dr Emily Das Rapporteur: Dr. Kiran Sharma Introduction and Chair’s remarks: 10 minutes Presentations [10 minutes each] 1. Building resilience through life skills: Current situation and emerging challenges among adolescents-Dr Aditi, Technical Specialist-Evidence Synthesis, PCC, India 2. Unlocking the potential of adolescent girls: Transforming lives through education, skills, and opportunity– Dr Basant Panda, Technical Specialist, PCC, India 3. Equity through Systems Thinking: Transforming Adolescent Nutrition in India– Monica Shrivastav, Senior Technical Specialist, PCC, India 4. Digital Exposure and Adolescent well-being– Dr Kajori Banerjee, Affiliate, Girl Centre, Population Council Inc, USA and ISI, Kolkata Discussion/ Q&A: 10 minutes
01:30 PM– 02:30 PM	Lunch Break
02:30 PM – 04:00 PM	Plenary Session on Population, environment and culture: Interdisciplinary approaches from ongoing projects of the Anthropological Survey of India. Panel Discussion (Chaired by Prof. BV Sharma, Director, AnSI) Session Coordinator: Dr Priyanka Yadav Rapporteur: Ravina Ranjan Speakers 1. Dr. Mithun Sikdar, SA(P), SRC Mysore - <i>How Happy Am I? Reflections on the perceptions among the elderly in Mysuru</i> 2. Dr. Abhishikta Roy, SA(P), NWRC Dehradun - <i>Impact of Pesticide Use and Emerging Health Burden among Tribal Farmers in Vidarbha Region, Maharashtra: An Anthropological Assessment</i>

	3. Shri. Kiran Uttaravalli, RA(P), CRC Nagpur - <i>Agro-chemical exposure and Neurogenic Consequences among the Tribal farmers of Vidarbha</i> 4. Ms. Anjali Nikam, RA(P), NWRC Dehradun - <i>'We Don't Visit Like We Used To': A Qualitative Inquiry into the Loosening of Friendship and Neighborhood Bonds After the Pandemic</i> 5. Shri. Ganesh Chandru Ramteke, RA (P), NWRC Dehradun - <i>Deforestation and Biodiversity Loss in Gadchiroli: Assessing the Impact of Iron Ore Mining at Surjagad</i> 6. Shri. Tushar Srivastava, RA (P), NWRC Dehradun - <i>Social Support and Active Aging: A Case Study of Swabhimaan Kendra in Dehradun Smart City</i> 7. Ms. Priya Dey, JRF, Head Office, Kolkata - <i>Cash-Crop Monocultures, Pesticide Exposure, and Health Implications for Indigenous Agrarians of the Vidarbha Region</i> 8. Dr. Parikshit Chakraborty, Research Investigator, Cultural Research Institute - <i>Health Status and Disabilities Assessment of Oldest-old Population: A Cross-Sectional Study in West Bengal, India</i>
04:00 PM – 04:30 PM	Tea
04:30 PM– 06:00 PM	Technical Session 2A Adolescents, Life Skills & Education
04:30 PM– 06:00 PM	Technical Session 2B Public Health and Nutrition
04:30 PM– 06:00 PM	Technical Session 2C Urbanisation & Infrastructure
04:30 PM– 06:00 PM	Technical Session 2D Ageing & Elderly Wellbeing
04:30 PM– 06:00 PM	Technical Session 2E Morbidity, Anaemia and Tribal Health
04:30 PM– 06:00 PM	General Body Meeting (IASP Members Only)
07:30 PM onwards	Dinner

DAY 3: 29 November 2025

Time	Activity
09:00 AM – 10:30 AM	Prof. Chandrasekharan & P.P. Talwar Awards
09:00 AM – 11:00 AM	Poster Presentation 2
10:30 AM – 10:45 AM	Tea Break
10:45 AM – 12:15 PM	Technical Session 3A Climate Change & Health
10:45 AM – 12:15 PM	Technical Session 3B Data, AI, and Analytics in Demography
10:45 AM – 12:15 PM	Technical Session 3C Migration & Labour Economics
10:45 AM – 12:15 PM	Technical Session 3D Community-Based Health, Migration, and Intervention Studies
10:45 AM – 12:15 PM	Technical Session 3E Economic Development & Inequality

12:15 PM – 01:15 PM	Valedictory Session
12:15 PM	Welcome Address (5 min) Dr. Suresh Sharma
12:25 PM	Conference Summary (5 min) Dr. Ajay Kumar Singh
12:30 PM	Overall Reflection from IASP (5 min) Dr. Anil Chandran S
12:35 PM	Valedictory Address (10 min) Dr AG Khan
12:45 PM	Awards announcement Dr. Anil Chandran S
12:50 PM	Participant Feedback (5 min)
12:55 PM	Reflection about the conference (5 min) Dr Binod Kumar Singh
01:00 PM	Reflection and Thanks from Local Organizer (5 min) Dr BV Sharma
01:05 PM	Vote of Thanks (5 min) Dr. Jeetendra Yadav
01:10 PM	National Anthem (2 min)
01:15PM	Lunch

SESSION DETAILS: DAY 2

TECHNICAL SESSION 1

Technical Session 1A

Theme: Fertility, Family Planning & Reproductive Health

11:00 AM to 12:30 PM

Chairperson	Prof. Mohanachandran Nair
Discussant	Dr Archana Muthye
Session Coordinator	Dr. Gudakesh
Rapporteur	Anaswara BG
Room	406

Abstract ID	Title of the Paper	Name of the Presenter
IASP-033	Son preference and parity progressions: the case of Uttar Pradesh	Anup Kumar
IASP-222	Inequality in Teenage Pregnancy Prevalence among the Tribals and Non Tribals in India: Evidence from NFHS-5	Niranjan Rout
IASP-102	Housing and fertility preferences in urban India: The intersection of tenure, house type and dwelling size	Dr. Ismail Haque
IASP-232	An analysis of the model fitting methods for the estimation of life expectancy at birth at national and state level of India using NFHS and SRS data	Pawan Kumar Yadav
IASP-231	Understanding Fertility Mismatch in India: Patterns and Determinants	Paramita Majumdar
IASP-291	Bridging the gaps in high-risk pregnancies management by public health cadre through classroom training and handholding	Sandhya NVS Dittakavi
IASP-71	Miniscule Male in Family Planning Program in India: Geographic and Socioeconomic Trends	Abhishek Dube

Technical Session 1B**Theme: Maternal & Child Health Interventions****11:00 AM to 12:30 PM**

Chairperson	Prof. N S Bisht
Discussant	Dr Kavitha N
Session Coordinator	Dr Priyanka Yadav
Rapporteur	Dr.Kiran Sharma
Room	405

Abstract ID	Title of the Paper	Name of the Presenter
IASP-011	Understanding post-abortion complications and treatment-seeking behavior in India: the role of frontline health workers	AJ Francis Xavier
IASP-029	Trends, Economic Inequalities and Predicted Probabilities in Maternal health care services in India, 2005-2021	Ankush Singh
IASP-050	Effect of mHealth intervention on improving maternal health care services utilization: a systematic review	Bal Govind Chauhan
IASP-077	Assessing the Incremental Impact of Digital Learning and WhatsApp Chatbot on Frontline Health Workers' Competencies for High-Risk Pregnancy Management	Dr Devan Kumar Kuda
IASP-344	Impact of maternal and child interventions on perinatal outcomes: A three-year analysis	Tila Khan
IASP-363	Understanding Knowledge Attitude and Practices of ASHA Workers in Addressing Maternal Mental Health: A Qualitative Study from Uttar Pradesh, India	Yogita Kharkwal

Technical Session 1C**Theme: Mortality, Morbidity & Non-Communicable Diseases****11:00 AM to 12:30 PM**

Chairperson	Prof. S K Singh
Discussant	Dr Bashir Ahmad Bhat
Session Coordinator	Dr Rahul Kumar
Rapporteur	Deepak Kumar
Room	407

Abstract ID	Title of the Paper	Name of the Presenter
IASP-003	Financial Toxicity Among Gastric and Pancreatic Cancer Survivors in India and Its Impact on Quality of Life	Abhishek Anand
IASP-049	Availability, Accessibility & Quality of Healthcare Services for Patients with Sickle Cell Disorder in Wardha district of Maharashtra.	Badal Santoshrao Thool
IASP-044	Employment Disruption and Financial Vulnerability among Dialysis and Transplant Patients in Kerala	Arun Kumar M
IASP-065	Cancer Screening Practices in India: Spatially Disparaging Stigma and Taboo in the Reproductive Age Group	Deepak Kumar
IASP-278	Seasonal Dynamics of Asthma Mortality in India: A Time Series Perspective	Rishabh Kumar

IASP-336	The Toll of Deaths during the COVID-19 Pandemic Period for India and its States: Unravelling the losses in life expectancy using SRS mortality data	Suryakant Yadav
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Technical Session 1D

Theme: Reproductive Rights, SRH & Legal Frameworks

11:00 AM to 12:30 PM

Chairperson	Dr. Bhaswati Das
Discussant	Dr Asharaf Abdul Salam
Session Coordinator	Dr. Ajay Kumar Singh
Rapporteur	Prerna Rai
Room	307

Abstract ID	Title of the Paper	Name of the Presenter
IASP-065	Cancer Screening Practices in India: Spatially Disparaging Stigma and Taboo	Deepak Kumar
IASP-058	Temporal Pattern of Reproductive Health Parameters in Eastern India	Brijesh P. Singh
IASP-403	Contraceptive Neglect After Childbirth Among High-Parity Women in India	Dr. Kiran Sharma
IASP-063	Socio-Economic powerlessness Matters: Non-Therapeutic Abortion, Reproductive Rights and Anthropological Worldview	Debendra Kumar Biswal
IASP-241	Multilevel Analysis of Early Marriage and Its Determinants Among Young Women in A High Prevalence State of India	Pratima Barman
IASP-486	Spatial Shifts in Delivery and Postnatal Care Indicators in West Bengal: A GIS-Based Comparative Study Using NFHS Data	Dr. Subhasish Sutradhar

Technical Session 1E

Theme 5: Gender, Socio-Economic Inequalities & Empowerment

11:00 AM to 12:30 PM

Chairperson	Dr. Anil Chandran S
Discussant	Dr. Angan Sengupta
Session Coordinator	Dr Archana Muthye
Rapporteur	Ravina Ranjan
Room	Library Building

Abstract ID	Title of the Paper	Name of the Presenter
IASP-055	Gender Inequality in Educational Attainment	Binod Bihari Jena
IASP-220	Utilizing Gender Dialogues as a Mechanism for Institutional Transformation: An Empirical Study in Four Districts of West Bengal	Nilanjan Bala
IASP-302	Financial Freedom among Indian Married Women- A State-Level Analysis	Sefali Verma
IASP-308	Empowerment of Women: Analysing Trends and Determinants in India, Evidence from NFHS	Shivangi Gupta
IASP-290	Assessing Public Welfare Awareness Among Baiga PVTGs: An Index-Based Field Study	Sandesh Bandhu
IASP-328	Age and sex specific variations in body composition of paudi bhuyan tribe.	Subham Prasad Sahoo

TECHNICAL SESSION 2

Technical Session 2A

Theme: Adolescents, Life Skills & Education

04:30 PM TO 06:00 PM

Chairperson	Mr. Protik Banerjee
Discussant	Dr AJ Francis Xavier
Session Coordinator	Dr Rajesh Chauhan
Rapporteur	Dr Kasturi Mondal
Room	405

Abstract ID	Title of the Paper	Name of the Presenter
IASP-114	Beyond Silence: Assessing Knowledge, Attitudes, Experiences and Preferences on Sex Education Among College-Going Youth in Mumbai	Dr. Pragati Ubale
IASP-143	Adolescent Sexual Reproductive Health and Rights (ASRHRs) of Lodha Tribes: Special Focus on National Adolescent Health Program	Gita Naik
IASP-256	Barriers and Facilitators of Mental Health Help-Seeking Among Adolescents and Youth in India: A Systematic Review	Puspita Datta
IASP-398	Can Life Skills Reignite Confidence in Education for Adolescents? An Empirical Exploration?	Somenath Ghosh
IASP-401	Can Play-based Life skills Education Transform the Gender Attitude and Perception of Adolescents in Urban Slums?	Sukanya Bose
IASP-188	Anthropometric assessment of nutritional status among adolescents of paudi bhuyan tribe.	Manashree Manamukta Naik

Technical Session 2B

Theme: Public Health and Nutrition

04:30 PM TO 06:00 PM

Chairperson	Dr. Subrato Mondal
Discussant	Dr. Gudakesh
Session Coordinator	Dr. Priyanka Yadav
Rapporteur	Bindya Kumari
Room	406

Abstract questions ID	Title of the Paper	Name of the Presenter
IASP-174	Prevalence and Contextual Determinants of Acute Respiratory Infection among Rural Children	Koustav Ghosh
IASP-253	Assessing the Impact of Community-Based Interventions on Maternal Nutrition: A Study from Slum Areas of Kolkata	Purbita Sanyal
IASP-273	Governance to Strengthen Public Health: Mapping Urban Poverty and Its Impact on Child Health Indicators in India	Rayhan Sk
IASP-397	Eradication of Period Poverty: A Case Study in Urban Slums	Joyita Khan
IASP-402	Beyond Calories: Addressing Micronutrient Deficiencies in India	Prarthana Das
IASP-410	Enhancing Health and Nutrition Through Local Governance Engagement	Chitra Chandra

Technical Session 2C
Theme: Urbanisation & Infrastructure
04:30 PM TO 06:00 PM

Chairperson	Dr Brijesh P Singh
Discussant	Dr. Emily Das
Session Coordinator	Dr Archana Muthye
Rapporteur	Deepak Kumar
Room	407

Abstract ID	Title of the Paper	Name of the Presenter
IASP-471	Demographic and Environmental Interlinkages of Plastic Pollution: GIS-based Insights from the Kolkata Metropolitan Development Authority	Dr. Sudipa Halder
IASP-079	Addressing Urban Challenges and Enhancing Sustainability: The Aspirational Cities Program	Dr Imtiyaz Ali
IASP-039	Census Towns and the Shifting Landscape of Indian Urbanisation	Arindam Gupta
IASP-131	Marginal Lives, Marginal Care: Border Securitization and Healthcare Access	Dr. Sumana Das
IASP-171	Is Household Air Pollution a risk factor for age at menopause in India? an examination from National Family Health Survey Data	Kavitha. N
IASP-339	Is the remittance driver of intra and inter household quarrels?	Sutapa Sarkar

Technical Session 2D
Theme: Ageing & Elderly Wellbeing
04:30 PM TO 06:00 PM

Chairperson	Prof. Audinarayana
Discussant	Prof Abhay Kumar Tiwari
Session Coordinator	Dr AG Khan
Rapporteur	Dr Kasturi Mondal
Room	307

Abstract ID	Title of the Paper	Name of the Presenter
IASP-026	Socio-Demographic Determinants among Elderly Housing Arrangement in Uttar Pradesh	Anil Kumar Pal
IASP-271	Association of Self-reported Depressed Mood and Tobacco Use among Older Adults	Ravina Ranjan
IASP-400	Fintech and Older adults: A Global Synthesis	Dr. Angan Sengupta
IASP-298	Association between Self-Rated Health and Anemia in Later Life: Insights from the Longitudinal Ageing Study in India, 2017-18	Saroj Kumar
IASP-329	A Bibliometric analysis and visualization on Ageing in Place (AIP) in the gerontological research	Subham Sharma
IASP-019	Prevalence of Non-Communicable Diseases Among the Elderly	Ambady Sivan

Technical Session 2E**Theme: Morbidity, Anaemia and Tribal Health****04:30 PM TO 06:00 PM**

Chairperson	Dr. Ajay Kumar Singh
Discussant	Dr Jeetendra Yadav
Session Coordinator	Dr Rahul
Rapporteur	Ravina Ranjan
Room	Library Building

IASP-474	Nutrition and TB: Addressing Malnutrition as a Hidden Barrier in TB Elimination in Madhya Pradesh	Dr. Archana Muthye
IASP-498	Prevalence and influencing factors of Anaemia among currently married women in the districts of Bihar: Evidence from large scale survey data	SVSRK Bharadwaj
IASP-217	Expansion or Compression of Morbidity Among India's Working-Age Population	Nand Lal Mishra
IASP-103	State level Inequalities and Gender Disparities in Death Registration System in India	Dr. Jayanta Kumar Basu
IASP-448	Impact of Digital Exposure on Comprehensive Knowledge of HIV/AIDS among Unmarried Indian Youth: Estimation Using Propensity Score Matching	Lahu Vitthal Rathod
IASP-475	Empowering Tribal Adolescents through Life Skills Education: Evidence from the Alluri Sitaramaraju District, Andhra Pradesh	Ajay Kumar Singh

Poster Session Day 2, 28-09-2025**Time 12:30 PM to 02:30 PM****Venue: Near Auditorium****Coordinators: Dr. Archana Muthye and Dr. Emily Das**

S. No.	Abstract ID	Name of the Paper	Presenting Author
1.	IASP-006	Association between climatic factors and child underweight in India: a geo-spatial analysis using NFHS-5 (2019-21)	Abhishek Rajak
2.	IASP-009	Addressing Nutritional and Health Disparities Among Tribal Communities in India	Abinash Jena
3.	IASP-010	Hypertension and Diabetes Across Later Life in India: A Life-Course Perspective	Aditi Chakraborty
4.	IASP-016	Loneliness and Its Health Correlates among Older Adults in India: Evidence from LASI	Akriti Singh Rajpoot
5.	IASP-028	Temporal Changes in Socio-Economic Inequality in Distress Financing for Caesarean Deliveries in India, 2015-21	Ankita Roy
6.	IASP-031	Assessing Women's Physical Health in India: Classical Regression and Machine Learning Approaches	Anshul Pandey
7.	IASP-032	Sex Preferences and Contraceptive Use among Tribal Women in India: A Regional Analysis	Anubhav Verma

S. No.	Abstract ID	Name of the Paper	Presenting Author
8.	IASP-034	Navigating the Digital Finance Transition: A Phenomenological Study of Older Adults' Motivations, Barriers, and Social Influences in India	Anupama S & Dr. Angan Sengupta
9.	IASP-035	Environmental Risk Factors for Type 2 Diabetes in Urban India: Insights on Artificial Light at Night and Greenness Exposure	Arabindo Tanti
10.	IASP-048	Monitoring Spatial Pattern of Birth Weight in India Using Statistical Process Control Techniques	Ayushi Chourasiya
11.	IASP-054	Guarding the Future: Tackling Substance Use and Mental Health Challenges in Adolescence	Bibaswan Majumdar
12.	IASP-057	Impact of Gender-Based Violence on Reproductive Health Outcomes Among Indian Women: Evidence from NFHS-5	Bipul Kumar Roy
13.	IASP-064	Obstetric Violence and Its Association with Postnatal Depression Among Women in Rural India	Deepak
14.	IASP-066	Heat Stress and Unequal Nights: Analysing the Impact of Heatwaves on Sleep Disorders Among Slum Dwellers of Delhi (NCT)	Deepak Verma
15.	IASP-073	Epidemiology of Malaria in India	Divyanshi Verma
16.	IASP-086	Interplay of Nomophobia, Smart Phone Addiction and Mental Health Among Undergraduate Students	Dr Ranjeeta Kakoti
17.	IASP-094	Role of Dietary Diversity in Addressing Undernutrition	Dr Anuj Singh
18.	IASP-096	Advancing Transgender and LGBTQ+ Inclusion in Global Medical Practice	Dr Birendra Kumar Jaiswal
19.	IASP-097	Knowledge and Determinants of Sexual and Reproductive Health Among Urban Youth of Kolkata	Dr Chandramallika Biswas
20.	IASP-118	Out-of-Pocket Expenditure of Slum Dwellers	Dr Rashmi Shukla
21.	IASP-122	Sankalp Themes for Rural Population: A Study in Some Gram Panchayats in West Bengal	Dr Sabari Bandyopadhyay
22.	IASP-127	Cultural, Traditional and Ritual Barriers to Access Healthcare Among Tribal Communities in Mandla District of Madhya Pradesh	Dr Shatrughan Prasad
23.	IASP-128	Social Media Addiction and Its Association with Sleep Quality Among Medical Students in Tamil Nadu, India	Dr Srigowtham Subramaniam
24.	IASP-133	Decomposing the Socio-Economic Inequality in Infant Mortality in Odisha: NFHS-5	Dr Suvashri Suvadarsini
25.	IASP-141	Rural Male Out-Migration and Remittances: An Insight from Nadia District of West Bengal	Faruk Biswas

S. No.	Abstract ID	Name of the Paper	Presenting Author
26.	IASP-211	Nexus between livelihood Diversification and food security in Tribal households: A cross-sectional study in Paschim Medinipur of West Bengal	Mriganka Dolui
27.	IASP-173	Does Health Insurance Reduce Out-of-Pocket Spending for Lifestyle Diseases? Evidence and ML Risk Stratification from LASI-Kerala	Kishor R
28.	IASP-181	Access to Menstrual Hygiene Resources and Women's Health and Participation: A Mixed-Method Study	Mahashweta Chakrabarty
29.	IASP-186	Impact of Population Growth on Health and Educational Infrastructure in Selected Blocks of Rarh and Barendri Regions, West Bengal	Manab Ghosh
30.	IASP-224	Patterns of Commuting Among Dual-Worker Couples in India: A Mixed-Method Study	Nivedita Paul
31.	IASP-225	Healthcare Access, Inequality, and Under-Five Mortality: A Regional Analysis	Nur Alam
32.	IASP-229	Wetland Ecology Deterioration, Livelihood Issues and Diversification as a Coping Strategy: A Study from Loktak Wetland (India)	Ongtham Kipjen Singh
33.	IASP-207	Persistent in High Risk Fertility Behaviour among Women in West Bengal between 2003 to 2019	Mouli Maity
34.	IASP-120	From Sex to Gender: An Analysis of Private and Public Patriarchy	Sefali Verma

AWARDS PRESENTATION SESSIONS – TWO PARALLEL SESSIONS

PROF. CHANDRASEKHARAN AWARD PRESENTATION

09:00 – 10:30 AM

Session Coordinator	Dr Jeetendra Yadav
Rapporteur	Deepak Kumar
Room	405

S. No.	Title of the Paper	Name of the Presenter
PROF. CHANDRASEKHARAN AWARD		
1	Is migration associated with Household Food Security among tribes? A study in Eastern India	Mriganka Dolui
2	Pattern and Determinants of Adequate Quality of ANC in India: A Spatial Regional Model Approach	Shubham Pathak
3	Health Behavioural aspects of Occupational Health in Small-scale Fishery – A case Study from a Ramsar Wetland, Loktak Lake, India	Ms. Oinam Ashabala Devi
4	Wetland Ecology Deterioration, Livelihood Issues and Diversification as a Coping Strategy: A Study from Ramsar Wetland, Loktak, India	Ongtham Kipjen Singh
5	Understanding the Causes and Consequences of Inadequate Birth Interval	Hricha Rai
6	Impact of Inadequate Infrastructure and Remoteness on Migration Patterns and Accessibility: A Case Study of Taksing Circle of Upper Subansiri District of Arunachal Pradesh	Dr. Likhan Chandra Doley

PROF PP TALWAR AWARD PRESENTATION

9:00 – 10:30 AM

Session Coordinator	Dr Emily Das
Rapporteur	Ravina Ranjan
Room	Auditorium

PP TALWAR AWARD		
S. No.	Title of the Paper	Name of the Presenter
1	The Paradox of Growth: Rural Transformation and Persistent Disparities in Arunachal Pradesh	Kanchan Devi
2	Health Behavioural aspects of Occupational Health in Small-scale Fishery – A case Study from a Ramsar Wetland, Loktak Lake, India	Oinam Ashabala Devi
3	Meta-Analysis to understand Quality of Care in Maternal Health Programs in Uttar Pradesh	Yogita Kharkwal
4	Correlates of Fertility Mismatch among Indian Women: Patterns, Predictors, and the Role of Decision-Making Autonomy	Paramita Majumdar
5	Outlier Detection in Fréchet Distribution: A Novel Test Statistic with Application to Catastrophic Health Expenditure	Pratyasha Tripathi
6	Female Literacy and Gender Gap in Puri District: A Block-Wise Analysis	Swoyam Prangya Jena

Technical Session 3A
Theme: Climate Change & Health
10:45 AM – 12:15 PM

Chairperson	Dr. William Joe
Discussant	Dr D P Singh
Session Coordinator	Dr. Jeetendra Yadav
Rapporteur	Dr Kasturi Mondal
Room	405

Abstract ID	Title of the Paper	Name of the Presenter
IASP-047	Livelihood Diversification and Migration under Climate Change Risk	Avijit Mistri & Md Syed Salimuddin
IASP-110	Assessing Climate Change Impact on Human Health	Dr. Nasrin Banu
IASP-124	Burden of Mortality due to Acute Climate Change Related Factors in India	Dr. Sanjay Jayawant Rode
IASP-288	Gendered Vulnerabilities to Climate-Sensitive NCDs: A Global Health Perspective	Saleha Khatun
IASP-112	Gender Affirmative Healthcare for Transgender Communities	Dr. Papia Raj

Technical Session 3B
Theme: Data, AI, and Analytics in Demography
10:45 AM – 12:15 PM

Chairperson	Dr. Dipender Nath Das
Discussant	Dr. Jayanta Kumar Basu
Session Coordinator	Dr Emily Das
Rapporteur	Ms. Perna Rai
Room	406

Abstract ID	Title of the Paper	Name of the Presenter
IASP-152	Development and Validation of a Multi-Component Community Health Worker Empowerment Tool and Index	Hanimi Reddy Modugu
IASP-117	From Missing Data to Predictive Modelling: Machine Learning Insights into Fertility Determinants	Dr. Rakesh Kumar Saroj
IASP-243	Outlier Detection in Fréchet Distribution: A Novel Test Statistic with Application to Catastrophic Health Expenditure	Prof. Pratyasha Tripathi
IASP-284	A Comparative Study on Machine Learning Approaches for Diabetes Prediction	S R Sakthi Malaviga
IASP-391	Linkage the Digital Divide: Impact of Digital Health Initiatives on Reproductive Healthcare among Rural Women in Bihar	Anjum Khatoon
IASP-491	Utilization of Digital Media and Its Consequences on Health	Dr. Tej Bali Singh

Technical Session 3C
Theme: Migration & Labour Economics
10:45 AM – 12:15 PM

Chairperson	Dr. Rajesh Chauhan
Discussant	Dr. Archana Muthye
Session Coordinator	Dr. Rahul Kumar
Rapporteur	Dr. Bindya Kumari
Room	407

Abstract ID	Title of the Paper	Name of the Presenter
IASP-450	Non-migration choices: Exploring household migration decision in Eastern Uttar Pradesh	Vikesh Kumar
IASP-452	Migrant Stay Dynamics: A Duration-Based Analysis of Keralite Origin to the Gulf	Rahul Kumar Jha
IASP-199	Low-Skilled Labour Migration to the Gulf States	Md Selim Reja
IASP-367	A Study on Women Migrant Workers of Kendrapara District of Odisha to Kerala	Dr. Liza Swain
IASP-085	More Lonely Abroad? Loneliness Among Mid-life and Older Indian Migrants	Dr Mengxing Joshi
IASP-485	A Spatio-temporal Analysis of Migration in Sikkim (1991-2011): Shifts in Demographic Profile	Bikram Nasipuri

Technical Session 3D
Theme: Community-Based Health, Migration, and Intervention Studies
10:45 AM – 12:15 PM

Chairperson	Dr Hanimi Reddy
Discussant	Dr Ajay Kumar Singh
Session Coordinator	Dr. Priyanka Yadav
Rapporteur	Deepak Kumar
Room	307

Abstract ID	Title of the Paper	Name of the Presenter
IASP-1	Recent Trends in Out Migration of Labour Force from Madhya Banga: A Political Economic Perspective	A K M Anwaruzzaman
IASP-399	Assessing the Impact of Community-Based Interventions on Maternal Nutrition: A Study from Slum Areas of Kolkata	Sreeparna Ghosh Mukherjee
IASP-411	Enhancing Health and Nutrition Through Local Governance Engagement	Pintu Kabiraj
IASP-452	Migrant Stay Dynamics: A Duration-Based Analysis of Keralite Origin to the Gulf	Rahul Kumar Jha
IASP-459	Effectiveness of Integrated Treatment in Rehabilitation Centres for Substance Use Disorder in Sikkim	Diya Tikhatri
IASP-470	Men's Understanding of Natal Health Issues and Their Role in Maternal Care	Saravanan R

Technical Session 3E
Theme: Economic Development & Inequality
10:45 AM – 12:15 PM

Chairperson	Dr. KVR Subramaniam
Discussant	Dr AG Khan
Session Coordinator	Dr Priyanka Yadav
Rapporteur	Dr. Kiran Sharma
Room	Library Building

Abstract ID	Title of the Paper	Name of the Presenter
IASP-154	Contribution of Income, Education and Health Dimensions in HDI, 1990-2023	Heer Joshi
IASP-046	Demographic Dividend in Rajasthan, India: Delayed or in Time	Asharaf Abdul Salam
IASP-221	Socio-Economic Drivers of Consumption Inequality in India	Nilesh J Yadav
IASP-075	Digital Literacy in India: New emerging facts	Dr D P Singh
IASP-185	The push towards education: New business opportunities in a Delhi village	Mallika Chaudhuri
IASP-259	Traditional Healers: A Less Familiar Image of the Nomadic Snake-Charmers in India	Rahul

Poster Session Day 3, 29-09-2025

Time 09:00 AM to 11:00 AM

Venue: Near Auditorium

Coordinator: Dr. Archana Muthye and Dr. Emily Das

S. No	Abstract ID	Name of the Paper	Presenting Author
35.	IASP-236	Geographical Inequality and Associated Factors of Dropout from Continuum of Maternity Care Among Adolescent Mothers in India	Pooja Tripathi
36.	IASP-024	Age at Menarche and its Association with Obesity Risk among Indian Women: Evidence from NFHS-5	Anaswara B G
37.	IASP-244	Exploring Infertility Treatment Trajectories and Stigma: Findings from Northeast India	Pratyashee Ojah
38.	IASP-249	Intra-Household Power Dynamics and Women's Autonomy Across Regional Contexts in India	Priyotosh Laha
39.	IASP-264	Habitation Transformation and Urban Heat Island Intensification: A Study of Burdwan Development Authority Area	Rakhibul Mondal
40.	IASP-265	International Border and Regional Disparities: A Spatial Analysis Through Sustainable Livelihood Perspective	Rakib Sarkar
41.	IASP-266	Role of Information and Social Support Mechanisms in Tuberculosis Care: Evidences from Nadia District, West Bengal	Rakib Shaikh

S. No	Abstract ID	Name of the Paper	Presenting Author
42.	IASP-268	Exploring Female Employment Pattern in India: A Study on Different Sectors, Earnings and Regional Variations	Ranjan Singha
43.	IASP-270	Health Vulnerability Among Older Adults in India: Socio-Economic, Gender, and Regional Perspectives	Ravi D. Prasad
44.	IASP-299	Polygamy Marriage and Child Health in India	Satish Kumar Chauhan
45.	IASP-305	Survival Analysis of Drug-Susceptible Tuberculosis in Pediatric Patients: Comparing Cox Regression and Parametric Models	Shalini Kumari
46.	IASP-310	Primary Health Care Delivery through Rural Health and Wellness Centres: A District-Level Study in Kanpur (U.P.)	Shraddha Bhatia
47.	IASP-314	Regional Variation in Intimate Partner Violence in India: Evidence from NFHS-5	Shubham Kumar
48.	IASP-315	Trend, Patterns and Predictors of High Risk Fertility Behavior and its Association with Child Nutrition Levels in India: A Multivariate Decomposition Analysis	Shubham Pathak
49.	IASP-316	Role of Women's Decision-Making Autonomy on Maternal Healthcare Service Utilization in India using NFHS-5	Shweta Patel
50.	IASP-319	Work Participation and Gender Inequalities in North 24 Parganas: Insights from Census 2001 and 2011	Somnath Mukherjee
51.	IASP-320	Beyond Biology: The Role of Son Preference in Reversing Infant Survival Advantage Among Girls in India	Soumen Barik
52.	IASP-321	Prevalence and Determinants of Anaemia Among Reproductive-Aged Women in India: An Exploratory Study	Soumitra Mandal
53.	IASP-322	Reassessing the Nutrition Policy Landscape: Analysing Policy Mapping and Malnutrition in Selected South Asian Countries	Sourav Bhattacharjee
54.	IASP-326	Exploring Factors Affecting Contraception Use of Eligible Couples in Ri Bhoi, Meghalaya	Sreya Bhattacharya
55.	IASP-327	Emerging Rural–Urban Continuums: Land Use Change and Livelihood Transformation in Rajarhat CD Block, West Bengal	Srijita Saha
56.	IASP-331	Mapping Anaemia Vulnerability: Determinants and Prevalence Shifts Among Adolescent Girls in Aspirational Districts	Subhojit Let
57.	IASP-334	Women Empowerment and Divorce in India: A Mixed-Method Study	Sunandita Das

S. No	Abstract ID	Name of the Paper	Presenting Author
58.	IASP-342	Female Literacy and Gender Gap in Puri District: A Block-Wise Analysis	Swoyam Prangya Jena
59.	IASP-343	Examining Ambient Air Pollution and Adverse Birth Outcomes in India: Findings from NFHS-5 (2019–21)	Tapas Bera
60.	IASP-350	Regional Variation in Multidimensional Well-Being Index of Older Persons in India	Vandita Ranjan
61.	IASP-354	Perception and Awareness of HIV/AIDS Among College and University Students: A Public Health Perspective	Vikash Kumar
62.	IASP-356	Wage Theft Among Indian Return Migrants from the Gulf: Survey Evidence from Bihar	Vikram
63.	IASP-359	Two-Way Flow: Factors Shaping Remittance Behaviour in Amritsar Households	Vinod Kumar
64.	IASP-365	Framing Migration in Indian Print Media: Comparative Study of English Dailies, 2024	Zahedur Rahaman
65.	IASP-368	Circular Data Analysis of Seasonal Variation in Conception	Abhishek Saraswat
66.	IASP-369	Developing a Flexible Discrete Probability Model for Child Mortality	Abhiraj Bhattacharya
67.	IASP-405	Bridging Inequalities in Antenatal Care: Contributions of ASHAs, ANMs, and Anganwadi Workers in India	Tamal Reja
68.	IASP-215	Analyzing Spatial Transformation in North Bengal's Urban and Peri-Urban Areas: Implications for Urban-Rural Transition	Najib Ansari
69.	IASP-34	Sex differentials in mortality in India: role of 24 causes of death using GBD (2021) Study	Himanshu Jaiswal
70.	IASP-478	Linkages between Menstruation and Anemia in Indian Adolescents: Evidence from a Large-Scale Sample Survey	Chanda Maurya

List of Papers Selected for Oral and Poster Presentation

ORAL PRESENTATION

LIST OF PAPERS SELECTED FOR ORAL PRESENTATION		
S.NO.	PRESENTER	TITLE OF THE PAPER
1.	ABHISHEK ANAND	FINANCIAL TOXICITY AMONG GASTRIC AND PANCREATIC CANCER SURVIVORS IN INDIA AND ITS IMPACT ON QUALITY OF LIFE
2.	AJ FRANCIS ZAVIER	UNDERSTANDING POST-ABORTION COMPLICATIONS AND TREATMENT-SEEKING BEHAVIOR IN INDIA: THE ROLE OF FRONTLINE HEALTH WORKERS
3.	AMBADY SIVAN	PREVALENCE OF NON-COMMUNICABLE DISEASES AMONG THE ELDERLY IN PATHANAMTHITTA DISTRICT, KERALA
4.	ANIL KUMAR PAL	SOCIO-DEMOGRAPHIC DETERMINANTS AMONG ELDERLY HOUSING ARRANGEMENT IN UTTAR PRADESH: A COMPARATIVE ANALYSIS FAMILY AND OLD AGE HOMES BY GENDER
5.	ANKUSH SINGH	TRENDS, ECONOMIC INEQUALITIES AND PREDICTED PROBABILITIES IN MATERNAL HEALTH CARE SERVICES IN INDIA, 2005-2021
6.	ANUP KUMAR	SON PREFERENCE AND PARITY PROGRESSIONS: THE CASE OF UTTAR PRADESH
7.	ARINDAM GUPTA	CENSUS TOWNS AND THE SHIFTING LANDSCAPE OF INDIAN URBANISATION, 1991-2011
8.	ARUN KUMAR M	EMPLOYMENT DISRUPTION AND FINANCIAL VULNERABILITY AMONG DIALYSIS AND TRANSPLANT PATIENTS IN KERALA
9.	ASHARAF ABDUL SALAM	DEMOGRAPHIC DIVIDEND IN RAJASTHAN, INDIA: DELAYED OR IN TIME
10.	AVIJIT MISTRI* & MD SYED SALIMUDDIN	LIVELIHOOD DIVERSIFICATION AND MIGRATION UNDER CLIMATE CHANGE RISK PERCEPTION IN SLASH-AND-BURN AGROECOSYSTEM IN NORTHEAST INDIA- A CASE STUDY
11.	BADAL SANTOSHRAO THOOL	AVAILABILITY, ACCESSIBILITY & QUALITY OF HEALTHCARE SERVICES FOR PATIENTS WITH SICKLE CELL DISORDER IN WARDHA DISTRICT OF MAHARASHTRA.
12.	BAL GOVIND CHAUHAN	EFFECT OF MHEALTH INTERVENTION ON IMPROVING MATERNAL HEALTH CARE SERVICES UTILIZATION: A SYSTEMATIC REVIEW
13.	BINOD BIHARI JENA	GENDER INEQUALITY IN EDUCATIONAL ATTAINMENT
14.	BRIJESH P. SINGH	TEMPORAL PATTERN OF REPRODUCTIVE HEALTH PARAMETERS IN EASTERN INDIA
15.	DEBENDRA KUMAR BISWAL	SOCIO-ECONOMIC POWERLESSNESS MATTERS: NON-THERAPEUTIC ABORTION, REPRODUCTIVE RIGHTS AND ANTHROPOLOGICAL WORLDVIEW
16.	DEEPAK KUMAR	CANCER SCREENING PRACTICES IN INDIA: SPATIALLY DISPARAGING STIGMA AND TABOO IN THE REPRODUCTIVE AGE GROUP
17.	DR D P SINGH	DIGITAL LITERACY IN INDIA: NEW EMERGING FACTS
18.	DR DEVAN KUMAR KUDA	ASSESSING THE INCREMENTAL IMPACT OF DIGITAL LEARNING AND WHATSAPP CHATBOT ON FRONTLINE HEALTH WORKERS COMPETENCIES FOR HIGH-RISK PREGNANCY MANAGEMENT: EVIDENCE FROM ONE NORTH AND ONE SOUTH INDIAN STATES
19.	DR IMTIYAZ ALI	ADDRESSING URBAN CHALLENGES AND ENHANCING SUSTAINABILITY: THE ASPIRATIONAL CITIES PROGRAM (AKANKSHI NAGAR YOJANA) IN UTTAR PRADESH, INDIA

LIST OF PAPERS SELECTED FOR ORAL PRESENTATION		
S.NO.	PRESENTER	TITLE OF THE PAPER
20.	DR MENGXING JOSHI	MORE LONELY ABROAD? LONELINESS AMONG MID-LIFE AND OLDER INDIAN MIGRANTS IN THE UK COMPARED TO HOST AND ORIGIN POPULATIONS
21.	DR. ISMAIL HAQUE	HOUSING AND FERTILITY PREFERENCES IN URBAN INDIA: THE INTERSECTION OF TENURE, HOUSE TYPE AND DWELLING SIZE
22.	DR. JAYANTA KUMAR BASU	STATE LEVEL INEQUALITIES AND GENDER DISPARITIES IN DEATH REGISTRATION SYSTEM IN INDIA
23.	DR. NASRIN BANU	ASSESSING CLIMATE CHANGE IMPACT ON HUMAN HEALTH: EXPERIENCES OF THE RURAL COMMUNITIES IN INDIAN SUNDARBANS
24.	DR. PAPIA RAJ	GENDER AFFIRMATIVE HEALTHCARE FOR TRANSGENDER COMMUNITIES
25.	DR. PRAGATI UBALE	BEYOND SILENCE: ASSESSING KNOWLEDGE, ATTITUDES, EXPERIENCES AND PREFERENCES ON SEX EDUCATION AMONG COLLEGE-GOING YOUTH IN MUMBAI"
26.	DR. RAKESH KUMAR SAROJ, ASSISTANT PROFESSOR	FROM MISSING DATA TO PREDICTIVE MODELLING: MACHINE LEARNING INSIGHTS INTO FERTILITY DETERMINANTS
27.	DR. SANJAY JAYAWANT RODE	BURDEN OF MORTALITY DUE TO ACUTE CLIMATE CHANGE RELATED FACTORS IN INDIA: AN ECONOMETRIC ESTIMATE OF STATE LEVEL DATA
28.	DR. SUMANA DAS	MARGINAL LIVES, MARGINAL CARE: BORDER SECURITIZATION AND HEALTHCARE ACCESS IN THE RIVERINE CHARLANDS OF MURSHIDABAD, WEST BENGAL
29.	GITA NAIK	ADOLESCENT SEXUAL REPRODUCTIVE HEALTH AND RIGHTS (ASRHRS) OF LODHA TRIBES: SPECIAL FOCUS ON NATIONAL ADOLESCENT HEALTH PROGRAM
30.	GURKAWAL KAUR	EPIDEMIOLOGICAL ANALYSIS OF MUSCULAR STRENGTH AND ITS BIO-SOCIAL DETERMINANTS: EVIDENCE FROM RURAL UTTARAKHAND
31.	HANIMI REDDY MODUGU	DEVELOPMENT AND VALIDATION OF A MULTI-COMPONENT COMMUNITY HEALTH WORKER EMPOWERMENT TOOL AND EMPOWERMENT INDEX
32.	HEER JOSHI	CONTRIBUTION OF INCOME, EDUCATION AND HEALTH DIMENSIONS IN HUMAN DEVELOPMENT INDEX, 1990-2023
33.	KAVITHA. N	IS HOUSEHOLD AIR POLLUTION A RISK FACTOR FOR AGE AT MENOPAUSE IN INDIA? AN EXAMINATION FROM NATIONAL FAMILY HEALTH SURVEY DATA
34.	KOUSTAV GHOSH	PREVALENCE AND CONTEXTUAL DETERMINANTS OF ACUTE RESPIRATORY INFECTION AMONG RURAL CHILDREN: A CROSS-SECTIONAL STUDY IN PURBA BARDHAMAN DISTRICT OF WEST BENGAL, INDIA
35.	MALLIKA CHAUDHURI	THE PUSH TOWARDS EDUCATION: NEW BUSINESS OPPORTUNITIES IN A DELHI VILLAGE
36.	MANASHREE MANAMUKTA NAIK	ANTHROPOMETRIC ASSESSMENT OF NUTRITIONAL STATUS AMONG ADOLESCENTS OF PAUDI BHUYAN TRIBE.
37.	MD SELIM REJA	LOW-SKILLED LABOUR MIGRATION TO THE GULF STATES: EXAMINING THE REASONS, SOCIAL NETWORKS, AND MIGRATION COSTS AMONG MUSLIMS IN WEST BENGAL, INDIA
38.	NAND LAL MISHRA	EXPANSION OR COMPRESSION OF MORBIDITY AMONG INDIA S WORKING-AGE POPULATION

LIST OF PAPERS SELECTED FOR ORAL PRESENTATION		
S.NO.	PRESENTER	TITLE OF THE PAPER
39.	NILANJAN BALA	UTILIZING GENDER DIALOGUES AS A MECHANISM FOR INSTITUTIONAL TRANSFORMATION: AN EMPIRICAL STUDY IN FOUR DISTRICTS OF WEST BENGAL
40.	NILESH J YADAV	SOCIO-ECONOMIC DRIVERS OF CONSUMPTION INEQUALITY IN INDIA
41.	NIRANJAN ROUT	INEQUALITY IN TEENAGE PREGNANCY PREVALENCE AMONG THE TRIBALS AND NON TRIBALS IN INDIA: EVIDENCE FROM NFHS-5
42.	PARAMITA MAJUMDAR	UNDERSTANDING FERTILITY MISMATCH IN INDIA: PATTERNS AND DETERMINANTS
43.	PAWAN KUMAR YADAV	AN ANALYSIS OF THE MODEL FITTING METHODS FOR THE ESTIMATION OF LIFE EXPECTANCY AT BIRTH AT NATIONAL AND STATE LEVEL OF INDIA USING NFHS AND SRS DATA
44.	PRATIMA BARMAN	MULTILEVEL ANALYSIS OF EARLY MARRIAGE AND ITS DETERMINANTS AMONG YOUNG WOMEN IN A HIGH PREVALENCE STATE OF INDIA
45.	PRATYASHA TRIPATHI	OUTLIER DETECTION IN FRÄ©CHET DISTRIBUTION: A NOVEL TEST STATISTIC WITH APPLICATION TO CATASTROPHIC HEALTH EXPENDITURE
46.	PROF ABHAY KUMAR TIWARI	A STUDY ON INFLUENCE OF MATERNAL HEIGHT DIFFERENTIALS ON FERTILITY
47.	PURBITA SANYAL	ASSESSING THE IMPACT OF COMMUNITY-BASED INTERVENTIONS ON MATERNAL NUTRITION: A STUDY FROM SLUM AREAS OF KOLKATA
48.	PURVA BHALLA	SCENARIO OF INDUCED ABORTION IN INDIA: REASONS AND COMPLICATIONS
49.	PUSPITA DATTA	BARRIERS AND FACILITATORS OF MENTAL HEALTH HELP-SEEKING AMONG ADOLESCENTS AND YOUTH IN INDIA: A SYSTEMATIC REVIEW
50.	RAHUL	TRADITIONAL HEALERS: A LES FAMILIAR IMAGE OF THE NOMADIC SNAKE-CHARMERS IN INDIA
51.	RAVINA RANJAN	ASSOCIATION OF SELF-REPORTED DEPRESSED MOOD AND TOBACCO USE AMONG OLDER ADULTS IN INDIA: INSIGHTS FROM THE LONGITUDINAL AGING STUDY INDIA WAVE-1
52.	RAYHAN SK	GOVERNANCE TO STRENGTHEN PUBLIC HEALTH: MAPPING URBAN POVERTY AND ITS IMPACT ON CHILD HEALTH INDICATORS IN INDIA
53.	RISHABH KUMAR	SEASONAL DYNAMICS OF ASTHMA MORTALITY IN INDIA: A TIME SERIES PERSPECTIVE
54.	S R SAKTHI MALAVIGA	A COMPARATIVE STUDY ON MACHINE LEARNING APPROACHES FOR DIABETES PREDICTION IN INDIA
55.	SALEHA KHATUN	GENDERED VULNERABILITIES TO CLIMATE-SENSITIVE NCDS: A GLOBAL HEALTH PERSPECTIVE
56.	SANDESH BANDHU	ASSESSING PUBLIC WELFARE AWARENESS AMONG BAIGA PVTGS: AN INDEX-BASED FIELD STUDY
57.	SANDHYA NVS DITTAKAVI	BRIDGING THE GAPS IN HIGH-RISK PREGNANCIES MANAGEMENT BY PUBLIC HEALTH CADRE THROUGH CLASSROOM TRAINING AND HANDHOLDING IN HIGH AND LOW PERFORMING STATES OF INDIA.

LIST OF PAPERS SELECTED FOR ORAL PRESENTATION		
S.NO.	PRESENTER	TITLE OF THE PAPER
58.	SAROJ KUMAR	ASSOCIATION BETWEEN SELF-RATED HEALTH AND ANEMIA IN LATER LIFE: INSIGHTS FROM THE LONGITUDINAL AGEING STUDY IN INDIA, 2017-18
59.	SEFALI VERMA	FINANCIAL FREEDOM AMONG INDIAN MARRIED WOMEN- A STATE-LEVEL ANALYSIS
60.	SHIVANGI GUPTA	EMPOWERMENT OF WOMEN: ANALYSING TRENDS AND DETERMINANTS IN INDIA, EVIDENCE FROM NFHS
61.	SUBHAM PRASAD SAHOO	AGE AND SEX SPECIFIC VARIATIONS IN BODY COMPOSITION OF PAUDI BHUYAN TRIBE.
62.	SUBHAM SHARMA	A BIBLIOMETRIC ANALYSIS AND VISUALIZATION ON AGEING IN PLACE (AIP) IN THE GERONTOLOGICAL RESEARCH
63.	SURYAKANT YADAV	THE TOLL OF DEATHS DURING THE COVID-19 PANDEMIC PERIOD FOR INDIA AND ITS STATES: UNRAVELLING THE LOSSES IN LIFE EXPECTANCY USING SRS MORTALITY DATA
64.	SUTAPA SARKAR	IS THE REMITTANCE DRIVER OF INTRA AND INTER HOUSEHOLD QUARRELS?
65.	TILA KHAN	IMPACT OF MATERNAL AND CHILD INTERVENTIONS ON PERINATAL OUTCOMES: A THREE-YEAR ANALYSIS
66.	YOGITA KHARKWAL	UNDERSTANDING KNOWLEDGE ATTITUDE AND PRACTICES OF ASHA WORKERS IN ADDRESSING MATERNAL MENTAL HEALTH: A QUALITATIVE STUDY FROM UTTAR PRADESH, INDIA
67.	DR. LIZA SWAIN	A STUDY ON WOMEN MIGRANT WORKERS OF KENDRAPARA DISTRICT OF ODISHA TO KERALA
68.	ANJUM KHATOON	BRIDGING THE DIGITAL DIVIDE: IMPACT OF DIGITAL HEALTH INITIATIVES ON REPRODUCTIVE HEALTHCARE AMONG RURAL WOMEN IN BIHAR
69.	JOYITA KHAN	ERADICATION OF PERIOD POVERTY: A CASE STUDY IN URBAN SLUMS
70.	SOMENATH GHOSH	CAN LIFE SKILLS REIGNITE CONFIDENCE IN EDUCATION FOR ADOLESCENTS? AN EMPIRICAL EXPLORATION?
71.	DR. ANGAN SENGUPTA	FINTECH AND OLDER ADULTS: A GLOBAL SYNTHESIS OF ENABLERS, BARRIERS, AND RESEARCH TRENDS FOR INCLUSIVE DIGITAL FINANCE
72.	SUKANYA BOSE	CAN PLAY-BASED LIFE SKILLS EDUCATION TRANSFORM THE GENDER ATTITUDE AND PERCEPTION OF ADOLESCENTS IN URBAN SLUMS?
73.	PRARTHANA DAS	BEYOND CALORIES: ADDRESSING MICRONUTRIENT DEFICIENCIES IN INDIA
74.	DR. KIRAN SHARMA	CONTRACEPTIVE NEGLECT AFTER CHILDBIRTH AMONG HIGH-PARITY WOMEN IN INDIA
75.	CHITRA CHANDRA	ENHANCING HEALTH AND NUTRITION THROUGH LOCAL GOVERNANCE ENGAGEMENT
76.	DR RAKESH KUMAR SAROJ	FROM MISSING DATA TO PREDICTIVE MODELLING: MACHINE LEARNING INSIGHTS INTO FERTILITY DETERMINANTS
77.	LAHU VITTHAL RATHOD	CHANGING TRENDS AND ACCEPTANCE OF INTER-CASTE AND INTER-RELIGION MARRIAGES IN INDIA: A STUDY OF NATIONAL FAMILY HEALTH SURVEY DATA
78.	VIKESH KUMAR	NON-MIGRATION CHOICES: EXPLORING HOUSEHOLD MIGRATION DECISION IN EASTERN UTTAR PRADESH
79.	RAHUL KUMAR JHA	MIGRANT STAY DYNAMICS: A DURATION-BASED ANALYSIS OF KERALITE ORIGIN TO THE GULF

LIST OF PAPERS SELECTED FOR ORAL PRESENTATION		
S.NO.	PRESENTER	TITLE OF THE PAPER
80.	DIYA TIKHATRI	EFFECTIVENESS OF INTEGRATED TREATMENT IN REHABILITATION CENTRES FOR SUBSTANCE USE DISORDER IN SIKKIM
81.	SVSRK BHARADWAJ, and K V R SUBRAHMANYAM	PREVALENCE AND INFLUENCING FACTORS OF ANAEMIA AMONG CURRENTLY MARRIED WOMEN IN THE DISTRICTS OF BIHAR: EVIDENCE FROM LARGE SCALE SURVEY DATA
82.	RAHUL KUMAR JHA, PROF. ARKADIUSZ WISNIOWSKI, PROF. WENDY KAY OLSEN, PROF. MARIA PAMPAKA	MIGRANT STAY DYNAMICS: A DURATION-BASED ANALYSIS OF KERALITE ORIGIN TO THE GULF
83.	SUDIPA HALDER AND BINOD KUMAR SINGH	DEMOGRAPHIC AND ENVIRONMENTAL INTERLINKAGES OF PLASTIC POLLUTION: GIS-BASED INSIGHTS FROM THE KOLKATA METROPOLITAN DEVELOPMENT AUTHORITY
84.	BIKRAM NASIPURI	A SPATIO-TEMPORAL ANALYSIS OF MIGRATION IN SIKKIM (1991-2011): SHIFTS IN DEMOGRAPHIC PROFILE
85.	DR. SUBHASISH SUTRADHAR	SPATIAL SHIFTS IN DELIVERY AND POSTNATAL CARE INDICATORS IN WEST BENGAL: A GIS-BASED COMPARATIVE STUDY USING NFHS DATA
86.	AJAY K SINGH	EMPOWERING TRIBAL ADOLESCENTS THROUGH LIFE SKILLS EDUCATION: EVIDENCE FROM THE ALLURI SITARAMARAJU DISTRICT, ANDHRA PRADESH
87.	DR. TEJ BALI SINGH	UTILIZATION OF DIGITAL MEDIA AND ITS CONSEQUENCES ON HEALTH

POSTER PRESENTATION

LIST OF PAPERS SELECTED FOR POSTER PRESENTATION		
S.NO.	PRESENTER	TITLE OF THE PAPER
1.	ABHISHEK RAJAK	ASSOCIATION BETWEEN CLIMATIC FACTORS AND CHILD UNDERWEIGHT IN INDIA: A GEO-SPATIAL ANALYSIS USING NATIONAL FAMILY HEALTH SURVEY 5 (2019-21)
2.	ABINASH JENA	ADDRESSING NUTRITIONAL AND HEALTH DISPARITIES AMONG TRIBAL COMMUNITIES IN INDIA
3.	MISS. RUPAM BHARTI	WOMEN'S KNOWLEDGE ON MATERNAL HEALTH CARE IN BIHAR
4.	ADITI CHAKRABORTY	HYPERTENSION AND DIABETES ACROSS LATER LIFE IN INDIA: A LIFE-COURSE PERSPECTIVE
5.	AKRITI SINGH RAJPOOT	LONELINESS AND ITS HEALTH CORRELATES AMONG OLDER ADULTS IN INDIA: EVIDENCE FROM LASI
6.	ANASWARA B G	AGE AT MENARCHE AND ITS ASSOCIATION WITH OBESITY RISK AMONG INDIAN WOMEN: EVIDENCE FROM NFHS-5
7.	ANKITA ROY	TEMPORAL CHANGES IN SOCIO-ECONOMIC INEQUALITY IN DISTRESS FINANCING FOR CAESAREAN DELIVERIES IN INDIA, 2015-21
8.	ANSHUL PANDEY	ASSESSING WOMEN'S PHYSICAL HEALTH IN INDIA: CLASSICAL REGRESSION AND MACHINE LEARNING APPROACHES
9.	ANUBHAV VERMA	SEX PREFERENCES AND CONTRACEPTIVE USE AMONG TRIBAL WOMEN IN INDIA: A REGIONAL ANALYSIS
10.	ANUPAMA S & DR. ANGAN SENGUPTA	NAVIGATING THE DIGITAL FINANCE TRANSITION: A PHENOMENOLOGICAL STUDY OF OLDER ADULTS' MOTIVATIONS, BARRIERS, AND SOCIAL INFLUENCES IN INDIA
11.	ARABINDO TANTI	ENVIRONMENTAL RISK FACTORS FOR TYPE 2 DIABETES IN URBAN INDIA: INSIGHTS ON ARTIFICIAL LIGHT AT NIGHT AND GREENNESS EXPOSURE
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Abstract of Papers for Oral Presentation

Financial Toxicity Among Gastric and Pancreatic Cancer Survivors in India and Its Impact on Quality of Life

Abhishek Anand

Background: Financial toxicity (FT) associated with cancer treatment has emerged as a critical issue impacting cancer patients globally. The absence of comprehensive research on FT among gastric and pancreatic cancer survivors in India leaves a gap in understanding the full spectrum of economic burdens and challenges faced by them. This study addresses this gap by examining the factors associated with FT and its impact on the quality of life for gastric and pancreatic cancer survivors.

Methods: Data for this study were collected from April to September 2024 at Tata Memorial Hospital (TMH), Mumbai. Participants with a history of gastric and pancreatic cancers were selected at their regular follow-up visits to the Gastrointestinal outpatient department at TMH. The FT was measured using the COST FACIT v2, and the EORTC-QLQ-C30 was used to measure QoL.

Results: Among the 190 survivors, 19.5%, 36.3% and 44.2% had low, moderate and high FT, respectively. The results further show that survivors aged 61 and above had significantly lower FT ($\hat{I}^2 = 2.50$, $p = 0.02$) compared to those aged 23-45. The classification based on patient's paying capacity showed that survivors with poor and very poor status had significantly higher FT than those from other category. High years of education, i.e. 10 years or above ($\hat{I}^2 = 1.68$, $p = 0.08$), and insurance coverage ($\hat{I}^2 = 2.63$, $p = 0.06$) also reduced FT. The findings also show that as FT increases, QoL deteriorates, which is particularly evident across various functional and symptom scales.

Conclusion: We conclude that FT is significantly associated with factors such as age, education, insurance, economic status of patients, etc. The FT and its associated risk factors limit the ability of survivors and their families to integrate back into society and have a better QoL. It is evident that survivors need more than just medical treatment; they need a holistic support system that addresses their financial needs.

Keywords - Financial toxicity, Quality of life, Cross-sectional study, India

Understanding post-abortion complications and treatment-seeking behavior in India: the role of frontline health workers

AJ Francis Xavier

Background and objectives: Abortion complications pose significant health risks, underscoring the crucial need for accessible reproductive healthcare services and safe abortion care. The role of frontline health workers (FLWs) in India in improving maternal and child health is well documented. However, there is a lack of evidence in India regarding the role of FLWs in managing abortion complications. Utilizing pooled data from DHS surveys conducted in India in 2015-2016 and 2019-2021, the paper examines the prevalence and determinants of abortion complications and treatment-seeking behaviors among married women, focusing on the role of frontline workers (FLWs).

Data and methods: This study used data from the DHS surveys conducted in India in 2015-16 and 2019-21. The analysis focused on 6,562 and 5,445 women, respectively, who reported having their most recent abortion within the five years preceding each survey. Descriptive and bivariate logistic regressions were used. Explanatory variables, apart from socioeconomic variables, used were gestation age, place of abortion, provider of abortion, and active presence of FLW. Active FLW presence in a PSU is measured as the percentage of women who have been contacted by or received services from FLW for any services in the past 5 years. Its value ranges from 0% to 100%, with 100% indicating full FLW engagement within the PSU and 0% indicating no activity.

Findings: Abortion complications decreased from 19% to 16%, while treatment-seeking increased from 83% to 90% between 2015-16 and 2019-21. During this time, the presence of FLWs in a PSU rose from 24% to 49%. Multivariate analysis indicates that active FLW presence correlates with increased reporting of abortion complications and increased treatment seeking. Specifically, a one-percentage-point increase in FLW contact at the village level is associated with a 0.4% increase in the likelihood of experiencing abortion complications. A one-percentage-point increase in FLW contact correlates with a 0.8% increase in the likelihood of women seeking treatment for abortion complications.

Additionally, abortions conducted in the second trimester or later are associated with a higher risk of complications (OR=2.0) and an increased likelihood of treatment-seeking (OR=1.4). The odds of experiencing abortion complications are greater when a doctor performs the abortion, and higher odds of seeking treatment for complications compared to self-managed abortions. The likelihood of experiencing complications is higher for abortions conducted in private facilities (OR=1.25) compared to home/self-managed abortions. However, women who have abortions in health facilities, whether public or private, are more likely to seek treatment for complications.

Conclusions: This study underscores the critical role of FLWs and facility-based care in reducing abortion complications and promoting treatment-seeking for complications when they arise. Enhancing the involvement of FLWs and offering training specifically for abortion care could potentially enhance the results. The findings point to specific areas for targeted intervention. Training healthcare providers, enhancing FLWs community outreach, and ensuring access to safe, timely abortion services remain key areas to improve maternal health outcomes related to abortion in India.

Prevalence of Non-Communicable Diseases Among the Elderly in Pathanamthitta District, Kerala

Ambady Sivan

Background and Objectives: India's demographic transition is characterised by rapid ageing and rising chronic disease burdens, with important implications for health systems and social protection. Kerala, despite being the most advanced state in demographic transition, faces a disproportionately high prevalence of non-communicable diseases (NCDs) among its older population. The prevalence of chronic conditions poses significant challenges for healthcare utilisation, financial stability, and intergenerational wellbeing. This study examines the prevalence and socio-demographic correlates of nine major NCDs among older adults in Pathanamthitta district, Kerala, the district which is having highest proportion of older adults in India. The objectives were to (i) estimate age- and sex-specific prevalence of selected NCDs, and (ii) analyse their variation across socio-demographic and economic groups.

Data and Methods: The analysis draws on primary survey data collected in Pathanamthitta district, Kerala, during September 2024 to January 2025. A total of 449 older adults aged 60 years and above are interviewed using a structured questionnaire covering demographic and socio-economic characteristics, and health conditions. The samples are selected using a stratified multi-stage sampling design. Using probability-proportional-to-size (PPS) and systematic sampling from a randomly chosen cluster resulted in 223 and 226 interviews from the two Taluks. Prevalence of nine NCDs hypertension, diabetes, cancer, lung disease, heart disease, stroke, arthritis, cholesterol and other chronic conditions is measured using self-reported conditions. Cross-tabulations are used to assess prevalence patterns across age, sex, caste, religion, and other socio-demographic and economic variables.

Findings: The findings reveal a high burden of NCDs among the elderly in the district. Hypertension (59%), arthritis and other chronic conditions (50%) were the most prevalent conditions, followed by diabetes (47%) and cholesterol (35%). Age-specific patterns showed a steady increase in NCDs with advancing age. Women reported a higher prevalence of hypertension, arthritis, and diabetes, while men exhibited a greater burden of cardiovascular disease and lung disease. Urban residence is characterised by a higher prevalence of all NCDs except arthritis. Elderly individuals who report significant difficulty in managing their daily finances exhibit a higher prevalence of hypertension and arthritis compared to those who are able to manage their finances comfortably. It is also found that the white ration card holders, representing the more affluent group, show lower levels of arthritis (29%) and lung disease (16%). These patterns indicate a clear socio-economic gradient in health, with disadvantaged groups experiencing disproportionate burdens of chronic morbidity.

Conclusion/ Policy Implications: The study highlights that NCDs are not only widespread but also socio-demographically patterned among older adults. With the elderly population growing, the health system faces a dual challenge of managing chronic conditions and ensuring financial protection. Policies must prioritise primary healthcare to older adults, routine screening, and financial risk protection. Findings from this district-level study reinforce the urgency of introducing ageing and multimorbidity considerations in Kerala's broader health and social policy frameworks.

Socio-Demographic Determinants among Elderly Housing Arrangement in Uttar Pradesh: A comparative analysis Family and old age homes by Gender

Anil Kumar Pal

Background/Objective: The rapid demographic transition in India has resulted in a growing elderly population, accompanied by shifting family structures and changing support systems. Traditional joint families, once the primary source of care for the elderly, are increasingly being replaced by nuclear households, leading to a rising prevalence of institutional living in old age homes. This study investigates the socio-demographic and economic characteristics associated with these two distinct housing arrangements for elderly men and women in Uttar Pradesh.

Methods: A cross-sectional survey was conducted among 364 elderly (aged 60 and above) respondents (n=157 males and n=207 females) from selected districts (Varanasi and Mirzapur) of Uttar Pradesh, using a structured questionnaire. during July to December 2024. Participants were selected using a convenience sampling method and met the inclusion criteria of ≥6 months of residence in the current setting and ability to provide informed consent. Socio-demographic variables such as age, religion, caste, education, marital status, residence, income sources, occupation, asset ownership, amenities access, financial responsibility, financial difficulty, and living conditions were analyzed. Descriptive statistics along with chi-square (χ^2) used to determine significant differences between groups. Multivariable logistic regression analyses were performed separately for each sex to identify factors independently associated with the odds of living in an old age homes (OAH).

Results: Results reveal marked gendered patterns in elderly housing arrangements. For men, lack of income (57.1% in old age homes vs. 21.3% in family settings, $p<0.001$), limited asset ownership (31.8% vs. 16.0%, $p=0.002$), and higher dependence on external financial support (50.8% vs. 19.2%, $p<0.001$) significantly increased the likelihood of residing in old age homes. Multivariate analysis further highlighted that residence outside the native district (AOR=78.82, CI: 7.59–818.85), absence of savings (AOR=0.10, CI: 0.01–0.95), and being never employed (AOR=70.66, CI: 3.76–1327.98) strongly predicted institutionalization.

Among women, vulnerabilities appeared even more pronounced. More than half of female residents in old age homes reported no personal income (58.0% vs. 20.5% in family settings, $p<0.001$), and 33.6% reported no asset ownership compared to 19.3% in family settings ($p<0.001$). Regression analysis indicated that older age (80+, AOR=7.06, CI: 1.23–40.71), forward caste status (AOR=15.01, CI: 2.20–102.58), and higher education (graduate and above, AOR=8.30, CI: 1.00–68.84) significantly increased the likelihood of residing in old age homes. Additionally, lack of financial autonomy, dependence on external support (AOR=5.43, CI: 1.32–22.34), and low access to amenities (AOR=0.06, CI: 0.01–0.30) were strongly associated with institutional living among women.

Conclusion/Policy implications: Findings underscore that elderly individuals in old age homes, regardless of gender, experience disproportionately high financial difficulties (63.5% males and 74.8% females reporting frequent difficulty, $p<0.001$) and less comfortable living conditions. However, gender differences emerge, with men's institutionalization largely driven by economic insecurity and employment history, while women's is influenced by marital status,

education, and caste. This study highlights the urgent need for policy interventions that address the gendered vulnerabilities of the elderly, particularly by strengthening community-based care, expanding pension coverage, and ensuring asset security.

Keywords: Elderly, Old age homes, Family setting, Gender differences, Uttar Pradesh

Trends, Economic Inequalities and Predicted Probabilities in Maternal health care services in India, 2005-2021

Ankush Singh

Background: Maternal mortality is decreased over number of years by using maternal health care services in India but access and utilization of maternal health care services in different socioeconomic section of society are still focus of the study. Objective of this paper is to observe the trends, economic inequalities and predicted probabilities in utilization of prenatal care (PNC) and skilled birth attendance (SBA) among mothers in India and some selected states i.e. Uttar Pradesh, West Bengal, Maharashtra and Andhra Pradesh and viewing preference of choosing place of delivery for SBA among non-rich and rich mothers.

Methods: Analysis of the paper was used using the data of three rounds of National Family Health Surveys (NFHS) i.e. NFHS-3 to NFHS-5 in India. Mothers aged 15-49 years were considered in all three study rounds of NFHS for the analysis. For looking the trends values in utilization of PNC and SBA bivariate analysis has been conducted. Economic inequalities regarding utilization of maternal health care services were viewed using concentration index and concentration curve. Logistic regression was performed for finding predicted probabilities of utilization of PNC and SBA. For predictive probabilities of choosing place of delivery for SBA multinomial logistic regression has been used.

Results: Finding showed that utilization of PNC and SBA among mothers were increased from 35% to 58% and from 35% to 72% in India during 2005-2021. All considered states showed major increments in utilization of PNC and SBA. Higher inequalities (more advantages to rich mothers) obtained among mothers in utilization of PNC and SBA in India and the states which has been considered. Result from logistic regression analysis indicates that predicted probability of using PNC and SBA were less in non-rich mothers as compare to rich mothers during all three periods which were under consideration. Multinomial logistic regression result depicts that predictive probability of choosing of public and private health facility for delivery were more in non-rich and rich mothers respectively in India during 2005-2021.

Conclusion: Non-rich mothers utilized less PNC and SBA as compare to rich mothers in India and the states which were considered. In case of place of delivery, non-rich mothers preferred public health facilities, whereas, rich mothers preferred to use private health facilities keeping in view this fact that different health policies of government regarding health care services should be inclined toward non-rich mothers because they are more using the public health facility.

Keywords: Maternal health care, Prenatal care, Skilled birth attendance, NFHS, India.

Son preference and parity progressions: the case of Uttar Pradesh

Anup Kumar

Introduction: Son preference in Uttar Pradesh is a deeply ingrained cultural phenomenon where families favor having sons over daughters, rooted in social, economic, and religious factors. This preference often leads to gender-biased sex selection, influencing demographic trends like skewed sex ratios and impacting the well-being of women and girls. **Methodology:** Now with declining TFR and sex selective stopping behavior, we estimated sex specific parity progression ratios.

Result: The results clearly indicate the sex specific stopping behavior in Uttar Pradesh.

Conclusion: With declining TFR this may create more gender gap which may be indirect estimation of sex selective abortion also.

Census Towns and the Shifting Landscape of Indian Urbanisation, 1991–2011

Arindam Gupta

Background and Objectives: This study examines the emerging patterns of urbanisation in India between 1991 and 2011, with particular emphasis on the rise of census towns as a distinct driver of urban growth. The objective is to assess their contribution to overall urbanisation, understand inequality in urban population distribution, and project future urban growth trajectories.

Data and Methods: The study draws on secondary data from the Census of India (1991, 2001, 2011), Town Directories, Village Directories, and Primary Census Abstracts. Three key methods are applied: (i) standard classification of rural and urban units across census periods to ensure comparability, (ii) measurement of population distribution inequality using the Gini coefficient and Lorenz curves, and (iii) projection of urban growth through the Urban–Rural Growth Differential (URGD) model recommended by the United Nations.

Findings: The analysis reveals three central shifts. First, the number of census towns rose dramatically from 1,362 in 2001 to 3,894 in 2011, contributing nearly one-third of India's urban growth during the decade. These settlements, largely reclassified from villages, reflect the transformation of rural economies through declining agricultural employment and expansion of tertiary activities. Second, inequality in the distribution of the urban population has intensified, with the national Gini coefficient increasing from 0.66 in 1991 to 0.69 in 2011, signifying concentration of populations in larger cities, though census towns themselves display relatively even population distribution. Third, projections suggest that India's urban population will approach parity with its rural counterpart by 2051, with the level of urbanisation rising from 31.2% in 2011 to nearly 50% in 2051.

Conclusion/Policy Implications: The rapid proliferation of census towns challenges traditional urban governance structures, as most continue to be administered under rural panchayats despite their urban characteristics. Policymakers must prioritise statutory recognition, infrastructure provision, and service delivery in these emerging settlements to ensure sustainable urbanisation. Additionally, the rising inequality in urban population distribution highlights the need for balanced regional development strategies that strengthen small and medium towns, rather than allowing disproportionate growth in megacities. Finally, long-term urban projections underscore the urgency of integrated spatial planning, equitable resource allocation, and adaptive governance mechanisms to manage the impending demographic transition toward a half-urban India.

Employment Disruption and Financial Vulnerability among Dialysis and Transplant Patients in Kerala

Arun Kumar M

Background and Objectives: Chronic kidney disease (CKD) is a growing health problem in India. It affects patients not only through poor health but also through financial stress and loss of income. Dialysis and transplantation are essential treatments for life sustaining, but they are costly, time-consuming, and complicate the pursuit of a normal lifestyle. This creates a situation where patients face both health problems and economic hardship, making them highly vulnerable. Kerala has one of the highest populations of CKD patients in the country, with a significant concentration in Malappuram district.. This paper examines how CKD patients in Malappuram face health and financial vulnerability, with special focus on employment disruption, treatment costs, and the factors linked to job loss.

Data and Methods: This study is part of a PhD project. Data were collected in Malappuram district using stratified random sampling. Out of 94 panchayats and 12 municipalities, 12 panchayats and 2 municipalities were randomly selected. Patient lists were prepared with the support of palliative care nurses, and one-third were selected systematically. The final sample included 220 patients: 145 on dialysis and 75 who had undergone transplantation, including 7 with graft failure who had returned to dialysis. Data were collected through face-to-face interviews using a structured questionnaire covering socio-demographics, employment and income history, medical costs, and coping strategies. Quality of life was measured using EQ-5D-5L and WHOQOL-BREF. Analysis involved descriptive statistics, cross-tabulations, and inferential tests (chi-square, t-test etc).

Findings: The results show that CKD patients face a severe double burden. Almost half (48%) of respondents had stopped working because of CKD, while only 17% were still employed, 9% left work for other reasons, and 26% had never worked. Gender differences were striking: 95% of women had never worked compared to only 1% of men. Younger and better-educated patients were more likely to remain employed. Treatment type strongly influenced outcomes: 91% of dialysis patients had stopped working, compared to 49% of transplant patients. Importantly, those who stopped working due to CKD reported a current income of 0, making them fully dependent on family, loans, or insurance, even while facing higher monthly out-of-pocket expenses (â,116,400 vs. â,112,338) and worse sleep quality. The analysis also showed that age, years with CKD, education, diabetes, heart disease, and stroke were significantly associated with stopping work, while sex, residence, hypertension were not significant. These findings show that both medical conditions and economic stress combine to increase patient s vulnerability.

Conclusion and Policy Implications: This study shows that CKD patients in Kerala face extreme health and financial vulnerability. Transplantation improves the chances of continuing employment and reduces hardship. Policies should therefore focus not only on medical care but also on financial protection. Expanding health insurance, offering targeted income support, and improving access to affordable transplantation are urgent needs. Addressing both health and financial vulnerability together is essential for ensuring fair and sustainable care for CKD patients.

Livelihood Diversification and Migration under Climate Change Risk Perception in Slash-and-Burn Agroecosystem in Northeast India- A Case Study

Avijit Mistri & Md Syed Salimuddin

Slash-and-burn agriculture is a widely controversial practice on the grounds of carbon neutrality and climate change. Wetland Atlas of India report (2019) estimated 8446.76 sq km of shifting cultivation area, of which 6765.50 sq km, i.e., 3% of the geographical area of Northeast (NE) India, is under slash-and-burn agriculture (jhumming), which provides sustenance for more than 6.2 lakhs hilly tribal families. Though jhumming is claimed to be economically and culturally sustainable, environmental sustainability is a grave concern. The tribal communities in this agroecosystem are already under threat of ecological changes, and livelihood is being challenged, where migration ushers in the hope of coping with the crisis. Against this backdrop, the present study aims to assess the climate change risk perception of hilly tribes in their traditional agriculture in NE, examine their livelihood diversification, and investigate the process of migration in connection with coping strategies. Finally, the study predicts the factors influencing livelihood diversification in the agroecosystem.

It is a case study from one of the NE states, Manipur, where the slash-and-burn practice is rampant (4% of state's geographical areas) in the hilly districts, and increasing in trend, 258.42 sq km during 2008-15. Two highly jhum-practising districts, namely Ukhrul and Kamjong, are selected. A total of 352 sample households, comprising two major ethnic communities Nagas and Kukis were surveyed, along with collecting soil samples from their jhumming plots, from three census villages of the two districts. Climate change risk perception in agriculture was captured through a five-point Likert-type scale and assessed and hypothetically tested with the descriptive statistics and one-sample t-test. Livelihood diversification is examined with the Simpson Diversity Index and the count method. Finally, an Ordinal Logistic Regression (OLR) model is designed to predict the significant factors that influence the livelihood diversification in the study area.

The study assesses that 86% households perceived climatic risk in their traditional farming during the last five years. Risk in farming includes 18 climatic phenomena divided into two broad categories: uncertainty in the onset of farming season, which is reported, with high to very high levels of risk, by nearly 98% of the households, and increase in farming problems, which is reported, with moderate to fairly high levels, by almost 69% households. Crop diversity in terms of the area under seven broad types of crops shows that, on average, 90% households are estimated to have 0 (zero) diversity, which implies they were restricted to cultivating a particular group of crops, especially food grain rice and maize in Kharif/Rabi. Within the farm sector diversification crop, plantation and livestock shows that 81% of households were involved in any two activities and only 13% of households diversified into all three activities. As the farm sector is more susceptible to the climatic stressors, the households try to diversify their livelihood into the non-farm sector at the local level or outside the village. A very few households (34%) witnessed livelihood diversification in non-farm sectors 30% households were engaged in at least one, and only 3% in at least two non-farm activities out of three broad categories temporary non-farm employment, business enterprises and regular/wage salary earning. Overall income diversification, including on-and off-farm, reveals that 72% households

were attached to farming only, where 26% and only 2% households source income, respectively, from at least one non-farm and two non-farm sectors alongside farming. Since there is a lack of job opportunities in the remote hilly villages, a sheer proportion, 58%, of non-farm diversification occurred in the migration situation, i.e., labour migration out of the villages. Around 36% or one in every three households reported migration. Finally, based on the OLR model, the predominant predictors for the livelihood diversification in the study area are climatic risk perception, market risks, agricultural infrastructure and credit issues, dearth of non-farm diversification at the local level and household size and assets.

Intensifying climatic risks in the subsistence traditional agro-economy further marginalise the hilly tribes and lead to a vicious cycle of permanent forest loss and net deficit of carbon. Livelihood diversification in non-farm and migration provides a broad avenue to cope with the crisis. Sector-based and community-targeted policy interventions may broaden the opportunities for livelihood diversification in the subsistence economy.

Keywords: Climate Change, Risk Perception, Livelihood Diversification, and Migration

Availability, Accessibility & Quality of Healthcare Services for Patients with Sickle Cell Disorder in Wardha district of Maharashtra.

Badal Santoshrao Thool

Background and Objectives: Sickle Cell Disease (SCD), a genetic disorder characterised by vaso-occlusive crises and chronic anaemia, has emerged as a major public health challenge in India. It can cause long-term complications and costly health problems (Lee et al., 2019). Advances in treatment over the last three decades have transformed SCD from a fatal childhood illness into a chronic condition (de Montalembert et al., 2014; Sinha et al., 2020). Nevertheless, patients continue to require lifelong supportive care, including penicillin prophylaxis, blood transfusions, and hospitalisations for crisis management (Adams-Graves et al., 2016). Despite reductions in morbidity and mortality through early screening (Kauf et al., 2009), SCD patients face barriers to timely diagnosis, accessibility, and quality of treatment. This study aims to assess the availability, accessibility, and quality of medical treatment facilities/services for SCD patients in Wardha district, Maharashtra

Data and Methods: A cross-sectional primary survey was conducted in selected villages of Wardha district, Maharashtra, considering the documented high prevalence of SCD. Using a multistage sampling design, four blocks were selected by simple random sampling, villages were chosen by probability proportional to size, and a list of SCD patients was obtained from ASHAs and taluka health authorities. In total, 340 respondents were interviewed, including 87 Sickle cell anaemia patients and 258 with the sickle cell trait. Data were collected using a structured questionnaire covering availability (screening, counselling, diagnostics, drugs, blood transfusion, ambulance, and skilled manpower), accessibility (distance, cost and schemes), and quality (patient satisfaction and service delivery processes). Descriptive statistics have been performed for analysis purposes.

Findings: Nearly 66% of patients had an SCD identification card. Screening was done mainly at government facilities (54%), with smaller proportions screened at private (10%), semi-government (21%), and village-level camps (13%). Service readiness varied: 38% accessed primary SCD services at block level, 32% at village level, and 24% at district level. Only 44% received genetic counselling. Day-care centres were unavailable or unknown to 90% of patients, and 60% reported no ambulance service at their PHC. Fewer than 10% had attended awareness programmes, and ASHA workers had visited only 30% of patients. In terms of accessibility, 53% accessed primary health services within 5 km, but 28% cited cost as a big problem. About 38% rated accessibility as moderate. On quality, >90% of OPD patients at PHCs rated manpower, medicines, diagnostics, and counselling as satisfactory, while >95% of inpatients reported satisfaction, especially in semi-government facilities.

Conclusion/Policy Implications: India has launched Sickle Cell Anaemia Elimination Mission 2023 with ultimate aim to eliminate SCD as a public health problem by 2047. The findings highlight the need for strengthening screening camps at village level, expand diagnostic and counselling services, and deploy social workers for patient follow-up and premarital counselling. Enhancing facility readiness, ensuring drug availability, and strengthening referral mechanisms are critical for improving equity and access to quality SCD care in Wardha.

Effect of mHealth intervention on improving maternal health care services utilization: a systematic review

Bal Govind Chauhan

Despite the decline in the maternal and neonatal mortality, India is still facing a huge burden of maternal and newborn mortality compared to other developed countries. Moreover, almost half of the pregnant women in India obtain the recommended minimum of four antenatal visits and the coverage of postnatal care is pretty poor. In recent years, the augmented mobile phone access has brought the potential for mHealth to improve the preventive reproductive health outcome and reproductive healthcare services utilization. Therefore, this study is an attempt to gather the evidence on mhealth intervention and its association with maternal and child health care services utilization. Further, study also attempted to find out the loophole in the use of mhealth intervention through the systematic literature review published in peer reviewed international journals. For this purpose, different sources such as Medline/PubMed, Web of Science, Google scholar, and Cochrane Library via a combination of search terms have been explored. For analysing the finding of the previous studies PRISMA guidelines has been used. Out of total collected papers, 14 publications were included in the review. The findings indicate that there is a significant impact of mHealth intervention on maternal health care utilization (antenatal care, delivery care and post-natal care) and continuum of care of these services. The finding of the study guides the policy-maker and public health researcher to use of technology for increasing the uptake of health care services in the lagging behind areas. Further, study findings also have implication on frontline health worker such ASHA, ANM etc. to improve health outcomes and well as data quality.

Gender Inequality in Educational Attainment

Binod Bihari Jena

Education is an indispensable aspect of Human Development and powerful instrument of economic and social change (Schulz, 1988; Tilak, 2003). During the last decades, India has progressed a lot in the field of education, but still lagging behind many developing and developed countries. In this backdrop this paper tries to estimate the gender inequality in educational attainment using the latest two rounds of NSS unit level data conducted in the year 2014 and 2018.

Objectives: To estimate the gender wise of educational attainment, to study the socio-economic disparity in mean age of schooling and to study the gender wise inequality in educational attainment

Materials and Methods: To achieve the above objectives, two rounds of NSS unit level dataset (71 st round of 2014 & 75 th round of 2018) on Social Consumption on Education have been used, covering all the states and union territories of India. Here two commonly used educational indicators- educational attainment rate and mean years of schooling have been estimated. To study the educational attainment rate we have classified total population (age 15 & above) into seven educational levels such as: (i) non-literate (ii) below Primary (iii) Primary (iv) Middle (v) Secondary (vi) Higher Secondary and (vii) Graduation and above and to study the disparity in mean age of schooling across socio-economic groups, the compared mean method has been used. To study the in-equality in educational attainment, Gini Index and Lorenz curve have been used.

Major Findings: Marked disparity is observed in educational attainment between rural and urban population. Rural areas are still characterized by higher percentage of non-literate population and lower percentage of higher educated population. There also exists gender disparity in educational attainment across sectors, with female population still in disadvantage position. Similarly, educational attainment in terms of mean years of schooling varies across sub-groups of male and female population.

Temporal Pattern of Reproductive Health Parameters in Eastern India

Brijesh P. Singh

This study highlights the pattern of reproductive health in eastern region of India during 1992-2021 based on selected indicators of reproductive health available from different rounds of the National Family Health Survey (NFHS). The reproductive health features involved here will help in identifying the trend present in the indicators over the period of 29 years. The analysis has been carried out for the country and for four states of eastern regions i.e., Bihar, Jharkhand, West Bengal and Odisha. It also covers the differences in wealth index quintiles between poor and rich sector in terms of fertility, family planning, birth interval, antenatal care, maternal and child mortality.

The Annual percentage change (APC) between the two rounds of NFHS and Average annual percentage change (AAPC) for the entire reference period is calculated to check the progress in the reproductive health and to check the reproductive health inequality, the equity analysis in wealth index quintiles group has been carried out using index of inequality and odds ratio. This study shows that there is a major gain in the reproductive health parameters of women in eastern region of India. At the national level, all the 24 indicators of reproductive health considered in the present analysis have shown improvement during the last three decades, although the progress, as measured in terms of the AAPC, has been different for different indicators. The analysis, however, reveals that the progress in reproductive health has not been consistent throughout the period under reference. Similarly, there exists significant income inequality in the reproductive health of women in the country as there are notable differences in all indicators of reproductive health by the level of income. The existing health programs should be strengthened further and new policies should be developed to ensure better performance of reproductive health parameters.

Socio-Economic powerlessness Matters: Non-Therapeutic Abortion, Reproductive Rights and Anthropological Worldview

Debendra Kumar Biswal

The socio-cultural motives associated with non-therapeutic abortion have raised disputed and emotional issues in medical ethics, reproductive rights and body politics. The feminist-anthropological movements debates center on body politics- integrity- autonomy, entitlement, claims, choice, consent, and what it means to be a citizen. This paper seeks to explore three possible explanations on how to justify women s reproductive rights, what could be the the motivations/coercion for abortion and how they are forced to accept the terms of the marriage contract by sheer social and economic powerlessness in relation to abortion. Firstly, anthropology sees the reproductive health issue as a part of women s reproductive rights i.e. the rights of the women to regulate their own fertility safely and effectively, to bear and raise healthy children and remain free of diseases. The women s reproductive health problems are originated in gender inequalities, control of power and resources. Secondly, the motives of abortion are critically viewed upon, e.g. abortions those are supposed to be eugenic from the social point of view are based on the idea that this fetus, if allowed birth, would be a burden on society. Also, abortion is associated with a multitude of factors like practical wisdom, emotions, experiences, implicit knowledge or in totality the world view i.e. an accepted and functional view of meaning of life and activity in the society. Thirdly, are the women forced to accept the terms of the marriage contract by sheer social and economic powerlessness and therefore seek to limit births? Millions of abortions are mentioned as evidence of this, but, it is objected, many women would, in fact, like more children. Wanted children are excluded by this sexual socio-economic domination, and so women who do want children should be supported by the state.

Cancer Screening Practices in India: Spatially Disparaging Stigma and Taboo in the Reproductive Age Group

Deepak Kumar

Background: Cancer's burden in India is amplified by low screening uptake, leading to late diagnoses and mortality. Pervasive societal stigma and taboos significantly hinder preventive healthcare, especially among the reproductive age group (15-49 years). This study examines the spatial distribution of cancer screening practices for both sexes, focusing on how localized stigma influences uptake, using NFHS-5 data.

Data and Methods: Data from NFHS-5 (2019-2021) for individuals aged 15-49 were analyzed. Key screenings included breast self-examination (BSE) and clinical breast examination (CBE) for women, and oral cancer screening for both sexes. State-level spatial analysis mapped screening prevalence. Composite indices from NFHS-5 variables on cancer knowledge, curability beliefs, open discussion willingness, and perceived cause of cancer were used to assess stigma and taboo influence. Multivariable logistic regression (unadjusted and adjusted) examined the association between these stigma indicators and screening uptake, controlling for state-level demographics (age, education, SES, residence).

Results: NFHS-5 revealed substantial state-level disparities. Only 15.3% of women aged 15-49 ever had a CBE, with rates varying from over 30% in southern states to under 5% in northern states. Oral cancer screening was higher (22.5% of men, 18.9% of women), but still showed low uptake clusters in Northern and Eastern states. Logistic regression showed a strong link between stigma and reduced uptake. Women in states with lower cancer symptom knowledge had 2.5 times higher odds of not undergoing CBE (OR=2.5). Reluctance to discuss cancer openly correlated with lower oral screening. Adjusted models confirmed these: lower cancer knowledge remained linked to lower CBE uptake (aOR=1.8). A novel finding highlighted that oral cancer screening stigma was pronounced in states with high tobacco use, suggesting an intersection of addiction stigma. Moreover, states with reproductive health taboos showed significantly lower breast cancer screening, indicating a spillover effect.

Conclusion: Stigma and taboos deeply affect cancer screening in India's reproductive age group, creating stark state-level disparities. Interventions must not only raise awareness but also actively de-stigmatize cancer within specific socio-cultural contexts, acknowledging gendered beliefs and their intersection with other health taboos. Culturally sensitive strategies are crucial for improving early detection and reducing India's cancer burden.

Keywords: Cancer Screening, Stigma, Taboo, Spatial Analysis, Reproductive Health

Digital Literacy in India: New emerging facts

Dr D P Singh

Background: COVID-19 pandemic has brought about numerous transformations in public discourse like never before. Consequently, in today's day-to-day life, there is a marked shift in our preferences, habits and a general way of life, wherein, for instance, physical connectivity is changing to digital connectivity, usual classrooms to digital learning platforms, or even physical payment methods in cash transforming to digital paying options more often than not whenever possible. The collected information was on users' usage and ownership of mobile phones and internet services.

Objectives: To examine computer skills in India from the National Sample Survey 80th round of the comprehensive modular survey.

Data and methods: Data Source: The data used for the analysis is the latest data from the 80th round of the comprehensive modular survey conducted from January 2025 to March 2025. Earlier 79th NSS and 78th round data from the multiple indicator survey collected some basic information on computer skills is compared. Information on access and use of computer skills collected from 1,36,937 persons above age 3 years, The information collected on the use of mobile/telephone and desktop/laptop/notebook, etc., on the survey date. Some essential computer skills, such as the ability to complain about cybercrime/report cyber fraud in the cybercrime reporting portal, were ascertained.

Methodology: Uni-variate and bi-variate techniques are used to find emerging levels, trends, and patterns of computer skills. The digital skills is analyzed between gender, age, and rural-urban. The captures data on individuals' ability to perform online banking and purchasing goods, and their proficiency in executing specific ICT-related skills. At the household level, the survey collects information on the availability of assets and services related to mobile and internet connectivity, including landline telephones and internet connections through optical fiber cables.

Findings: Nearly 98 per cent of individuals reported having access to a mobile phone. A minimal variation was found in terms of gender and place of residence. Almost 70 per cent of individuals aged 15 years and above reported to perform online banking transaction using devices like computers, or mobile. One out of 5 were having the ability to complain/report about cybercrime, with 30 per cent in urban and 15 per cent in rural areas. Nearly 38 percent of urban households reported online purchasing goods, mainly non-food items, during the last 30 days, with most of them 3/4th between 1-3 times..

Policy Implications: For any developmental projects and access to welfare services in the country, digital access and use have become a primary concern for the government. The government is increasingly emphasizing the execution, implementation, and success of its welfare schemes. Hence, enhancing digital literacy through training and access in the country will affect its future socio-economic development. The success of any government delivery mechanism of the future, both because of the government and its citizens, will depend on the levels of digital literacy among the masses.

Assessing the Incremental Impact of Digital Learning and WhatsApp Chatbot on Frontline Health Workers Competencies for High-Risk Pregnancy Management: Evidence from one North and one South Indian States

Dr Devan Kumar Kuda

Background: Maternal and neonatal mortality are critical public health issues in low- and middle-income countries (LMICs), accounting for 94% of global maternal deaths (WHO, 2019). In India, 50% of pregnancies are high-risk, contributing to 75% of perinatal deaths (Kuppusamy et al., 2023). Achieving SDG 3.1 reducing maternal mortality to below 70 per 100,000 live births requires scalable, equity-driven, locally designed interventions for underserved and remote communities (Peters et al., 2008).

Auxiliary Nurse Midwives (ANMs), India's frontline health workers, are crucial in identifying, diagnosing, and managing high-risk pregnancies (HRPs). However, they face challenges, including declining knowledge, limited real-time clinical support, and low digital literacy (Kruk et al., 2017). mHealth solutions, including Learning Management Systems (LMS) and WhatsApp-chatbots, can enhance ANMs' competencies and promote maternal health equity (Abejirinde et al., 2018). Yet, technology adoption is hindered by inadequate systems integration and socio-cultural barriers (Inampudi et al., 2024).

Given this context, to address these issues, ARMMAN (<https://armman.org/>), a leading Indian public health NGO, implemented the Integrated High-Risk Pregnancy Tracking and Management (IHRPTM) program. This initiative uses Tech-Plus-Touch ecosystem, leveraging two locally developed digital interventions LMS and WhatsApp-chatbot to strengthen ANM competencies in rural Telangana and Uttar Pradesh (UP). The LMS provides self-paced modular content (videos-audios-PDFs and quizzes) with certificates for scores above 80%. It supports practice-based learning and complements live classroom sessions with digital reinforcement for community-level HRP care. The WhatsApp-chatbot delivers real-time clinical guidance based on protocols. The program addresses 20-HRP conditions in Telangana and six in UP, with plans for scale-up in multiple states. Over 15,000 ANMs and clinicians are currently engaged.

Methods: This study evaluates the effectiveness of the LMS and WhatsApp-chatbot in enhancing and sustaining ANMs' knowledge and clinical competencies for HRP care, focusing on four conditions: quality antenatal care (ANC), anaemia, pregnancy-induced hypertension (PIH) and antepartum haemorrhage (APH). Using a mixed-methods approach, it assesses the incremental impact of digital tools compared to classroom training, explores user perspectives on design and usability, develops digital user personas of ANMs and explores factors influencing sustained use and adoption.

Quantitative assessments involved 7,553 ANMs in Telangana (September 2022–August-2023) and 333 in two districts of UP (June 2024), using HRP-specific checklists to measure baseline and post-training knowledge. A follow-up assessment in Telangana (6–9 months post-training) with 529-ANMs evaluated knowledge retention without digital reinforcement. To evaluate the additional value of digital tools in knowledge gain, a stratified random sample of 400 ANMs (200 per state) will undergo field-based assessments six months post-intervention. Data were collected through CAPI, focus group discussions, and in-depth interviews, then analyzed using SPSS for quantitative data and thematic manual coding for qualitative insights.

Preliminary findings: Preliminary results of pre-training assessments of ANMs in Telangana demonstrated moderate baseline knowledge across HRP conditions, with the highest proficiency observed in anaemia management (73.2%) and the lowest in PIH (61.7%). Quality ANC and APH scored 67.7% and 64.9%, respectively. While theoretical knowledge particularly recognition of anaemia symptoms (97.9%) was high, practical application remained limited; for example, only 34.1% competence in protocol-based Quality ANC practices.

Post-training evaluations revealed significant knowledge gains across all HRP conditions: APH (+13.3%), Quality ANC (+10.5%), PIH (+9.4%), and anaemia (+7.8%), with effect sizes ranging from small to moderate (Cohen's $d = 0.20 - 0.40$). These findings indicate substantive improvements in clinical knowledge following structured classroom training.

The ANMs in Uttar Pradesh show similar baseline knowledge levels across the four HRP condition: Quality ANC (68.0%), anaemia (72.0%), APH (65.0%), and PIH (63.0%). Post-training gains were consistently high, with improvements of 16-17% points across all condition. These gains yielded large effect sizes (Cohen's $d = 0.75$ to 0.82), underscoring the training's strong impact on knowledge gain.

Follow-up assessments (6-9 months post-training) with 529 ANMs in Telangana, without digital reinforcement, revealed sustained knowledge in anaemia (81.2%), with modest declines in Quality ANC (-2.0%), PIH (-3.3%), and APH (-7.4%), highlighting the need for periodic reinforcement and handholding support (Modugu et al., 2024)

Early monitoring data indicates better skill retention in Quality ANC and anaemia post-LMS and chatbot use. While initial uptake is encouraging, deeper research is needed to assess long-term impact. Study findings will be presented at the conference.

Policy Implication: The IHRPTM program offers a scalable, context-specific model to enhance ANMs capacity in identifying, managing, and referring HRPs. By combining classroom training with digital tools including LMS and a WhatsApp-based chatbot, it addresses gaps in clinical decision-making. Evidence from Telangana and Uttar Pradesh shows immediate knowledge gains, especially in anaemia management and quality antenatal care (ANC). However, retention after 6-9 months was mixed: skills in anaemia management sustained, while knowledge of complex HRPs like APH and PIH declined, highlighting the need for continuous reinforcement support (Saha & Quazi, 2022).

Early feedback monitoring and evaluation data after six months of exposure to the LMS and chatbot suggests improved knowledge retention, especially for anaemia and quality ANC. To enhance adoption, the study will develop user personas reflecting barriers to digital literacy, usability, and support needs (Nascimento et al., 2023). These findings emphasize user-centric, localized design and consistent implementation support, positioning mHealth tools as effective complements to traditional training. Outcomes from this work will inform a persona-driven, LLM-powered chatbot aimed at strengthening ANC services and reducing maternal mortality in resource-limited settings.

Addressing Urban Challenges and Enhancing Sustainability: The Aspirational Cities Program (Akankshi Nagar Yojana) in Uttar Pradesh, India

Dr Imtiyaz Ali

Urban policy and planning are crucial for developing livable cities and safeguarding residents' rights. In Uttar Pradesh, the focus on sustainable urban planning is concentrated on the 100 most underdeveloped cities, aiming to improve resilience, living standards, economic opportunities, and environmental sustainability. With the state's urban population currently at 27% and projected to reach 40% in five years, significant development is necessary.

A selection of 100 cities from 762 was made based on criteria including slum population, infrastructure, climate, municipal services, civic amenities, health services and mobility, using through range equalisation methods. This selection spans 38 districts, affecting about 2.4 million households and 13 million individuals. Despite these efforts, challenges persist: only 10.3% of households have piped water, stormwater drainage covers just 19% of roads, and health infrastructure is insufficient, with fewer than one public hospital bed per 1,000 people. These deficiencies contribute to migration driven by limited economic opportunities.

In response, the Uttar Pradesh government has launched the Aspirational Cities program, a pioneering initiative in India. The program aims to enhance infrastructure, education, healthcare, municipal services, and environmental conditions while integrating multiple government schemes to achieve holistic development through a convergence approach.

More Lonely Abroad? Loneliness Among Mid-life and Older Indian Migrants in the UK Compared to Host and Origin Populations

Dr Mengxing Joshi

Loneliness is an urgent global public health concern, yet comparative research examining how loneliness among immigrants relates to both host-country populations and non-migrants in countries of origin remains scarce. This study addresses a long-standing gap raised by Victor et al. (2012) by comparing the prevalence and predictors of loneliness among three groups: Indian migrants in the UK, White British adults, and Indians residing in India. Drawing on harmonised, nationally representative data from the UK Household Longitudinal Study (Wave 9) and the Longitudinal Ageing Study in India (Wave 1), the analysis includes 87,194 individuals aged 45 and above. Findings reveal that Indian migrants in the UK report the highest loneliness (45%), significantly more than White British (32%) and Indian-residing adults (33%). These differences persist after controlling for key demographic, health, and social factors. Stratified models further show that predictors of loneliness differ across groups and are mostly not significant among Indian migrants. Despite relatively higher socioeconomic status, Indian migrants in the UK remain more vulnerable to loneliness. While this study cannot directly examine underlying mechanisms, it raises questions about whether migration-related experiences, such as structural exclusion, disrupted social embeddedness, cultural in-betweenness, or unmet expectations, may contribute to elevated loneliness in this group. This study points to the need for future research and policy approaches that are sensitive to the specific contexts of ageing in transnational and migrant lives.

Housing and fertility preferences in urban India: The intersection of tenure, house type and dwelling size

Dr. Ismail Haque

The causal relationship between housing provisions and individual s fertility is a research area that has relatively been understudied. Although, numerous research carried out mostly in developed countries surmised a significant bearing of housing options on the childbirth decisions of families, there is a lack of quantitatively informed research around this topic in India. Given this backdrop, drawing on individual level data from the India Human Development Survey-II (2011-2012), this paper seeks to empirically examine the effects of housing tenure (renting, owning, staff housing and others), house type (detached house, raw house, flat and others), dwelling size and home support (living with parents/siblings) on fertility preferences and outcomes among 11991 ever married women (15-49 years) in urban India. As a measure of fertility preference, perception regarding ideal family size was considered. Whilst, for fertility outcomes, the number of birth since 2005 (to women aged 15-49 years) and total children ever born (CEB) (to 4288 women aged 40-49 years) was taken into consideration. Descriptive statistics, bivariate, chi-square test, linear and Poisson regression are utilized as the methods of research. Taking rented houses and flat accommodation as control group, our OLS results suggest that homeowner (OR: 1.033; $p<0.011$) and families living in raw houses (OR: 1.059; $p<0.004$) respectively, prefers higher number of children to be ideal family size. Apart from this, families living with parents/siblings are more likely to prefer higher family size compared to those living alone as well (OR: 1.134; $p<0.001$). Lastly, our Poisson estimates shows that families with ownership housing as well as free houses (staff housing) have higher completed fertility (CEB) than renters do (IRR: 1.081; $p<0.001$ and IRR: 1.137; $p<0.001$) in the presence of other socioeconomic and demographic factors in the model. Families living in a detached (IRR: 1.117; $p<0.000$) and raw houses (IRR: 1.141; $p<0.000$) also seem to have higher fertility than their apartment living counter parts as well. Dwelling size, however, does not show any significant effect on CEB. The results are robust and consistent even after controlling for the region fixed effect as well as numerous socioeconomic and demographic covariates (women and husband education, women age, marital duration, religion, caste, wealth status among others). Finally, we offered some policy implications of our results that are critical for the on-going and future programmes, which seek to regulate fertility and to achieve population stabilization.

State level Inequalities and Gender Disparities in Death Registration System in India

Dr. Jayanta Kumar Basu

Background: India being the most populous country in the world accounts for roughly 17% of global deaths, making the completeness of its CRVS system crucial - not just nationally, but globally. While India has made major strides in death registration, there are historic limitations and inequalities. Since 2000, there has been a strong increase in not only the absolute numbers of deaths registered, but also the completeness when measured as a proportion of estimated total deaths. The number of registered deaths increased from 3.8 million in 2000 to almost 8 million in 2020. This is encouraging, but it raises critical questions: Has this increase been equitable across the states at sub-national level? Has it closed the gender gap in registration? And can the data now be relied on for robust mortality monitoring? This paper aims to critically analyze whether the level and recent trends in state-level inequalities in death registration completeness in India, including by gender, have really reduced in last two decades of CRVS system strengthening.

Objectives: This paper has four main objectives: First, to measure trends in completeness from 2000 to 2020. Second, to assess state-level disparities. Third, to examine gender gaps in death registration. And finally, to explore how socio-economic development, captured via SDI, correlates with completeness. Sex-specific trends and whether states reporting age and sex disaggregated data were also studied. These results are expected to highlight how investments in the CRVS system in India have been distributed across states, and where further investment is needed.

Methods: This paper used the empirical completeness method to measure annual completeness for each state from 2000-2020, and then assessing trends in inequalities according to the correlation of completeness with the socio-economic indicator of the Socio-Demographic Index (SDI). Completeness of death registration (i.e. the percentage of actual deaths that are registered) is calculated using the empirical completeness (Adair-Lopez) method.

Results: Estimated completeness of death registration in India for both sexes increased from 58% in 2000 to 88% in 2020. Male completeness was much higher than female completeness in most years; male completeness rose from 60% in 2009 to 91% in 2020, while female completeness increased from 54% to 81% in the same period. Although by large state-level inequalities by state remain, there was a narrowing of inequalities by Socio Demographic Index (SDI). The regression analysis with SDI shows a positive correlation with completeness: more developed states tend to register more deaths. However, this association weakened over time from 257 to 175 in unweighted models. This indicates a narrowing of inequality, which is encouraging. Interestingly, male inequality declined more, while female inequality actually rose slightly highlighting the need for gender-sensitive CRVS interventions.

Conclusion: Although narrowing of inequalities in completeness demonstrates that the benefits of higher levels of death registration have spread to relatively poorer states of India in recent years, the continued low completeness in some states and for females are concerning. The Indian CRVS system also needs to increase the number of registered deaths with age at death reported to improve their usability for mortality statistics.

Assessing Climate Change Impact on Human Health: Experiences of the Rural Communities in Indian Sundarbans

Dr. Nasrin Banu

Background: Climate change regarded as the biggest global health threat of the 21st century has adverse effects on population health, lives and well-being of billions of people. Since last two decades, climate-related threats i.e. sea-level rise, higher air and water temperatures, and greater frequency and intensity of precipitation and progressive salinization of water and soil has been significantly affecting the health and livelihoods of poor households living on the edge of India Sundarbans.

Objective: The present study strives to examine impact of climate change and its associated ramifications on people's health in the rural areas of Indian Sundarbans.

Methodology: The study is based on mixed methods including quantitative and qualitative. The quantitative data has been collected from the field with structured questionnaire while qualitative data is obtained through Key Informants Interviews. Total 758 households, chosen by using the Cochran's equation (1977) with 95% level of precision, have been surveyed following purposive sampling from 17 villages. Village selection was based on stratified random sampling including five from coastal villages, six from riverine/estuarine and six from inland villages located from coastal blocks of Indian Sundarbans. The household's head or the senior member of the family was interviewed. Basic quantitative methods like descriptive statistics (such as graphical charts, percentages, tables, etc.) as well as inferential statistics (like One-way ANOVA, paired sample t-test, etc.) have been used here to test the hypotheses.

Results: The study reveals that the majority of respondents (85.53%) acknowledged gradual changes in the prevailing climatic conditions of the Sundarbans over time. The disease profile of the native population, largely dominated by climate-induced and climate-associated illnesses, reflects a higher prevalence of skin diseases (62%), hum/pox (53%), asthma (52%), diarrhoea (50.99%), arthritis (46%), and vector-borne diseases such as dengue/malaria (38.75%). In contrast, non-climatic diseases such as heart disease, diabetes, thalassemia, and neurological disorders were found to be comparatively less prevalent. One-way ANOVA conducted across villages grouped into three zones—coastal, riverine, and inland—revealed no statistically significant variation in DPR among the zones. However, the results indicate that riverine villages (DPR: 30%) and inland villages (DPR: 27%) reported higher prevalence rates of various diseases compared to coastal villages (DPR: 9.08%). A paired-sample t-test further showed that, for the majority of diseases (58%; 15 out of 26), the prevalence rate among females was higher than that among males. The test also confirmed significant gender differences (at the 0.01% confidence level) in the prevalence of specific diseases, including anaemia, arthritis, vector-borne diseases (dengue/malaria), and skin diseases.

Conclusions/Policy implications: Addressing climate change impacts on human health in the Sundarbans requires holistic interventions, including strengthening healthcare infrastructure, ensuring access to life-saving services, mitigating climate-related occupational hazards, and compensating climate victims through collaborative efforts among government, NGOs, and local communities. As awareness grows, there is a rising demand for practical and efficient strategies that link climate change mitigation and adaptation with direct health benefits at all levels.

Key Words: Climate Change, Human Health, Rural Women, Vulnerability, Sundarbans

Gender Affirmative Healthcare for Transgender Communities

Dr. Papia Raj

Background and Objectives: The concept of queering medical spaces emerged as a framework challenging traditional binary categories of sex and gender, celebrating diversity, and empowering transgender individuals to make informed decisions about their bodies and identities. Gender-affirmative healthcare provides a supportive and safe space for individuals irrespective of their gender identity. Hence, gender affirmative healthcare is a critical component of queering medical spaces, providing transgender individuals with healthcare that supports their well-being and self-determination. It is a personalized and holistic approach considering various aspects of the gender journey, beneficial not only for transgender individuals but also for their families, communities, and society at large. Despite this, transgender individuals encounter discrimination when seeking equitable healthcare. Therefore, this paper aims to examine the current state of transgender healthcare research and identify potential areas requiring further investigation in future.

Data and Methods: The study employed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure the accuracy of the sample database. Bibliometric analysis was chosen due to its ability to provide a comprehensive analysis of accumulated knowledge over time. Thus, through PRISMA, the study initially identified 278 articles, with 42 meeting the inclusion criteria for analysis. Bibliometric analysis was conducted using Biblioshiny and Vos-viewer software. The search period was restricted from 2002 to 2022, with 2002 serving as the baseline year as very few literature was available before 2002.

Findings: Initially, there was minimal publication, with only one article each in 2002, 2007, 2013, and 2014. However, starting in 2016, there has been steady growth in publications, and the year 2021 recorded the highest number of articles, with eleven publications indicating a notable surge in scholarly interest in gender affirmative healthcare. The review underscores the growing academic interest in gender affirmative care and emphasizes the necessity for increased scholarly focus. Analysis of document production by various countries reveals an uneven geographical distribution of research in this area. Additionally, the study identifies a trend towards a greater emphasis on the adoption of affirmative approaches in addressing health disparities through term co-occurrence analysis.

Conclusion/Policy Implications: Bibliometric findings reveal that this field is expanding and warrants increased academic attention. However, there is a notable lack of geographical diversity in the articles studied. The thematic analysis highlights the necessity of educating healthcare professionals, initiating social endeavors to promote acceptance of transgender individuals, and implementing gender-affirmative healthcare practices. This research holds potential in informing the development of inclusive policies and comprehensive strategies to improve the health outcomes of transgender populations, thus advancing health equity and contributing to the achievement of Sustainable Development Goals.

Beyond Silence: Assessing Knowledge, Attitudes, Experiences and Preferences on Sex Education Among College-Going Youth in Mumbai"

Dr. Pragati Ubale

The sexual and reproductive health of unmarried youth in India is neglected, poorly understood, and ill-served, as they are expected to be sexually inactive until marriage. The consequences of this neglect could be enormous. One's attitude and knowledge predict their behavior, and in India, attitudes and knowledge of youth regarding sexual behavior are shaped by rigid traditional norms and not by comprehensive sex education. Therefore, the objective of the present study is to examine the extent of awareness of youth in Mumbai of SRHR, their attitude towards imparting sex education, to understand the preferences of youth in Mumbai regarding sex education and how the SRHR knowledge among youth is associated with sex education receiving status of the respondents.

The research question for the present study is how do college-going youth in Mumbai perceive sex education (attitudes, preferences), what is their level of SRHR awareness, and how is this awareness associated with their prior exposure to sex education?

Researchers purposively selected Mumbai as a study area. This study employed a mixed methods approach. The college going youth are the sampling units in the present study. For the quantitative aspect, this study employed a purposive sampling technique targeting youth populations across different colleges in Mumbai. The quantitative data from a total of 831 students was collected (comprising 424 women and 407 men).

Though the sample is of college going youth in Mumbai, a significant percentage of people revealed unawareness of SRHR issues such as modern contraceptives, ovulation, age of consent, right of abortion to unmarried Indian women and HIV/AIDS. Overall, 95.88% of youth expressed that sex education should be provided in schools and colleges in India. More than 80% of youth agreed that giving sex education would reduce risky sexual practices among youth. Out of the total respondents, only 37.32% received sex education but 70% of them reported that they got sex education in the duration less than or equal to one week. The topic of contraception was covered for 62.46% of participants and the concept of sexual consent was not covered for nearly 50% of the participants. When compared overall, person and non-person sources of sex education, Internet and social media were the most dominant sources of sex education. Overall, the mean preferred age suggested by youth is 13, with the smallest age of two years and the largest age of 25. Though only around one third of youth received sex education and majority of them received it for duration less than or equal to one week, those who received it display better SRHR knowledge.

The Findings revealed that youth in Mumbai are very much ready to receive sex education. The findings that even a short duration of sex education improves SRHR knowledge significantly suggest the importance of sex education programmes across the country.

From Missing Data to Predictive Modelling: Machine Learning Insights into Fertility Determinants

Dr. Rakesh Kumar Saroj, Assistant Professor

Background: Sikkim, reporting India's lowest total fertility rate (TFR = 1.1 versus the national average of 2.0), faces critical demographic and socioeconomic challenges. Identifying fertility determinants in such a low-fertility context requires methods that go beyond traditional statistical models to capture complex, nonlinear relationships.

Methods: This study analyzed NFHS-5 data for Sikkim (N = 3,271; 45 features). Missing data constituted 18.9% of the dataset and were systematically classified into MCAR, MAR, and MNAR categories, with MAR predominating. Missing values were imputed using mode substitution, KNN, and MICE. Feature selection combined filter, wrapper, and embedded techniques including Random Forest, SHAP, RFE, Mutual Information, and LASSO resulting in the identification of 15 core predictors. Machine learning models (Decision Tree, Random Forest, XGBoost, CatBoost, and LightGBM) were trained using 70:30 train-test splits and evaluated with RMSE, MAE, and R^2 metrics.

Results: Model performance improved markedly after imputation and feature optimization. On the full feature set, CatBoost and XGBoost achieved the highest predictive accuracy ($R^2 = 0.8029$, RMSE = 0.5538, MAE = 0.345). Restricting analysis to the top 15 features further enhanced outcomes: LightGBM achieved the best performance ($R^2 = 0.8561$, RMSE = 0.4731, MAE = 0.2730), followed by CatBoost ($R^2 = 0.8551$) and XGBoost ($R^2 = 0.8420$). Random Forest improved from $R^2 = 0.7378$ (RMSE = 0.6386, MAE = 0.3561) to $R^2 = 0.8321$ (RMSE = 0.5111, MAE = 0.2734) post-imputation. Key predictors consistently identified included age at first birth, marriage-to-first-birth interval, woman's current age, highest educational attainment, births in the last five years, desire for more children, ideal family size, contraceptive use, unmet need, and marital status.

Conclusion: Fertility decline is strongly associated with delayed childbearing (first birth >30 years), higher education, and contraceptive prevalence, alongside shifts in marital and fertility preferences. By integrating rigorous missing-data handling with advanced ensemble models, the study achieved >85% explanatory power, demonstrating the potential of machine learning to generate actionable, data-driven insights. These findings offer a robust evidence base for designing targeted reproductive health interventions and population sustainability policies in demographically sensitive regions.

Burden of Mortality due to Acute Climate Change Related Factors in India: An Econometric Estimate of State level Data

Dr. Sanjay Jayawant Rode

Climate related factors are continuously affecting on mortality in India. Annual temperature is continuously increasing in India. Severe climate change causes of increasing deaths due to lightening, heat strokes, exposure to cold and flooding. The states such as Odisha, Bihar, Madhya Pradesh and Bihar have reported higher number of deaths due to heat strokes, flood, exposure to cold and lightening. The deaths among male above 45 age is more due to climate change factors in India. But we have not found any gender difference in flooding related deaths in any state. Heat strokes are higher among the male in above 45 age group categories. Deaths due to lightening are consistently more but spread equally in all age groups. Hot days are observed more in Uttar Pradesh, Bihar, Haryana and Bihar state from June to August period. The cold days are found more in Himachal Pradesh Haryana, Jammu Kashmir and Punjab state. The ordinary least square regression result shows that cold related deaths are positively co-related to health expenditure, 30-44 female, 45-59 male and above 60 years male and female. The flood related deaths are positively co-related to female below 14 years, male 30-44 years, female 45-59 years, male above 60 years. The heat related deaths are negatively co-related to tree cover and up to 14 males. It is positively co-related up to 14 years female, 30-44 age group male, 30-44 age group female and male 60 years above age group. The lightening related deaths are negatively co-related to tree cover, up to 14 years male. It is positively co-related to expenditure on natural calamities. Central and state Governments must provide more compensation to families whose members died due to lightening, flood, exposure to cold and heat stroke. There is immediate need to plant trees in all states of India. The local farmers must be encouraged to diversify the agricultural crops and maintain water table level. They must avoid taking cash crops and adopt natural farming. Central and state government must increase health expenditure related to natural calamities. There is need to establish task force related to natural calamities which will help people to take to health care facilities on urgent basis and reduce the deaths due to climate change factors.

Marginal Lives, Marginal Care: Border Securitization and Healthcare Access in the Riverine Charlands of Murshidabad, West Bengal

Dr. Sumana Das

Background and Objectives

Border regions often reflect zones of dual marginalization, being both geographically isolated and politically sensitive. The eastern Indo-Bangladesh frontier, particularly the riverine stretches of Murshidabad district in West Bengal, exemplifies this marginality. Nirmal Char and its surrounding areas characterized by chars or riverine islands have long suffered from ecological instability, recurrent floods, riverbank erosion, and poor state outreach. These vulnerabilities are further intensified by securitization measures and administrative neglect. This study examines healthcare access disparities across several charland villages including Char Krishnapur, Munsurpur, Machchar, Ghoshpara, Hakimpur, Pakimari, Jajira, Natun Rajapur, Madanghat, and Patibona in Bhagawangola II Block. It explores whether the primary constraints to healthcare are shaped more by ecological remoteness or by the securitized border regime, while also analyzing the influence of environmental and administrative precarity on health-seeking behaviours.

Data and Methods

A mixed-methods approach was adopted. Quantitative data were collected via household surveys with 300 respondents, and qualitative insights were gathered through semi-structured interviews with healthcare workers and border security personnel. The analysis was guided by Penchansky's 5A framework and Surman's extended 6A model: Availability, Accessibility, Affordability, Acceptability, Awareness, and Accommodation. Principle Component analysis and the construction of a composite Healthcare Access Index using Probability Mass Functions were conducted in Jamovi software version 2.6.44. Thematic analysis was employed to interpret qualitative narratives and reveal lived experiences of marginality and exclusion.

Findings

Findings reveal pronounced healthcare exclusion, with high reliance on local healers due to inaccessibility of formal facilities. Seasonal isolation caused by monsoon-induced river swelling and erosion severely hampers access to healthcare. Poor infrastructure, such as unpaved paths and a lack of operational transport, further compounds this inaccessibility. Administrative invisibility renders healthcare schemes largely ineffective. Border securitization checkpoints, restricted movement, and ID-based surveillance are not very intensive here. It is implemented when villagers engage in fishing in Padma River, move to the Indian agricultural land in Bangladeshi side and also near border checkpost, herding cattle near BoPs and have some leads of smuggling. However, villages like Char Krishnapur, Ghoshpara, Shoitānpara, Paikmari, and Hakimpur demonstrate relatively better access due to proximity to river-crossing points, internal road connectivity, pharmacies, and the presence of a weekly-operational SPHC, ANM, and active ASHA workers. Conversely, Jajira mouza suffers from the worst healthcare conditions isolated, without roads, services, or health awareness. The availability index was

generally poor, with Char Krishnapur performing best due to its location near a river crossing. Principal Component Analysis of villagers' acceptability of available healthcare showed three components: (1) trust and satisfaction with local services like ASHAs and ANMs; (2) influence of past healthcare experiences and provider preferences; and (3) structural and linguistic barriers. Affordability was also low, but sometimes those family members of a household living in mainland cities financially support other members during emergencies. However, Persistent poverty, ecological fragility, displacement due to erosion, and sociopolitical insecurity contribute significantly to poor health outcomes than border securitization.

Conclusion / Policy Implications

Healthcare deprivation in Nirmal Char arises not only from infrastructural deficits but also from the compounded effects of environmental, institutional, and geopolitical factors. The study calls for region-specific health interventions including mobile clinics, boat ambulances, and relaxed border protocols during medical crises. It further recommends urgent integration of borderland populations into formal healthcare and identity systems to ensure that geography and geopolitics do not continue to obstruct access to essential health services.

Adolescent Sexual Reproductive Health and Rights (ASRHRs) of Lodha Tribes: Special Focus on National Adolescent Health Program

Gita Naik

Background: Lodha tribe comes under one of the Particular Vulnerable Tribal Groups of India (PVTGs). In both of this state West Bengal and Odisha they live only and has been treated as PVTGs. PVTGs has salient features like future extinction chance, stagnant population, very poor socio-economic condition. Lodha also has chronic problems like high prevalence of early marriage practice, high malnutrition, early child bearing, high illiteracy, high alcohol consumption, high violence and low life expectancy. In this situation it becomes important to protect adolescent sexual reproductive health because maximum population comes under adolescent group. National Adolescent Health (NAH) program launched to improve adolescent health of India. This program becomes very important in case of this type of sensitive and vulnerable population.

Objectives: In this paper main focus is to study ASRHRs of Lodha adolescent girls and implementation status of National Adolescent Health program.

Data and Methods: Entire study is based on primary data; total sample size is 350. Target group is 10 to 19 year married adolescent Lodha girls. Study area is Paschim Medinipur district in West Bengal and Mayurbhanj district in Odisha. Mixed method approach is followed in data collection.

Findings: Maximum marriages were taking in between 12 to 15 years among the respondents. Lodha married girls had at least one child before 17-year age. However, ASHA is contributing significant role in spreading contraception awareness among the newly married couples but practice rate is very low. Nutritional status of Lodha adolescent is very poor. More than 65% sample in this study eats twice only in a day. Food diversity is totally missing from their daily intake. In this scenario, weekly iron and folic acid supplementation becomes necessary for those girls which is the part of NAH program. But very less evidence found for availability of this component. Therefore, adolescent girl s health of this PVTGs becomes very vulnerable due to early marriage practice, early child bearing with high malnutrition. We also investigated availability of other components of NAH program such as peer educator, adolescent friendly health clinics etc in Lodha villages but very less evidence found regarding availability.

Conclusion: Adolescent population in this tribe is very high and other side life expectancy is low. In a very early age, they are entering vital event like marriage with high malnutrition, low SRH knowledge. Proper implementation of NAH program becomes utmost important here and we also suggest community specific health workers requires specially like for Lodhas.

Keywords: Lodha, Adolescent, Early Marriage, Adolescent Sexual and Reproductive Health, Girls, National Adolescent Health Program etc.

Epidemiological Analysis of Muscular Strength and its Bio-social Determinants: Evidence from Rural Uttarakhand

Gurkawal Kaur

Background: Muscular strength, a fundamental component of physical fitness and metabolic health, and functional well-being, supporting healthy body composition and daily activity. Handgrip strength (HGS), a simple yet cost-effective measure, is shaped by multiple factors including age, sex, anthropometric characteristics, nutritional intake, and lifestyle behaviors serves as a practical marker for population level health monitoring. It has diagnostic and prognostic value in conditions such as sarcopenia (loss of muscle mass) and dynapenia (loss of strength), particularly in ageing populations. Studies have linked reduced Hand grip strength to poor nutrition, disability in old age, cardiovascular and neural diseases, diabetes resulting into premature mortality and increased risks of morbidity. Because of its diagnostic utility, predictive relevance and its connection to multiple biological systems Hand Grip Strength is increasingly incorporated in clinical and epidemiological assessments worldwide. However, much of the available evidence is derived from urban, clinical or high-income settings, while rural populations in low-middle-income countries facing nutritional challenges and undergoing demographic transitions remain underrepresented. Understanding bio-social determinants of muscular strength in such settings is essential for informing health and nutrition policies tailored to rural populations.

Objectives: a. to study muscular strength using Hand grip strength test, b. to examine the relationship between socio-demographic, nutritional, anthropometric, and lifestyle variable with muscular strength.

Data and Methods: A community-based cross-sectional study was conducted in Gairsain block of Chamoli district, Uttarakhand, comprised of 181 participants stratified by age and sex. Standardized tools such as DDQ (Diet diversity questionnaire) and GPAQ (Global physical activity questionnaire) were employed to capture dietary, lifestyle and socio-demographic data. Anthropometric measurements were recorded using standard procedures. Hand Grip strength was assessed using a hand dynamometer. The data were entered in MS Excel, SPSS version 22 and WHO Anthroplus, and analysis was performed using t-test, Chi-square test, Pearson Correlation and Regression to generate Odds ratio with 95% confidence intervals.

Findings: The study found significant sex differences in muscular strength ($p < 0.001$) with males consistently recording strong HGS (76.6%) compared to females (23.4%). Among individuals with weak HGS, (95.2%) are females and only (4.8%) are males. In case of Marital status, significant results ($p < 0.05$) are observed with Strong HGS being more consistent among married individuals (53.2%) as compared to unmarried individuals (44.7%). Correlation analysis indicated diet diversity, physical activity, WC, HC, WHR, WHtR demonstrated significant association with HGS. Logistic regression analysis revealed that lifestyle factors such as low diet diversity ($OR = 0.165$, $p < 0.001$) and low to moderate physical activity levels ($OR = 0.192$ and 0.160 , respectively; $p < 0.001$) were significantly associated with weaker hand grip strength. Anthropometric Indicators at-risk waist circumference ($OR = 3.039$, $p = 0.005$) and hip

circumference (OR = 1.065, $p = 0.002$) and WHtR (OR=3.567, $p=0.016$) also showed significant positive associations with HGS.

Conclusion: The study elucidates pronounced sex-and marital status based differentials in muscular strength, as males and married participants exhibiting significantly strong handgrip performance. Low diet diversity and physical activity levels and anthropometric indices including elevated waist circumference and waist-to-height ratio were robustly associated with attenuated grip strength. Collectively, these findings position handgrip strength as a salient epidemiological and demographic biomarker for guiding nutrition and lifestyle focused interventions in rural populations.

Development and Validation of a Multi-Component Community Health Worker Empowerment Tool and Empowerment Index

Hanimi Reddy Modugu

Background and Objectives: Community Health Workers (CHWs) are backbone of public health system, and for optimal performance, they need to be empowered - as empowerment is associated with performance, motivation, and to ultimate success of program. Literature on CHW-performance is confined to technical capabilities and systemic resource constraints, but not on how power asymmetries within the system and how systems/communities entrench and reinforce existing gender-norms and how inequalities impact their performance/confidence. ARMMAN, an Indian-NGO, has been capacitating 0.2: million-ANMs and one million-ASHAs, through its blended 'tech-plus-touch' approach, on maternal and newborn care topics. Aim is to develop & validate CHW-empowerment-tool, in the context of ARMMAN's gender-transformative & tech-plus-touch approaches.

Data and Methods: Empowerment is a multi-dimensional construct, and it is not available for CHWs, India. Defined empowerment as a means by which individuals gain health & development-related skills and knowledge to facilitate positive change in their lives and communities. Assumed to empower community, it is essential ANMs/ASHAs be and feel empowered. Due to variations in roles & responsibilities at system/community levels separate tools were developed for ANMs and ASHAs, although, broad domains of tool are common. Delphi technique employed to achieve expert consensus on information areas and specific-questions of ANM/ASHA tool. Further, it got vetted by its supervisors, prior to data collection. Reliability of finalized questions of sub-domains will be tested using Cronbach-Alpha and entire tool will be validated using confirmatory factor analysis through in-person interviews with a cross-section of ANMs/ASHAs, from a north and a south Indian state, using mixed-method data collection techniques.

Findings: The ANM/ASHA empowerment tool was developed by integrating four-expressions of power (Power Over, Power With, Power To, Power from Within) with three levels of change (personal, relational, and professional) anticipated in their work/personality due to various capacity building initiatives, including those from ARMMAN. We used gender-integration as a cross-cutting domain across four expressions of power and three levels of change in ANMs/ASHAs. Thus, our tool for ANM/ASHA has a total of 31-sub-domains. Each sub-domain has: indicators, questions, source of each question, how question-specific data will be used for developing empowerment index of ANM/ASHA, how each question integrates with four expressions of power. Professional change broad-domain has the following 10 sub-domains: Meaningfulness, Competence, Choice in work processes, Impact perception, supervisory constraints, Collaborative relationships, Quality improvement platforms, Institutional support, System integration. Personal broad-domain has the following 9 sub-domains: Self-efficacy, Autonomy in decision making, Peer support networks, Freedom of movement, Self-confidence, Motivation, Digital literacy, Resilience to stress, Financial autonomy. Relational broad domain has the following 6 sub-domains: Community-engagement, Community-trust, Social support, Spousal support, Harassment & discrimination,

Advocacy in community. Gender-integration domain has the following 6 sub-domains: Voice, Mobility, Safety, Gender-norm rejection, Attitude towards gender-norms, Cyber-safety.

We have developed empowerment tool for the ANM/ASHA using above domains. Information areas and questions of each sub-domain of this tool according to ASHA and ANM will be finalized in a Delphi meeting with subject experts and system leaders. Prior to data collection the tools will get vetted by supervisors of ASHA/ANM. Using the finalized tools, data will be collected from a cross-section of 600 ANMs and 600 ASHAs from one south and from one north Indian state selected by ARMMAN-leadership. Based on the data collected, the tools will be validated using appropriate statistical techniques, quantitatively. Qualitative results will be presented according to power-asymmetries and gender-equity issues faced by ANMs/ASHAs. Using these results empowerment index matrix will be developed for ANMs/ASHAs.

Conclusions/Policy implications: Once reliability of questions are tested with Cronbach Alfa and the tool is validated using confirmatory factor analysis , we will develop empowerment index for ANMs/ASHAs. Policymakers, donors, implementers, and researchers can adopt and adapt full tool or a portion of our tool across diverse contexts that capacitates CHWs technically, including equity-sensitive and gender-responsive cross-cutting interventions.

Contribution of Income, Education and Health Dimensions in Human Development Index, 1990-2023

Heer Joshi

Background and Objectives: Since its introduction in 1990, the Human Development Index (HDI) has been widely used to summarize progress in health, education, and income. Yet, surprisingly little is known about how each dimension drives the index value and its changes over time, especially after the 2010 shift to a geometric-mean formulation. While debates have focused on methodological trade-offs, a systematic examination of the relative contributions of these dimensions across countries and decades remains scarce. This paper seeks to fill this gap by quantifying the dimensional contributions to HDI levels and inter-temporal changes from 1990 to 2023, offering fresh insights into the internal dynamics of one of the world's most cited development measures.

Data and Methods: We use annual HDI data from UNDP reports (1990–2023) for all reporting countries. To examine the internal structure of HDI, we develop a decomposition framework that isolates the relative influence of health, education, and income dimensions on both HDI levels and changes. Our approach draws on analytical expressions derived from the index's functional form, allowing us to assess dimension-wise contributions without altering the index's axiomatic properties. The approach, while mathematically rigorous, preserves the interpretive clarity of dimensional contributions under the GM formulation without resorting to direct trade-off valuations. Details of the derivation are intentionally kept concise here, but the method ensures interpretive clarity while remaining consistent with the HDI's capabilities-based conception.

Findings: Three key patterns emerge. First, the education dimension dominates both HDI levels and improvements over time, with the strongest influence observed in low- and middle-HDI countries where schooling gains accelerated after 2000. Second, the income dimension shows diminishing marginal influence as countries approach higher development levels, while health improvements contribute moderately but steadily across all regions. Third, the post-2010 HDI formulation introduces a striking sensitivity to the lowest-performing dimension, amplifying its weight in shaping HDI values regardless of progress in other dimensions. Together, these findings reveal hidden asymmetries in how different capabilities shape the composite index across time and space.

Conclusion/ Policy Implications: This study advances methodological understanding of HDI by uncovering its internal dimensional dynamics over three decades. The results highlight how measurement choices influence the interpretation of human development trends, calling for careful reflection in comparative analyses. Consistent with UNDP's stance, we refrain from treating these decompositions as direct policy prescriptions; rather, they provide a deeper empirical lens for scholars examining the construction and evolution of multidimensional development measures.

Is Household Air Pollution a risk factor for age at menopause in India? an examination from National Family Health Survey Data

Kavitha. N

Introduction: Menopause is a complete cessation of menstruation for a period of one year. It is estimated that around 12 percent of women are experiencing menopause between 40 and 44 years of age worldwide. Both early and premature menopause can result in an increased risk of chronic diseases. Evidence also suggests that menopause at younger ages affects the mental health of women. In India, the percent share of women in the reproductive age group is high and therefore it is important to study the age at which women undergo menopause. Further studies have found that household air pollution alters the age at which women attain menopause. Studies conducted in India and elsewhere brought out that household air pollution has impact on the menopausal age. In view of this background, the present study aims to examine the impact of household air pollution on the age at menopause.

Objectives: To examine the influence of indoor air pollution (in terms of having no separate kitchen and use of unsafe cooking fuel) on the age at menopause among women in the age group 30-49.

Data and Methods: This study uses data from the fifth round of NFHS which collected information on availability of separate kitchen and main source of cooking fuel. NFHS also collects information on age at women attains menopause. Bivariate and logistic regression analysis are used to examine the effect of indoor air pollution on age at menopause. Recent studies brought out that mean age at menopause in India is around 46 and therefore women who attained menopause by 40 are considered as premature menopausal women in the study.

Results: It is surprising to note that 85 percent of Indian attained menopause by 40 years of age. Bivariate results show that percent of women attained premature menopause is higher among women belong to households where there is no separate kitchen and use unsafe cooking fuel. Multivariate logistic regression too confirms the findings. Logistic regression results brought out that the likelihood of early menopause is higher among women who belonged to households which use unsafe cooking fuel and have no separate kitchen. Other background characteristics have also exhibited a significant association with age at menopause.

Conclusion: Findings suggest that exposure to continued indoor air pollution contributes to the onset of early menopause, emphasizing the importance of addressing the issue as public health priority. Improving indoor air quality is crucial to mitigate the premature menopause and to improve the overall health and wellbeing of women in India.

Prevalence and Contextual Determinants of Acute Respiratory Infection among Rural Children: A Cross-sectional Study in Purba Bardhaman District of West Bengal, India

Koustav Ghosh

Background: Acute Respiratory Infection (ARI) constitutes a major challenge to the public health system, especially in developing countries, and is one of the leading causes of morbidity and mortality among children under five years of age. The Sustainable Development Goals (SDGs 3.2.1) aim to reduce the deaths from preventable diseases among newborn babies and children under-five years by the year 2030. Despite of various efforts by International and National agencies, preventable diseases that eventually lead to unprecedented levels of child mortality and morbidity in developing countries, including India. Current micro-level cross-sectional study examines the prevalence and contextual risk factors of ARI in the Purba Bardhaman district of rural West Bengal, India.

Methodology: Primary data were collected from 296 households using a structured questionnaire. Bivariate analysis with chi-square test to show the association between variables. Additionally, Multivariable logistic regression analysis revealed several significant risk factors.

Results: The findings indicate that 18% of the 296 children surveyed in the study area were suffering from ARI. Children living near Muri Mills (AOR: 2.2; 95% CI: 1.22 2.79), having contact with domestic animals (AOR: 3.3; 95% CI: 1.17 9.35), and with a family history of respiratory illness (AOR: 9.94; 95% CI: 2.97 33.3) were at higher risk. Cooking inside non-separate kitchens (AOR: 1.47; 95% CI: 1.13 6.5) and the child's presence during cooking (AOR: 6.54; 95% CI: 1.67 25.73) also increased ARI odds. Maternal respiratory illness (AOR: 3.58; 95% CI: 1.04 12.31) and being a female gender of the child (AOR: 2.49; 95% CI: 1.1 5.62) were identified as significant factors. It was also found higher household income reduces ARI risk.

Conclusion: These findings provide critical insights into localized determinants of ARI, often missed in national surveys, and can inform targeted interventions to support child health and meet Sustainable Development Goal (SDG) 3.2.1.

Key Words: Acute Respiratory Infection, Prevalence, West Bengal, Morbidity

The push towards education: New business opportunities in a Delhi village

Mallika Chaudhuri

Background and Objectives: The background to this paper is the study of a process of social change in the NCT of Delhi, wherein rural settlements come to be included into urban life, formally and informally. This process of integration is tied to major disruptions to the social, political and economic landscape of the villages, and consequently, the fabric of the city. This paper seeks to explore the growth of new business opportunities in one such village, Koi Sarai, particularly the development of education related infrastructure, within a larger context of migration/demographic change as well as changing educational and professional aspirations amongst the local residents.

Data and Methods: This paper draws on data that was collected over several phases of ethnographic fieldwork carried out from 2017 to 2023 as part of my PhD in two villages of Delhi. My sample consisted of 232 individuals across both settlements. Village residents were interviewed on a number of subjects, including livelihoods. They were approached on the basis of area of residence (mohalla), caste, and gender. Interviews were carried out at home and public/community spaces. This article is based on relevant selected interviews.

Findings: As the city continues to subsume individual rural and urban villages, one of the key disruptions in these villages has been to the economy. With the interruption of previously dominant livelihoods such as agriculture, there are anxieties/struggles with regard to fitting into the urban economy, raising the question of on what terms people can enter the job market. Such change is experienced as displacement especially amongst the socially and economically dominant erstwhile agrarian caste (Jats, in Koi Sarai), whose identity is closely tied to being landowners and agriculturists. Integrated into an urban which marginalises agricultural and other rural pursuits, including cattle-rearing, village residents have often found themselves unprepared to integrate into an urban job market which privileges other skills especially those tied to higher education. There is a simultaneous demographic shift as a result of the growth of the rent-based economy, and a large growth in the student population, which creates demand for new related infrastructure/services in this case, a complex of study spaces called libraries, biometric security and WiFi. There is also an increasing push towards the development of such businesses amongst the local population (not just of outside entrepreneurs), beyond participation in the rent-based economy. Increasingly there is a circling back to a situation where these services/technologies, although initially targeted towards tenants, are increasingly targeted towards local residents, tapping into the larger anxieties present amongst residents.

Conclusion/ Policy Implications: The study raises questions pertaining to the integration of these villages with the city; this is not only in terms of the development of infrastructure, as is commonly highlighted with the villages (physical infrastructure), but also in terms of education and livelihoods. It also highlights the need to think solely beyond basic infrastructure, and focus on the role of new technologies in these centres.

Anthropometric assessment of nutritional status among adolescents of paudi bhuyan tribe.

Manashree Manamukta Naik

Background and Objectives: Adolescent nutrition is a critical determinant of growth, cognitive development, and future health. Among Particularly Vulnerable Tribal Groups (PVTGs) like the Paudi Bhuyan of Odisha, chronic undernutrition persists due to poverty, ecological constraints, and cultural practices, making anthropometric assessment essential to understand health disparities and guide interventions. The primary objective of this study is to assess the nutritional status of the adolescent Paudi Bhuyan students of Karangadihi Upper Primary School of Banspal Block in Keonjhar district, Odisha.

Material and Methods: The cross-sectional study was conducted among Paudi Bhuyan adolescents of Karangadihi Upper Primary School, Banspal block, Keonjhar district, Odisha. Through purposive sampling method, 56 participants (31 males, 25 females) were selected aged 14-17 years. Standard anthropometric techniques following Weiner and Lourie (1981) were employed to record height, weight, mid-upper arm circumference (MUAC), waist, hip, calf circumference, sitting height, and knee height using calibrated instruments. Body Mass Index (BMI) was calculated to assess nutritional status and categorized based on Chronic Energy Deficiency (CED) grades. Height-for-age z-scores (HAZ) were computed using WHO Anthro Plus software to evaluate stunting. Data were entered in MS Excel and analysed using IBM SPSS (Version 20.0). Descriptive statistics, mean comparisons, and Student's t-test determined sex differences, with significance at $p < 0.05$. The measured values were compared to standards prescribed by WHO (2007), ICMR (2010) and Indian Academy of Paediatrics (2015).

Findings: The study revealed a high prevalence of undernutrition among Paudi Bhuyan adolescents. Based on BMI, 62.5% of participants were classified with Chronic Energy Deficiency (CED), with 58.07% among males and 68% among females, highlighting gender disparities in nutritional vulnerability. Mean height, weight, and BMI of both sexes were consistently lower than WHO (2007), ICMR (2010), and IAP (2015) growth standards, confirming chronic nutritional deficits. Stunting was recorded in 60.7% of adolescents, with higher prevalence among females (68%) than males (54.8%), reflecting persistent gender inequality in food distribution, workloads, and healthcare access. Sex-wise comparisons showed males had significantly greater mean height, weight, hip circumference, calf circumference, and wrist breadth, while BMI and MUAC revealed no significant differences. Growth patterns displayed irregular increments, with adolescent girls showing stagnation and even decline in height and weight during certain ages, likely influenced by early marriage, gendered labour, and poor dietary diversity. Overall, the findings underscore the severe burden of undernutrition among this PVTG, shaped by socio-economic marginalization, ecological constraints, and cultural practices.

Conclusion: The study highlights severe undernutrition among Paudi Bhuyan adolescents, with high prevalence of CED and stunting, particularly among girls. Consistently lower growth indicators compared to national and global standards reflect socio-economic marginalization and ecological barriers. Addressing these disparities requires nutritional assessment and development programmes in school and community-based interventions that integrate nutrition, education, and livelihood support to break the cycle of intergenerational deprivation.

Low-Skilled Labour Migration to the Gulf States: Examining the Reasons, Social Networks, and Migration Costs Among Muslims in West Bengal, India

Md Selim Reja

The oil boom in the Gulf states in the 1970s led to an upsurge of labour migrants from various parts of the world to the Gulf countries, and India was one of the leading suppliers of labour migrants. Over time, there has been a significant shift in the source areas of low-skilled migrants in India to Gulf countries. The outflows of low-skilled labour to Gulf countries from traditional source states like Kerala, Tamil Nadu, and Karnataka shifted to states like Uttar Pradesh, Bihar, and West Bengal. This paper will explore West Bengal as a new hotspot for low-skilled migrants to Gulf countries. The entire study is based on a field survey conducted from September 1 2023, to March 1 2024, in the villages of Murshidabad District, West Bengal. The data were collected from migrants through purposive and snowball sampling techniques, ensuring a diverse and representative sample. For this purpose, a structured, pre-coded questionnaire schedule was designed to capture comprehensive data on the migration process. The multiple-response technique was applied to examine the reasons behind Gulf migration. The chi-square test is used to determine if there is a significant difference in migration costs based on migrants' characteristics, ensuring statistical significance. A multiple regression analysis was also executed to understand how migrant characteristics and other factors impact migration costs. The study, which investigates the reasons behind the migration of Muslim youth from West Bengal to Gulf countries in a push-pull context, found that lack of job opportunities is the most important reason at the place of origin, whereas the high wages in the Gulf countries are the most critical pull factor for their migration. Besides push-pull factors, the purpose of constructing a house is the most motivating factor for sampled migrants to go to Gulf countries. The present study found three important channels through which the sampled migrants obtained visas for work in Gulf countries, i.e. local agents or agencies, family, friends or relatives, and government agencies. The chi-square test suggests there are significant differences in migration costs among migrants based on age, educational level, and prior work experience. The regression model shows that prior work experience and the presence of relatives and friends in the Gulf countries led to lower migration costs, whereas a higher education level has significantly led to higher migration costs.

Expansion or Compression of Morbidity Among India's Working-Age Population

Nand Lal Mishra

Whether rising life expectancy in India is accompanied by improvements in health for the working-age population is a central question with implications for the nation's economic development and workforce sustainability. Although the all-ages shift from communicable to non-communicable diseases is well documented, there is limited empirical evidence on whether India's working-age adults are experiencing a compression (a smaller proportion of life spent in poor health) or an expansion (a growing burden of chronic morbidity) of morbidity. Most research to date has either focused on the general population or failed to systematically quantify health-adjusted life expectancy among those aged 15–64, the core productive age group, leaving a significant research gap in understanding morbidity trends within India's labor force (Mohanty et al., 2021; Yadav et al., 2020; Dandona et al., 2017). This study aims to fill this gap by directly assessing whether morbidity among Indian adults of working age has compressed or expanded, which is essential for policy planning and harnessing the country's demographic dividend.

To achieve this objective, we utilized standardized estimates from the Global Burden of Disease (GBD) Study 2019, analyzing data from 1990 to 2019 for individuals aged 15–64. The analysis employed life expectancy (LE) and health-adjusted life expectancy (HALE) to calculate healthy years lost due to disability (HYLD = LE – HALE), as well as partial life expectancy (PLE) and partial HALE (PHALE) for the working-age population. Both absolute (HYLD, PHYLD) and relative differences (HYLD/LE, PHYLD/PLE) were measured, allowing for nuanced classification of morbidity patterns. The methodological approach followed the established frameworks of Sullivan (1971), Salomon et al. (2012), and Howse (2006), enabling an assessment of both absolute and relative changes in healthy years lost.

The results show that, between 1990 and 2019, increases in LE and HALE for India's working-age adults were accompanied by only marginal reductions in both the absolute and relative gaps in healthy years lost due to disability. Specifically, the proportion of life spent in poor health for this group declined slightly (from 14.0% to 13.0%), and the absolute number of unhealthy years fell minimally (from 6.3 to 6.1 years). These insignificant changes indicate a dynamic equilibrium rather than a true compression of morbidity, echoing patterns seen in other low- and middle-income countries (Crimmins & Beltrán-Sánchez, 2011).

In conclusion, India's working-age population has not experienced substantial compression of morbidity in recent decades. Targeted strategies to prevent and manage chronic diseases are vital to ensure that gains in longevity translate into healthier, more productive working lives.

Utilizing Gender Dialogues as a Mechanism for Institutional Transformation: An Empirical Study in Four Districts of West Bengal

Nilanjan Bala

Context and objectives: Early marriage and gender-based violence (GBV) continue to affect Indian adolescent health, education, and empowerment. Although national policies encourage gender equity and adolescent well-being, schools typically lack structured and locally relevant platforms to address these challenges. Under SCERT West Bengal's National Population Education Project (NPEP), this operational research assessed the viability of teacher-facilitated awareness activities in four low-performing districts determined by NFHS-5 data. The study examined stakeholder participation, behavioral outcomes, difficulties, and school-based gender-responsive education strategies.

Data and Methods: This qualitative-dominant mixed-methods study combined NFHS-5 data evaluation with field findings. Due to high child marriage, anemia, and menstrual hygiene gaps, Coochbehar, Jalpaiguri, Murshidabad, and North 24 Parganas were chosen. Primary data came from 20 focus group talks with 195 in-service teachers, 10 per district cluster and 8–10 individuals per group. In 60 schools, 3,178 boys, 7,911 girls, 795 instructors (399 male, 396 female), and 1,194 parents participated in sensitization activities. Phase I synthesised focus group discussions (FGD) and triangulated them with National Family Health Survey (NFHS-5) indicators. Phase II reviewed school-level Google Forms for implementation, reflections, and community feedback. A Google form survey through Facebook of educators from government, private, and self-financed schools in four districts had been conducted.

Findings: The study shows that skilled educators may lead participatory, school-based discussions regarding gender-based violence, early marriage, and adolescent health to foster critical thinking. These methods promoted safe communication, intergenerational discourse, and early intervention in schools. The lack of systematic curricular integration, instructional continuity, and systemic follow-up limited their transformative potential. The initiative's conceptual strength is its NEP 2020, RKSK, and SDG compliance, but its sustainability is threatened by disconnected community involvement, inadequate teacher aid, and restricted thematic scope. Such programs will likely raise awareness but not affect teenage well-being or gender norms without institutional commitment and intersectoral convergence.

Conclusion and Policy Implications: This study illustrates that teacher-facilitated, participatory school dialogues can effectively enhance awareness of gender-based violence, early marriage, and adolescent health, while promoting safer and more expressive learning environments. The intervention is consistent with NEP 2020, RKSK, and essential SDGs, emphasizing the role of schools in early identification and prevention. The lack of structured follow-up, curricular integration, and cross-sectoral coordination considerably restricts long-term effectiveness. Inadequate teacher capacity, shallow thematic coverage, and limited community engagement pose significant challenges that may diminish the initiative to a mere symbolic gesture. To achieve transformative outcomes, it is essential to institutionalize adolescent engagement via systemic policy reforms that incorporate gender and life skills education, enhance monitoring systems, and create collaborative frameworks across education, health, and child protection sectors to ensure scale, sustainability, and equity.

Socio-Economic Drivers of Consumption Inequality in India

Nilesh J Yadav

Background and objective: India has grown and urbanised quickly, but gaps in living standards remain large. These gaps slow progress on SDG 1 (No Poverty), SDG 3 (Good Health), SDG 4 (Quality Education), SDG 10 (Reduced Inequalities) and SDG 11 (Sustainable Cities). To reduce these gaps, we must know what drives them. Measures like the Gini show totals but hide which socio-economic factors matter the most. Most evidence uses NSSO 2011–12 or older but India has changed since then. Using NSSO 2022–23, this study decomposes spending inequality and identifies key contributors more clearly across food, other non-food, education, and health.

Data and Methods: This study analyses seven rounds of NSS unit-level Consumer Expenditure data: 38th (1983–84), 43rd (1987–88), 50th (1993–94), 61st (2004–05), 66th (2009–10), 68th (2011–12), and 2022–23. Rural and urban households are examined separately and pooled. Spending is grouped into four parts: food, other non-food, education, and health. All amounts are converted to real terms using 2011–12 as the base year. Inequality is summarised with the Gini index. To identify drivers, we use Fields' regression-based decomposition of log per-capita expenditure, estimating period-specific models with appropriate survey design and weights. Explanatory factors include Religion, sector, caste (SC, ST, OBC, others), occupation, Industry, Dwelling unit, Land possession and household size.

Findings: The study shows that consumption inequality has risen markedly, with the sharpest increases in other non-food, education, and health spending. A regression-based decomposition indicates that household size, urban–rural location, caste, and occupation are the strongest contributors to these gaps. The urban–rural divide has widened, with urban households spending more across all categories. Caste-based inequalities persist for Scheduled Castes and Scheduled Tribes, reflecting structural disadvantages. Health-spending inequality has eased somewhat in recent years, suggesting better access to basic services, especially in rural areas. In other non-food spending, luxury goods and services concentrated among better-off households drive inequality. Education shows the largest dispersion—especially in cities—due to rising private schooling and coaching costs. While overall consumption has grown with economic expansion, gains have been skewed toward higher-income groups. Targeted policies in education and health are needed to narrow these gaps and promote more equitable consumption.

Conclusion: Economic growth has not closed spending gaps. Education and other non-food show the widest gaps; cities spend more than villages, and SC/ST households remain behind. Health gaps have eased a little. To support the SDGs on poverty, health, education, cities and inequality, policy should fit these results: strengthen public schooling and scholarships; expand primary care and protect families from medical costs; reduce the city and village gap with roads, digital access and local jobs; provide focused support to SC/ST households; fund these steps with fair taxes on luxury goods; and track progress with simple public dashboards.

Keywords: Consumption expenditure inequality, NSSO (1983–2023), Socio-economic indicators, Sustainable Development Goals (SDGs).

Inequality in Teenage Pregnancy Prevalence among the Tribals and Non Tribals in India: Evidence from NFHS-5

Niranjan Rout

Background: Early childbearing is a critical global public health issue due to its adverse consequences on maternal and child health. Despite recent progress, adolescent pregnancies remain prevalent, especially in low- and middle-income countries. Globally, around 10% of births are to mothers under age 20 (UN, 2022), and approximately 2.5 million girls aged 15–19 give birth annually in the developing world (WHO, 2018). In India, although teenage pregnancy has declined from 16% in NFHS-3 (2005–06) to 6.8% in NFHS-5 (2019–21) significant disparities still persist. Teenage pregnancy is notably higher among Scheduled Tribes (8.7%) than among non-Scheduled Tribes (6.6%), pointing to deep-rooted socio-demographic inequalities.

Statement of the Problem: Teenage pregnancy exposes young mothers to increased health risks such as eclampsia, infections, and maternal mortality. Babies born to teenage mothers also face higher risks of low birth weight, preterm birth, and neonatal complications. Globally, maternal health issues are a leading cause of DALYs and deaths among girls aged 15–19 (UNICEF, 2024). While many studies focus on socio-demographic determinants of adolescent pregnancy, limited research addresses disparities across social groups. This study explores the inequality in teenage pregnancy prevalence between Scheduled Tribes and non-Scheduled Tribes in India.

Review of Literature: Teenage pregnancy is influenced by a range of factors, particularly socio-economic and demographic ones, as highlighted in various studies. It is often linked to social issues such as low educational attainment and poverty (WHO, 2018). Ethnicity also plays a significant role in determining adolescent pregnancy rates (Poudel et al., 2018). One of the key risk factors for adolescent pregnancy is the low level of education among women (Pant et al., 2024). Additionally, lower family income is associated with an increased risk of teenage pregnancy (Ayele et al., 2018).

Objectives: The primary objective of this study is to examine the factors contributing to the inequality in teenage pregnancy prevalence between Scheduled Tribes and non-Scheduled Tribes in India. Specific objectives include: 1. To assess trends in the prevalence of teenage pregnancies among Scheduled Tribes compared to their non-Scheduled counterparts, 2. To identify the associated factors causing inequality in the prevalence of teenage pregnancies among Scheduled Tribes and non-scheduled tribes,

Data and Methods: This study utilizes data from the last three rounds of the National Family Health Survey (NFHS), with a focus on NFHS-5 (2019–21) for in-depth analysis. NFHS provides comprehensive data on demographic, health, and socio-economic indicators. Bivariate analysis (cross-tabulations) will be used to compare teenage pregnancy prevalence across groups. Multivariate logistic regression will assess the adjusted association between caste and adolescent pregnancy. A decomposition analysis will identify the extent to which factors like education, wealth, residence, employment, and family planning access contribute to inequality between Scheduled Tribes and non-Scheduled Tribes.

Results: The study finds a persistent disparity in teenage pregnancy rates between Scheduled Tribes and non-Scheduled Tribes. Despite a decline, 8.7% of tribal teenage girls still experience pregnancy. Regression analysis confirms that being from a Scheduled Tribe significantly increases the likelihood of teenage pregnancy, even after adjusting for socio-economic variables. Decomposition results reveal that wealth status, education, employment, place of residence, and unmet need for contraception are major contributors to this inequality.

Understanding Fertility Mismatch in India: Patterns and Determinants

Paramita Majumdar

Background and Objectives: Despite rapid fertility decline in India, a sizeable gap persists between women's achieved and desired fertility. This fertility mismatch, both over and under achievement of fertility goals has important demographic and health implications. The objective of this paper is to assess the extent and determinants of fertility mismatch among Indian women aged 40 years and above, and to examine the role of socio-demographic, reproductive and contextual factors in shaping these outcomes.

Data and Methods: The study uses data from latest round of NFHS for women aged 40 and older, for whom fertility outcomes can be considered near-complete. Fertility mismatch was defined by comparing actual and desired fertility, categorized as achieved, under-achieved, or over-achieved. Bivariate analyses examined differentials in fertility mismatch by socio-demographic factors and reproductive experiences. Multinomial logistic regression was used to assess independent effects, with achieved fertility as the reference category. A sub-sample analysis further investigated the role of women's autonomy, measured through decision-making indicators, to assess its influence on fertility mismatch.

Findings: Over-achievement was more common (43%) than under-achievement, and disproportionately affected disadvantaged groups. Women without education and those from the poorest households exceeded their desired fertility compared to the higher educated and rich women. Rural women were more likely to over-achieve (47%) than urban women (35%), and regional variation was strong: over-achievement peaked in the central region (54%) but was lowest in the south (29%). Early marriage heightened risk as 52% of women married before 18 exceeded their target fertility. Child loss was the strongest predictor, with 80% of women who lost a child over-achieving versus 35% among those without child deaths while infertility strongly predicted under-achievement (79%). Sex composition patterns highlighted son preference, as women with multiple daughters or multiple sons were more likely to exceed their ideal. Media exposure had a protective effect, lowering over-achievement. Regression analysis confirmed these associations. Higher education and wealth reduced risks of mismatch. Regional effects remained pronounced, with central and north-eastern women more likely to mismatch, while southern women were protected against over-achievement. Early marriage increased, and later marriage reduced, over-achievement but modestly raised under-achievement. Child loss emerged as the single strongest determinant of excess fertility, while infertility increased under-achievement. The sub-sample analysis highlighted the role of empowerment: women with autonomy had significantly lower risks of both under-achievement (RRR 0.83) and over-achievement (RRR 0.90), even after adjusting for other factors.

Conclusion: The findings underscore that fertility mismatch is shaped not only by structural disadvantages such as poverty, low education, and early marriage, but also by women's agency. Empowerment through autonomy and media exposure enables women to align reproductive outcomes more closely with their intentions. Policies should prioritize expanding girls' education, delay marriage, and ensuring reproductive health services, while simultaneously promoting gender equality and decision-making power for women.

An analysis of the model fitting methods for the estimation of life expectancy at birth at national and state level of India using NFHS and SRS data

Pawan Kumar Yadav

Introduction: Model life tables provide a methodological framework for estimating the complete age-specific mortality schedule in contexts where direct data are limited to key summary indicators such as the under-five mortality rate (U5MR) and adult mortality rate. This study employs model life table systems to fit mortality patterns using empirical estimates of U5MR and adult mortality, with the objective of reconstructing the full age-specific mortality profile. Furthermore, abridged life tables are developed using both observed and model-derived age-specific mortality rates to assess consistency and validity.

Methods: This study utilizes data from the two most recent rounds of the National Family Health Survey (NFHS-4: 2015–16 and NFHS-5: 2019–21) and the Sample Registration System (SRS: 2015 and 2020) to estimate life expectancy at birth in India. Four-model life table approaches—Brass Logit, Modified Logit, Splicing, and Log-Quadratic—were applied using estimates of under-five mortality (U5MR) and adult mortality derived from NFHS and SRS. Model fitting and life expectancy estimation were carried out at both national and state levels to assess regional differentials and temporal trends in mortality patterns.

Results: Among the evaluated model life table systems, the Brass logit model demonstrates the highest predictive accuracy for estimating life expectancy at birth (e_0) in the Indian context. The log-quadratic model also performs well in capturing the age-specific mortality pattern across the population. However, the deviation between estimated and observed e_0 values is minimal for the Brass logit model, indicating close alignment with empirical data. In contrast, the splicing and modified logit models exhibit larger discrepancies between estimated and observed e_0 , suggesting lower predictive efficiency. Based on estimates of under-five mortality (U5MR) and adult mortality (ADMR) derived from NFHS (2015–16, 2019–21) and SRS (2015, 2020) data, the Brass logit model emerges as the most reliable approach for estimating e_0 in India.

Conclusions: In settings where age-specific mortality data are unavailable, fitting model life tables using estimates of under-five mortality (U5MR) and adult mortality offers a viable approach for estimating the overall mortality pattern. In the Indian context, model life table systems such as the Brass logit and log-quadratic models can be effectively applied when only two summary mortality indicators U5MR and adult mortality are available.

Keywords: Mortality, Model Life tables, Life expectancy, Model Fitting, Age Pattern

Multilevel Analysis of Early Marriage and Its Determinants Among Young Women in A High Prevalence State of India

Pratima Barman

Background and Objectives: Early marriage remains a major social and developmental concern in India and continues to obstruct the achievement of Sustainable Development Goal (SDG) 5.3, which seeks to eliminate child, early, and forced marriage by 2030. Despite the existence of legal frameworks and various awareness programmes, early marriage is still prevalent in several states, particularly in West Bengal. The state records one of the highest levels of early marriage in the country, making it important to investigate the underlying determinants. Therefore, the present study aims to assess the prevalence of early girl marriage and identify its key socio-economic and demographic predictors in West Bengal.

Data and Methods: The analysis is based on data from the fifth round of the National Family Health Survey (NFHS-5). A total sample of 5,405 women aged 18–24 years, who were married before reaching 18 years, was considered for this study. To identify the determinants of early marriage, a multilevel mixed-effects logistic regression model was employed. The model fit was checked using the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC). This approach allowed the study to account for individual-, household-, and community-level factors influencing the likelihood of early marriage.

Findings: The results reveal that the prevalence of early marriage in West Bengal stands at 39.5 percent, which is higher than the national average. Education was found to be a strong protective factor: women with 9–10 years and 12 or more years of schooling had significantly lower odds of marrying before 18 compared to less educated women. Similarly, those from richer wealth quintiles showed reduced chances of early marriage. On the contrary, certain household and community characteristics increased the likelihood. Girls belonging to larger households with five or more members, those from Hindu communities, women in rural areas, and those living in female-headed households faced higher odds of early marriage. Moreover, households with younger heads were more prone to marrying off daughters early, whereas women from Scheduled Tribe communities showed relatively lower risks, reflecting cultural variations.

Conclusion: The findings highlight that early marriage in West Bengal is shaped by a complex interplay of education, economic status, household composition, and community background. Strengthening girls' education, particularly in rural areas, emerges as the most effective strategy to delay marriage. In addition, culturally inclusive initiatives should be designed to target vulnerable groups, such as larger households, female-headed families, and households with younger decision-makers. Promoting economic security and generating awareness at both family and community levels are essential for reducing the burden of early marriage. Addressing these factors will not only help in protecting the rights of girls but also contribute significantly towards achieving India's commitment to SDG 5.3.

Outlier Detection in Fr chet Distribution: A Novel Test Statistic with Application to Catastrophic Health Expenditure

Pratyasha Tripathi

Background and Objectives: Outlier detection is crucial for maintaining the reliability of statistical analyses, especially while dealing with extreme value distributions like the Fr chet distribution. Almost all the traditional outlier tests available are designed under normality assumptions which often fail when applied to heavy-tailed data and consequently, leading to misclassification of catastrophic events as normal variability. This study proposes a novel test statistic for detecting outliers in a sample from Fr chet-distribution, with the objective of providing a robust method designed for rare and extreme events. The focus is on direct application to the health sector, where catastrophic out-of-pocket expenditures can disproportionately affect vulnerable households.

Data and Methods: The test statistic $Z_1 = (X_{(n)} - X_{(n-1)}) / \hat{\sigma}$ is proposed to detect an upper outlying observation. This test statistic will reject the null hypothesis for large values of Z_1 . Thus an $\hat{\alpha}$ - level critical region will be given as $Z_1 > z_{\hat{\alpha}}$, where $z_{\hat{\alpha}}$ can be obtained from $P(Z_1 \leq z_{\hat{\alpha}}) = \hat{\alpha}$. Critical values for the test were obtained through extensive Monte Carlo simulations under varying sample sizes and shape parameters of the Fr chet distribution. To justify its performance, a simulation-based case study was designed to study catastrophic health expenditures as a share of annual household income. A dataset of 20 Fr chet-distributed values was generated, and a pseudo contaminant observation representing an extreme catastrophic case (>200% of income) was introduced. The test statistic was applied to identify the outlier, and results were compared with traditional methods.

Findings: Simulation results confirm that the proposed statistic consistently outperforms traditional outlier detection techniques in terms of sensitivity and specificity across varying sample sizes and shape parameters. In the case study, the test statistic effectively identified catastrophic expenditures as outliers, whereas conventional tests either failed to detect them or misclassified genuine heavy-tail values. The results highlight the superiority of the proposed method in analysing health expenditure data, particularly when detecting catastrophic out-of-pocket spending that can push households into poverty.

Conclusion/Policy Implications: The study demonstrates that the proposed Fr chet-based test statistic is a powerful tool for outlier detection in heavy-tailed health data. Its direct application to the out-of-pocket expenditure and insurance gaps shows that catastrophic health expenditures can be accurately identified and separated from normal heavy-tailed variations. This distinction is crucial for policymakers, as it allows for more precise estimation of financial vulnerability, strengthens evaluations of government health insurance schemes such as Ayushman Bharat PMJAY, and supports better resource allocation to protect households from impoverishment due to health shocks. Beyond health, the method holds potential for application in environmental risks, structural reliability, and financial modelling, contributing valuable insights to extreme value theory and applied demography.

A Study on Influence of Maternal Height Differentials on Fertility

Prof Abhay Kumar Tiwari

Background and Objective: Fertility is explained by a complex set of biological, socio-economic, and psychological factors. Researchers had evaluated the impact of these determining factors of fertility such as place of residence, religion, economic status, educational level etc. (Gurmu and Mace 2008, Chaudhary 1984, Andorka 1978; Bongaarts 2008, Bongaarts 2002, etc.). In the past, some studies have been conducted to assess the role of anthropometric measures on the human fertility. Usually, the anthropometric measures are considered as the measures of health and nutritional status of an individual, but for the western societies, a number of literature available which points towards the association of anthropometrics with the human fertility. Shivam (2021) has mentioned that maternal height as a differential of fertility. In this paper authors have done microlevel detail analysis to verify the variation in the fertility according to the maternal height.

Data and Methods: To monitor and evaluate the effectiveness of family planning and health programs, the Government of India relies on data from the National Family Health Survey (NFHS). To date, five rounds of the NFHS have been conducted. The most recent round, NFHS-5, was conducted in 2019–21 which offered more comprehensive insights into family planning, maternal, and child health indicators. For this study we have taken data of maternal height and some measures of fertility. A descriptive analysis has been conducted to see the role of maternal height on fertility.

Findings: Authors have found that the mean number of children ever born, proportion of 3+ order females, surviving children, waiting time to the first conception and some other indicators for different groups like Caste, religion, education, residential status, etc and for major states of India, vary according to the height of the mother.

Conclusion The socio-demographic factors such as religion, caste, economic status of the household, residential status, education level of female, region, age at marriage of females; play a significant role in regulation of fertility. This study concludes that along with these factors, the physical structure of females also has an impact on human fertility

Assessing the Impact of Community-Based Interventions on Maternal Nutrition: A Study from Slum Areas of Kolkata

Purbita Sanyal

Introduction: India's rapid urbanization, marked by a projected urban population of 630 million by 2030, pose critical challenges to public health, particularly in urban slums where poverty, overcrowding, and limited access to health services compromise maternal and child well-being. Among the urban poor in India, pregnant women face a double burden of malnutrition, persistent poor nutrition on one hand and increasing junk food consumption on the other. This nutritional transition, compounded by poor dietary diversity and high junk food consumption, places them at greater risk of maternal complications, low birth weight, pre term delivery, and poor neonatal outcomes. While global and national policies emphasize improving maternal nutrition as a pathway to reducing mortality and achieving Sustainable Development Goal 3, there remains a paucity of empirical evidence from India's urban slums on how targeted and community-based interventions can influence dietary behaviour.

Objectives: The primary objectives of this study were to assess the dietary diversity among Recently Delivered Women (RDWs) living in Kolkata's urban slums, evaluate the prevalence and associated effects of junk food consumption, and examine the impact of targeted community-based nutrition counselling and behaviour change interventions on improving maternal dietary practices among pregnant women in resource-constrained urban environments.

Database and Methodology: A quasi-experimental cross-sectional study was conducted in two socio-economically similar slum areas, one being intervention area where the Child in Need Institute (CINI) implemented maternal nutrition interventions for a couple of years and another non-intervention area. A total of 896 women with children under the age of two were surveyed: 428 from the intervention area and 468 from the non-intervention area. Data collection involved structured questionnaires capturing dietary diversity, consumption of iron and calcium supplements, weight gain during pregnancy, frequency of junk food intake, and maternal nutrition knowledge. The intervention included one-to-one counselling by home visits, the use of tricolour flag to explain dietary diversity, detailed engagement with religious leaders, food vendors, father's groups, peer-support groups, and community volunteers.

Findings: The findings reveal that 68.9% of women in the intervention area achieved a dietary diversity score above six, compared to 54.7% in the non-intervention group. Adequate gestational weight gain was reported by 28.5% of women in the intervention area, significantly higher than the 5.6% in the comparison group. Moreover, 84.8% of intervention group women consumed iron folic acid for 100 days or more when they were pregnant versus 44.4% in the non-intervention group. Junk food consumption was slightly lower in the intervention area at 71.5%, compared to 76.28% in the non-intervention area.

Conclusion: The study demonstrates that a multi-pronged, community-based targeted intervention strategy can significantly improve maternal nutrition outcomes in vulnerable urban slums. Context-specific behavioural interventions, if integrated into routine maternal health services, hold promise for improving dietary practices and reducing nutrition-related risks during pregnancy. Given the scalability and cost-effectiveness of this approach, the model has potential for replication across other urban slum settings in India. Policies to be framed for sustained community engagement, nutrition counselling, and intersectoral partnerships to ensure healthier pregnancies and long-term public health benefits.

Scenario of Induced Abortion in India: Reasons and Complications

Purva Bhalla

Background: Induced abortion remains a major public health issue and a contributor to maternal morbidity and mortality in India. A significant share of abortions is unsafe due to illegal or untrained providers, posing serious risks to women's health.

Objectives: This study aimed to: (a) analyse cases of induced abortion and their sociodemographic predictors, (b) examine methods of abortion and associated risks, and (c) explore reasons behind induced abortions and related complications.

Data and Methods: Data were drawn from the fifth round of the National Family Health Survey (NFHS-5, 2019–21). Women aged 15–49 years who terminated their last pregnancy through induced abortion in the five years preceding the survey formed the sample (N=8,386). Analysis included univariate, bivariate, and multivariate approaches, with binary logistic regression to assess the likelihood of home- versus facility-based abortions, and within facilities, public versus private preferences. SPSS V.21.0 was used for analysis.

Findings: The majority of women reporting induced abortions lived in rural areas and belonged to wealthier households. Between NFHS-4 and NFHS-5, Madhya Pradesh recorded the sharpest rise in induced abortions, followed by Bihar, Goa, and Lakshadweep. Across all age groups, pregnancy terminations peaked during the second month of gestation. Doctors were the most common abortion providers, followed by self-administered abortions, nurses/ANM/LHV, and others. Medication abortion was the most widely used method.

Key reasons for abortion included unplanned pregnancy, maternal health concerns, pregnancy complications, and family pressure (husband/mother-in-law not wanting more children). Most women opted for private facilities. Regional variations were notable: women in Lakshadweep relied exclusively on public facilities, those in Sikkim preferred private, and women in Odisha frequently chose at-home abortions. Complications were most common among women aged 25–29. Regression results indicated that older women were more likely to use facilities than to self-manage at home. Facility use also increased with higher wealth and educational attainment. Interestingly, while educated women preferred facilities, husbands with higher education were associated with home abortions. Women reported reluctance to use facilities due to the absence of female healthcare providers. Lower socioeconomic groups showed a preference for private facilities over public ones.

Conclusion and Policy Implications: Healthcare facilities can play a stronger role in safe abortion provision by ensuring high-quality care, including post-abortion contraception. Expanding access requires strengthening existing facilities, maintaining steady supplies of medical abortion drugs, and increasing the availability of trained providers. Given the widespread use of self-administered abortion pills, targeted interventions should provide women with accurate information, guidance on safe usage, and access to follow-up care. Improving awareness and reducing barriers to facility-based services will be crucial to safeguarding women's reproductive health in India.

Barriers and Facilitators of Mental Health Help-Seeking Among Adolescents and Youth in India: A Systematic Review

Puspita Datta

Background and Objectives: Adolescents and youth (ages 10–24) make up over 30% of India's population and face rising mental health challenges, including depression, anxiety, self-harm, and substance use. Despite increasing awareness and national health programs, service utilization remains low, especially in rural, tribal, and economically disadvantaged areas. This systematic review aimed to examine the individual, community, and structural-level barriers and facilitators to mental health help-seeking among youth. It also assessed whether these factors led to improved access, symptom reduction, or treatment continuity. The review further explored how contextual and technological factors shape help-seeking across regions.

Data and Methods: Following PRISMA 2020 guidelines, a systematic search was conducted in PubMed, Scopus, and Google Scholar for peer-reviewed articles published between January 2018 and June 2025. From 92 initial results, 30 studies (12 qualitative, 10 quantitative, 8 mixed-methods) were selected based on relevance and methodological rigor. Study quality was appraised using the MMAT (2018), with 22 rated high quality. An extraction matrix was used to code study characteristics, population, service types (formal/informal), barriers, facilitators, and outcomes. Thematic synthesis was complemented by a narrative analysis of quantitative findings. Many studies lacked ethical detail and did not incorporate youth-centred methods.

Findings: At the individual level, key barriers included low mental health literacy, limited awareness of symptoms, and self-stigma. Adolescents often hesitated to seek care due to fear of judgment or uncertainty about where to go. Facilitators such as peer support, culturally familiar communication methods, and mobile tools showed promise in small settings but lacked scale or long-term evaluation. At the community level, stigma, restrictive gender norms, and limited parental awareness suppressed open discussion about mental health. Peer-led school initiatives and family engagement helped increase awareness. However, informal community leaders and elders were rarely integrated into referral systems, despite their influence. At the system level, gaps included limited youth-focused services, urban-centric service design, high out-of-pocket costs, and language barriers. Access remained especially limited in tribal and remote areas. Only eight studies measured outcomes like symptom improvement or treatment adherence, and few used longitudinal designs.

Conclusion/Policy Implications: Improving mental health support for Indian youth requires coordinated, multi-level action. Individual-focused interventions must enhance literacy through schools, digital tools, and culturally relevant media. Community-based strategies should engage parents, peers, and local leaders to promote stigma-free support networks. At the system level, mental health services must be decentralized, affordable, and integrated into primary care. Programs must be accessible across languages and regions, with strong evaluation mechanisms that track long-term outcomes. Future research must elevate youth voices and examine which strategies lead to lasting mental health improvements across India's diverse settings.

Traditional Healers: A Less Familiar Image of the Nomadic Snake-Charmers in India

Rahul

The image of snake-charmers and his snakes is familiar one in India. However, the less familiar is the role of snake-charmer as a traditional healer. Traditional medicine has a historical legacy in Indian society. WHO finds that 80% of people worldwide are optimistic towards herbal and alternative medicines.

The present study, based on both quantitative and qualitative data, highlights the role of snake-charmers commonly known as Sapera or Sapela as informal health care provider from the centuries. The quantitative data have been collected from the 350 households, selected through a simple random sampling, of the Sapera community residing in the Sirsa district in the state of Haryana. Additionally, an in-depth interview of 10 Sapera members were conducted, with the help of semi-structured interview questionnaire, to collect qualitative data on traditional healing. Different components related such traditional medicine such as sources of herbs, methods of preparing medicine, and delivering process of medicine to the customers have been explored in the present study.

The aspect of traditional medicine has been an integral part of the Sapera community and serves as an important livelihood strategy to support their life. The study reveals that due to restrictions put on using wild animals for commercial purposes by the Indian Government, the Sapera community resorted to providing traditional medicine as their primary livelihood. Traditional medicines provided by the Sapera community are still in demand, especially in rural areas. Their nomadic life helps them explore and collect herbs and other materials required for medicines from different places in the country. They also reach diverse places where the demand for traditional medicine is greater. They move to places ranging from the Himalayan ranges, the plains of the Ganges, and desert areas of western India. They access the required herbs for preparing medicine from both natural sources as well as market-based shops, locally known as Pansari shop. In light of the felt needs and the growing demand for alternative medicines worldwide, there is a need to include the aspect of traditional occupation of medicines and snake-charming in the policy framework by policy-makers and also, to study these aspects intensively, protecting their intellectual property rights simultaneously.

Association of Self-reported Depressed Mood and Tobacco Use among Older Adults in India: Insights from the Longitudinal Aging Study India Wave-1

Ravina Ranjan

Background: Limited evidence exists on the relationship between tobacco use and self-reported depressed mood, such as feeling sad, blue, or depressed days (SBDD), among older adults in India.

Aim: This study aims to explore the association between tobacco use and self-reported depressed mood (SBDD) among older adults in India.

Methods: The study utilizes data from the Longitudinal Aging Study India (LASI) Wave 1, analyzing 10,487 respondents identified with self-reported mood disorders with SBDD. Descriptive statistics, bivariate, and multivariate analyses were conducted.

Results: Among individuals aged 45 years and above, 19.7% experienced SBDD for at least 2 weeks in the past 12 months. Tobacco users, particularly those consuming smokeless tobacco, reported significantly higher symptoms of SBDD compared to non-users. The findings highlight a statistically significant association between tobacco use and prolonged feelings of sadness or depression.

Conclusion: Analysis of LASI Wave 1 underscores the role of tobacco use in the prevalence and burden of negative emotions such as SBDD among older adults in India. Targeted interventions addressing tobacco use could potentially alleviate mental health challenges in this demographic.

Keywords: Longitudinal Aging Study India (LASI), tobacco, older adults, depression, mental health.

Governance to Strengthen Public Health: Mapping Urban Poverty and Its Impact on Child Health Indicators in India

Rayhan Sk

Introduction: India's rapid economic growth has accelerated urbanization, leading to increased population density, income inequality, unaffordable housing, and residential segregation in cities. These challenges force millions of migrants and locals to live in slum areas or substandard locations, characterized by inadequate housing, basic services, pollution, illnesses, nutritional insecurity, and urban poverty. These conditions pose significant health risks, particularly to children. This study aims to map urban poverty and examine its association with child health indicators in India, emphasizing the need for governance to strengthen public health by addressing socio-economic determinants.

Methods: The study utilized data from the Indian Demographic and Health Survey (DHS) 2019-21, Census 2011, and the UN-HABITAT definition for slums to create an urban poverty measure with three categories: urban poor, urban non-poor, and rural areas. Four key child health indicators were analyzed: continuum care of maternal and child health, low birth weight, stunting, and anemia. The analysis included 61,568 children born to women aged 15-49 in the five years preceding the survey. Descriptive statistics, trend analysis, regression, and decomposition analyses were performed to examine the data. The absolute number of children under five living in urban poverty was estimated using Census data to show burden and changes over time. Data analysis was conducted using ArcGIS 10 and STATA 13.

Results: Estimations based on the latest three rounds of DHS data reveal that the proportion of urban poverty has declined from 9% in 2006 to 5% in 2021. However, the estimated number of children aged <5 years living in poverty in urban India (1.5 million) is observed to be alarming. The top five states burdened with urban poverty are Maharashtra, Uttar Pradesh, Karnataka, Delhi, and West Bengal. A mild to high range of disparity in all child health indicators between urban poor and urban non-poor children is witnessed, with urban poor children being the most vulnerable group compared to their counterparts. **Results** of adjusted logistic regression show urban poor children are less likely to receive continuum care ($\hat{\beta}^2 = -0.36, p < 0.001$), more likely to be born with low birth weight ($\hat{\beta}^2 = 0.07, p < 0.001$), more likely to be stunted ($\hat{\beta}^2 = 0.32, p < 0.001$), and more likely to be anemic ($\hat{\beta}^2 = 0.16, p < 0.001$) compared to urban non-poor children, after controlling for other cofactors. Further, the Fairlie decomposition reveals that mothers' education contributes mostly to the differences in all child health indicators between urban poor and non-urban poor.

Conclusion: Despite a decline in urban poverty, 1.5 million children under five still live in impoverished urban areas in India, facing significant health disparities. Children living in impoverished urban areas are most prevalent in states such as Maharashtra, Uttar Pradesh, Karnataka, Delhi, and West Bengal. To reduce the magnitude and intensity of these problems, state-specific urban interventions are essential. Recommendations include enhancing educational support for mothers and improving healthcare access for the urban poor. Addressing urban poverty through targeted policies and programs is crucial for improving child health outcomes and overall societal welfare.

Seasonal Dynamics of Asthma Mortality in India: A Time Series Perspective

Rishabh Kumar

Background and Objectives: Asthma and chronic obstructive pulmonary disease (COPD) are two of the most common airway diseases and have become major contributors to mortality, morbidity, and disability worldwide. According to the India Global Burden of Disease (GBD) Collaborators, COPD, and asthma together account for the second largest share of total mortality in India, contributing 10.9% of all deaths. Alarming, India alone is responsible for 12.9% of global asthma cases and as much as 42.4% of global asthma-related deaths. There is a lack of evidence of seasonal asthma mortality among adults in India. Our study was conducted to determine monthly and seasonal patterns of asthma and chronic obstructive pulmonary disease in the study area during 1998- 2014 using Million Death Study (MDS) dataset.

Data and Methods: The Million Death Study monitored nearly 14 million people in 2.4 million nationally representative households in India between 1998-2014. Using the Generalized Additive Model (GAM) with a Poisson response and a log link, the study attempts to identify any seasonal and long-term trends affecting asthma deaths by the inclusion of harmonic regression terms and a non-parametric smooth function of time. The model accounts for both annual and semi-annual seasonal components using sine and cosine functions. Also, a smoothing spline term, $\delta_{\lambda}(\delta_{\lambda}')$, captures nonlinear trends over time other than the seasonal variation.

Findings: A total of 72,897 cases of asthma were recorded in MDS dataset. Overall asthma was highest in March with 29,887 (41%) cases, November with 25,513 (35%) cases and was lowest in July with 1,312 (1.8%) cases. Seasonal pattern showed that asthma relatively more prevailed during winter and early spring (November through March). The evidence of a seasonal variation in asthma deaths was strong, with all the harmonic terms ($\sin 1$, $\cos 1$, $\sin 2$, $\cos 2$) proving significant ($p < 0.05$). The presence of both annual and semi-annual cycles implies a complex interplay among seasonal factors with probable influences from climate, environment, or health sphere. The smooth term $\delta_{\lambda}(\delta_{\lambda}')$ was highly significant, with effective degree of freedom of about 19 and with a chi-square statistic greater than 3000 ($p < 0.0001$), evidencing the complex non-linear variation in mortality rate over time. The model explains good variation, achieving approximately 89.7% in deviance and an adjusted R-squared value of 0.876.

Conclusion/ Policy Implications: It can thus be concluded that there exists strong and consistent seasonality in asthma mortality among adults. Such identified patterns become very important to design and plan appropriate public health interventions and, therefore, proper resource allocation when incidents increase in season periods of risk. Asthma and COPD take a heavy toll on people's lives in India, causing suffering and loss for millions of families. With India carrying one of the world's highest burdens, urgent attention is needed to improve care, prevention, and awareness to save lives and ease hardship.

A Comparative Study on Machine Learning Approaches for Diabetes Prediction in India

S R Sakthi Malaviga

Background: Diabetes is a serious public health concern in India, with rates rapidly rising due to urbanisation, sedentary lifestyles, and dietary changes. India currently has more than 100 million diabetic people and about 136 million prediabetics, making it the world's second-highest burden. Alarming, more than half of cases go undetected, and treatment access is restricted, particularly in rural areas. Southern states and urban areas have greater prevalence rates, nearly doubling those of rural communities. According to projections, the number of cases might reach 156 million by 2050, underscoring the critical need for increased awareness, prevention, and healthcare access.

Objective: The goal of this study is to use NFHS-5 data and machine learning techniques to forecast diabetes prevalence in India. By identifying major risk variables and trends, the project hopes to inform evidence-based decision-making and focused public health initiatives for effective diabetes prevention and control.

Data and Methodology: This study uses data from the National Family Health Survey -5 (NFHS-5) to estimate diabetes prevalence in India, with an emphasis on sociodemographic and lifestyle factors. Predictive variables include age, body mass index (BMI), wealth index, education, place of residence, and lifestyle habits. The methodology employs two machine learning models: logistic regression and XGBoost. Logistic Regression is used because it is simple, easy to read, and can predict binary outcomes. In contrast, XGBoost, a gradient boosting method, is used because of its superior performance in capturing complicated, non-linear relationships between variables and its ability to handle big datasets. The NFHS-5 dataset was pre-processed to handle missing values and encoding for categorical variables. The data was split into 80% training and 20% testing sets, with models evaluated using accuracy and AUC along with ROC curves.

Findings: The findings of this study show that both Logistic Regression and XGBoost models achieved high accuracy, approximately 98.3%, demonstrating their effectiveness in classifying individuals as diabetic or non-diabetic. However, when comparing model performance using the Area Under the Curve (AUC), XGBoost outperformed Logistic Regression, with values of 0.59 and 0.50 respectively. This indicates that, although both models perform well at the default classification threshold, XGBoost has greater ability to distinguish between diabetic and non-diabetic individuals across varying probability cutoffs. These results highlight the complementary strengths of both approaches: interpretability in Logistic Regression and predictive reliability in XGBoost.

Conclusion/Policy Implications: Machine learning enables efficient analysis of large population datasets, uncovering complex patterns and risk factors. It enhances prediction accuracy, supporting early detection and targeted public health interventions. Policy implementation should focus on preventive screening, lifestyle modification programs, and improved healthcare access to reduce undiagnosed cases and guide targeted interventions.

Keywords: Diabetes mellitus, Machine Learning (ML), prediction, Model evaluation and efficient analysis .

Gendered Vulnerabilities to Climate-Sensitive NCDs: A Global Health Perspective

Saleha Khatun

Background: Now a days, climate change and human health are considered as global crisis by different stake holders of society responsible for holistic development across the world. Non-communicable diseases (NCDs) are an immense threat in the wake of climate change while women and men experience climate change differently.

Objectives: The study aims to explore potential global climate change impacts on NCDs and that too through the gender lens.

Material and Methods: The study is based on secondary data. The data on NCDs has been collected from World Bank Data, WHO and FAO. Climatic data is also derived from World Bank Data and FAO while data on NCDs derived from WHO. A One-Way Repeated Measures ANOVA, multiple regression and Paired Sample T-Test were executed for analyzing the data.

Results: One-way repeated measures ANOVA test results revealed that there was a significant effect on the surface temperature change as well as multi-hazards occurrences for time. This means that with the span of time climatic variables and extreme events are growing day by day. Multiple regression results explored that climate change variables are the significant determining factor for different NCDs. Paired-samples t-test result reveals that female s susceptibility to overall NCDs is higher compared to male population in the world.

Conclusions: Gender equality is a component of the sustainable development goals (SDGs) as well as precondition for achieving sustainability. So, it is the crucial need to acknowledge the gender dimension of climate change impacts on human health, and for that to be reflected in the policy frameworks.

Keywords: Climate change, Health, Non-Communicable Diseases, Gender.

Assessing Public Welfare Awareness Among Baiga PVTGs: An Index-Based Field Study

Sandesh Bandhu

India has a huge tribal population, and a lot of government programs are running for tribal development, but in reality, access and awareness are in a very problematic condition in India's tribal heartlands, especially among Particularly Vulnerable Tribal Groups (PVTGs). This study assesses the levels of awareness about government initiatives within the Baiga tribal community of Singrauli district, Madhya Pradesh, where overall exposure to such provisions remains very low. The study based on field survey, Focus Group Discussions (FGDs) and Key informant interviews (KIIs). The research also applies a composite framework to quantify patterns of public awareness. Findings suggest that informational disconnect is not merely logistical but also cultural, requiring participatory and community-rooted approaches to communication. This research points out the urgent need for adaptive, inclusive frameworks that can bridge knowledge gaps and enable meaningful inclusion of tribal voices in public development processes.

Keywords: Baiga, PVTG, Tribal Awareness, Public Access, Indigenous Inclusion, Grassroots Engagement,

Demographic Dividend in Rajasthan, India: Delayed or in Time

Asharaf Abdul Salam

Demographic dividend, explained in terms of adult boom/bulge, results from various demographic factors of significance to social, economic, environmental, and health sectors. Thus, a holistic change in these factors leading to lifestyle dimensions, including quality of life, endorses this phenomenon that makes people wealthy, healthy, and prosperous. Developed countries, with their resources, managed sectors to ensure fast progress to reflect in the demographics, whereas the resource-thrifty developing nations struggled dramatically to move upwards in the hierarchy. It is this struggle that caused the delay in creating such an adult boom to reap the opportunity at an earlier date. Many of the Indian states and the nation as a whole struggled to meet both ends. However, the states varied in demographic revolution. One of the states reporting such a crisis is Rajasthan, one of the North Indian States. This research analyses census data of the state from 1971 onwards through demographic techniques to examine the transition period and thereby the demographic dividend. Rajasthan, in a nutshell, progresses toward demographic stabilization and thereby demographic dividend through a journey with socio-political commitment and accountability. Such a promising trend paves the way for other states as well as other countries.

Bridging the gaps in high-risk pregnancies management by public health cadre through classroom training and handholding in High and Low performing states of India.

Sandhya NVS Dittakavi

Introduction: High-risk pregnancies (HRPs) are a major cause of preventable maternal deaths in India, contributing to over two-thirds of maternal mortality. ARMMAN, an NGO, implements maternal and child health interventions such as Kilkari and the Integrated High-Risk Pregnancy Tracking and Management (IHRPTM) programme. IHRPTM, operational in five states (Andhra Pradesh, Maharashtra, Assam, Telangana, and Uttar Pradesh), capacitated Auxiliary Nurse Midwives (ANMs), Medical Officers (MOs), and Staff Nurses (SNs) through cadre-specific, colour-coded protocols. Trainings combined classroom modules, protocol-based teaching, and pre/post evaluations. Evidence from baseline surveys highlighted cadre-specific strengths and weaknesses. Telangana ANMs were stronger in anaemia identification but struggled with hypertension; Uttar Pradesh showed missed identification, irrational management, weak referrals, and supply gaps. This study measures knowledge/skill gains of ANMs, MOs, and SNs on four HRPs: Quality Antenatal Care (QANC), anaemia, hypertension, and antepartum haemorrhage (APH) using pre/post-test evaluation.

Methodology: The study covered Telangana and Uttar Pradesh, two contrasting health contexts. Telangana (MMR 45, 97% institutional deliveries, ~70% 4+ ANC coverage) has statewide IHRPTM implementation for 21 HRP conditions (2021–26). Uttar Pradesh (MMR 151, 83% institutional deliveries, 42% 4+ ANC coverage) has shorter-duration interventions for six HRP conditions (2024–26). Trainings followed a cascade model in Telangana (Master Trainers → ToTs → HWs), reaching ~9,000 ANMs, ~625 MOs, and ~425 SNs. In UP, ARMMAN's Training Officers directly trained HWs in Sambhal and Shravasti. Each HRP module had 10 cadre-specific multiple-choice questions blending theory and case scenarios. Pre- and post-tests were administered digitally, and analysis included percent correct, mean scores, percent point (pp) change, effect sizes, and paired t-tests. Question-level analysis flagged items with <60% post-training accuracy. Visualisations (density plots, percentile curves) mapped score shifts.

Findings: Results showed significant improvements across cadres, conditions, and states, though with varied magnitude. Telangana participants started lower but achieved higher post-test scores.

ANMs: Telangana recorded the largest gains in QANC (+10.4 pp; 73.5 - 83.9%), APH (+14.0 pp; 66.2 - 80.2%), anaemia (+8.8 pp; 69.0 - 77.8%) and HTN (+9.6 pp; 71.2 - 80.8%), while Uttar Pradesh ANMs showed smaller improvements in QANC (+8.1 pp; 75.4 - 83.5%), APH (+6.9 pp; 79.0 - 85.9%), anaemia (+5.3 pp; 66.5 - 71.8%) and HTN (+3.7 pp; 72.1 - 75.8%).

MOs: The largest learning gains were observed in APH in both states (TG +15.4 pp; 58.7 - 74.1%, UP +16.6 pp; 58.4 - 75.0%). Anaemia also showed strong improvements (TG +12.4 pp; 72.3 - 84.7%, UP +13.8 pp; 61.2 - 75.0%), while hypertension gains were modest (TG +5.6 pp; 69.1 - 74.7%, UP +4.0 pp; 63.0 - 67.0%). QANC improved moderately in Telangana (+6.7 pp; 80.2 - 86.9%) but only marginally in Uttar Pradesh (+2.2 pp; 77.4 - 79.6%).

SNs: Telangana demonstrated strong improvements in APH (+15.3 pp; 53.9 - 69.2%) and HTN (+13.9 pp; 55.8 - 69.7%), with moderate gains in anaemia (+9.1 pp; 57.5 - 66.6%) and QANC (+7.2 pp; 73.2 - 80.4%); in contrast, UP-SNs improved less in QANC (+5.6 pp; 70.9 - 76.5%), APH (+8.5 pp; 40.7 - 49.2%) and anaemia (+6.9 pp; 59.7 - 66.6%), while their HTN scores declined ($\sim$ 1.9 pp; 74.8 - 72.9%).

Across cadres, APH training was most effective; anaemia and hypertension remained weakest. Density plots showed Telangana's participants clustering at higher post-scores, while UP's distributions remained flatter.

Conclusion & Policy Implications: Structured, cadre-specific, protocol-based training has demonstrated significant gains in knowledge and skills; however, persistent gaps remain in the management of anaemia and hypertension, underscoring the need for ongoing support and handholding. Reinforcement through simulation-based learning, mentoring, and digital self-learning platforms including LMS modules and LLM-powered chatbots has already been initiated and is receiving positive uptake. For sustainable impact, scaling efforts must prioritise the institutionalisation of HRP protocols within annual training calendars, the use of item-level analytics to guide refresher trainings, and alignment with supply chain readiness for essential equipment and drugs (e.g., BP devices, Hb testing kits, antihypertensives). Strong partnerships between state health departments, UNICEF, and professional councils, complemented by digital platforms for learning and real-time monitoring, are critical to achieving scale without loss of quality. Importantly, this training and evaluation model is adaptable beyond HRPs to other RMNCH+A domains, ensuring that skill enhancement is consistently linked with monitoring, thereby translating into lasting improvements in maternal and child health outcomes.

Association between Self-Rated Health and Anemia in Later Life: Insights from the Longitudinal Ageing Study in India, 2017–18

Saroj Kumar

Introduction: Population ageing is an important demographic shift in India, with major implications for healthcare systems and social policy. According to the 2011 Census, 8.6% of India's population was aged 60 years and above, and this share is projected to rise to nearly 19% by 2050 (United Nations, 2019). Monitoring the health of older adults has therefore become a priority, as their health outcomes determine the sustainability of public health interventions. Self-rated health (SRH), a subjective evaluation of overall well-being, and anemia, a clinically measurable condition marked by low hemoglobin levels, are two vital indicators in this context. Anemia among older adults arises from nutritional deficiencies, chronic diseases, and physiological ageing. Its consequences—fatigue, reduced physical capacity, cognitive decline, and mortality risk—make it a pressing concern. In contrast, SRH reflects individuals' perceptions of their physical and mental health, and has been shown to predict morbidity and mortality. Together, anemia and SRH represent complementary dimensions of health, combining biological assessment with lived experience. This study, using nationally representative LASI Wave 1 data, examines the association between anemia and SRH among older Indians, offering valuable insights for geriatric health policy.

Data and Methods: The study draws on the Longitudinal Ageing Study in India (LASI, Wave 1, 2017–18), which surveyed adults aged 45 years and above. Only respondents with completed biomarker assessments were retained, while those missing hemoglobin values were excluded. The analytical sample consisted of 64,399 older adults (27,197 men and 37,202 women).

Measures: Self-Rated Health (SRH): Categorized as good versus fair/poor. Anemia: Classified by hemoglobin levels. For men—mild (11.0–12.9 g/dL), moderate (8.0–10.9 g/dL), severe (<8.0 g/dL), any anemia (<13.0 g/dL). For women—mild (11.0–11.9 g/dL), moderate (8.0–10.9 g/dL), severe (<8.0 g/dL), any anemia (<12.0 g/dL).

Analytical Approach: Descriptive and bivariate statistics captured prevalence patterns of anemia and SRH. Logistic regression models assessed the association between anemia severity and SRH, accounting for sampling weights. Results are presented as odds ratios (ORs) with 95% confidence intervals.

Results: Anemia prevalence was 27.9% among men and 36.8% among women. Nearly one-fourth of anemic respondents rated their health as fair or poor, with proportions increasing alongside anemia severity. Among those with severe anemia, 52% of men and 47% of women reported poor health. Age magnified the relationship. In the 79+ group, 63% of women and 62.4% of men with anemia perceived their health negatively. Educational disparities were evident—47% of women and 45.7% of men with no schooling and anemia reported poor health compared to lower levels among the educated. Living arrangements also mattered; over half of anemic older adults living alone reported poor SRH. Regression results confirmed these associations. Among women, odds of fair/poor health rose with anemia severity—OR 1.12 (mild), 1.22 (moderate), and 1.24 (severe). For men, the pattern was similar: OR 1.12 (mild), 1.24

(moderate), and 1.26 (severe). These findings highlight the graded effect of anemia on perceived health, particularly among the oldest-old, women, the less educated, and those living alone.

Conclusion

This study establishes a strong link between anemia and self-rated health among older Indians. Beyond clinical effects, anemia significantly shapes subjective well-being, with vulnerable groups most affected. Addressing anemia through improved nutrition, early diagnosis, and accessible healthcare can enhance both objective and perceived health. Integrating anemia management into comprehensive geriatric care will be vital to ensure healthy ageing and better quality of life in India's growing elderly population.

Financial Freedom among Indian Married Women- A State-Level Analysis

Sefali Verma

Women make up nearly half of India's population but continue to face limited access to economic resources and decision-making power. Marriage, a nearly universal institution in India, often restricts women's autonomy by reinforcing traditional gender norms. Financial freedom—defined as access to and control over earnings, assets, and resources—is central to empowerment but remains unevenly studied at the state level. This study develops a Financial Freedom Index (FFI) for married women in India and examines regional variations and determinants of financial autonomy. The analysis uses the National Family Health Survey (NFHS-5, 2019–21), covering 724,115 women aged 15–49. Nine indicators across four dimensions were selected: (1) labour market outcomes (women's employment, income parity with husband), (2) financial agency (bank account ownership, mobile financial transaction, loan access), (3) control over resources (say in earnings, say in major household expenditure), and (4) asset ownership (land and house ownership). Each indicator was equally weighted, and a composite FFI score was constructed using additive aggregation method. Reliability was assessed with Cronbach's alpha, and state-level distributions were calculated using survey weights in Stata 16. **Results** show large state-level disparities in women's financial freedom. Only 26.6% of married women nationally reported being in paid work, ranging from 11.3% in Lakshadweep to 48.3% in Meghalaya. Income parity with husbands is achieved by 45.2% of women, with the lowest in Himachal Pradesh (26.9%) and the highest in Dadra & Nagar Haveli (59.3%). While over 90% of women in Tamil Nadu and Puducherry own a bank account, only 13.8% nationally reported using mobile phones for financial transactions, with Tripura at just 3.5%. Loan-taking is limited, averaging 11.3%, though Andhra Pradesh records 35.2%. Control over resources appears stronger: nearly 79% of women report influence over their husband's earnings, peaking at 95% in Nagaland compared to 66.7% in Kerala. Similar patterns are seen in household expenditure decisions, with Nagaland at 97.7% and Ladakh lowest at 64.5%. Asset ownership varies widely, with home ownership highest in Meghalaya (77.5%) and lowest in Andaman & Nicobar Islands (15.6%). Land ownership is highest in Arunachal Pradesh (67.3%) and negligible in Lakshadweep. The composite FFI ranges from a high in Meghalaya to a low in Lakshadweep and West Bengal. Cronbach's alpha of 0.68 indicates acceptable reliability. **Findings** demonstrate that financial freedom among married Indian women remains limited, with major disparities across states and dimensions. Women enjoy relatively greater household decision-making power but remain disadvantaged in employment, income equality, digital transactions, and asset ownership. Policy efforts must focus on (a) expanding women's participation in paid work, (b) promoting access to digital finance, (c) improving credit access for women entrepreneurs, and (d) strengthening women's property rights. Targeted interventions in lagging states are essential, while lessons can be drawn from high-performing regions like Meghalaya. Enhancing women's financial freedom is not only key to gender equality but also to India's broader economic growth.

Empowerment of Women: Analysing Trends and Determinants in India, Evidence from NFHS

Shivangi Gupta

Women's empowerment can be defined as the expansion of women's ability to make strategic life choices in a context where this ability was previously denied to them. Subsequently, women's empowerment not only makes women's position more vital in society, but it also addresses poverty alleviation, reduction in intimate partner violence, child nutrition, child stunting, and child growth, fertility preferences, and contraceptive use. There are studies that capture the level of women's empowerment and its impact on child nutrition, fertility preferences, contraceptive use, etc., in India. However, there is limited empirical evidence on trends in indicators of women empowerment using nationally representative data in India. This study examines the trend of women's decision-making, mobility, and economic autonomy for three time periods, 2005-06, 2015-16, and 2019-21, and its determinants in India.

This study mainly utilized the National Family Health Survey data for the last three rounds, NFHS-3, NFHS-4, and NFHS-5, for the time period of 2005-06, 2015-16, and 2019-21, respectively. This study generated three significant fields in women's autonomy based on specific questions or variables provided in NFHS data. These three autonomy variables are: Decision-making autonomy, Mobility autonomy, and Economic autonomy of currently married women. The major statistical methods that have been used in this study are simple additive method, data-appending, bivariate cross-tabulation of the predictor and various outcome variables, and multinomial logistic regression, using STATA 17 software.

There is an increasing trend among all three variables, i.e., decision-making autonomy, mobility autonomy, and economic autonomy. The full decision-making autonomy increased from 39% to 71%, full mobility autonomy increased from 35% to 43.5%, while full economic autonomy increased from 11.1% to 46.6% (from 2005-06 to 2019-21) among currently married women in Indian society. The Bivariate analysis also reflects the increasing trend across various socio-economic and socio-demographic predictor variables. Though there is an increasing trend in all three autonomies, it is still at a lower rate in marginalized socio-economic groups. Further, after appending time as a variable in all three datasets, there is an increasing trend in all three autonomies across the three time periods of NFHS (2005-06, 2015-16, and 2019-21). The determinants of the three autonomies are explored with the help of a multinomial regression model. The relative risk values of regression analysis revealed there is a significantly higher likelihood for the age, education, occupation, wealth quintile, and caste variables to fall into the full autonomy than the no autonomy category, compared to each variable's reference category.

To conclude, it can be said that there has been a significant improvement in women's decision-making, mobility, and economic autonomy during 2005/06- 2019/21. The identified facilitators are age, education, occupation, religion, and place of residence of the women. The strength of the study is that it presents the estimates from the nationally representative data source. The major limitation is that it only includes currently married women between the ages of 15 and 49 years old.

Age and sex specific variations in body composition of paudi bhuyan tribe.

Subham Prasad Sahoo

Background and Objective: Body composition is influenced by age, sex, and ethnicity and is vital for assessing health and nutritional status of an individual or any community. Tribal groups like the Paudi Bhuyan of Odisha remain underrepresented in research, necessitating focused studies to understand their physiological variations and health risks. As Paudi Bhuyan community belongs to a particularly vulnerable tribal group (PVTG), nutritional assessment becomes important because of their remote location and poor socio-economics status. The primary objective of this study was to access and analyse the body composition of the Paudi Bhuyan community and its variation with respect to the sex and age of the individuals.

Materials and Methods: This cross-sectional study was performed in a tribal village, Karangadihi of the Banspal Block, Keonjhar district, Odisha, India. Data were recorded from 222 individuals through simple random sampling, 93 of whom were males and 129 were females, belonging to 18-60 age group. Body composition was measured in terms of visceral fat, resting metabolism, body age and sectional measurements of subcutaneous fat and skeletal muscle percentages for the whole body, trunk, arms and legs with the help of Omron Karada Scan HBF-375. Statistical analysis i.e. descriptive statistics, students t test and one way analysis of variance (ANOVA) was performed in IBM SPSS.

Findings: The study on the Paudi Bhuyan community revealed distinct age- and sex-specific variations in body composition. Males were significantly taller and heavier than females, with higher visceral fat and skeletal muscle mass across all body segments, while females exhibited greater overall and subcutaneous fat. Body fat percentage among males showed an increasing trend with age, peaking in the 40-49 years group, whereas in females it was highest in the 50-60 years group. Subcutaneous fat, particularly in the trunk and limbs, was markedly higher among females and tended to rise with age. Conversely, skeletal muscle mass showed a consistent decline in both sexes as age increased, with males retaining significantly higher muscle proportions than females. Body Mass Index (BMI) values generally fell within the normal category, though older females were more prone to undernutrition. These findings highlight sexual dimorphism in fat and muscle distribution, along with clear age-related shifts in body composition. Such variations have implications for the nutritional health and disease risks among the Paudi Bhuyan.

Conclusion: The study among the Paudi Bhuyan community reveals significant sex- and age-related variations in body composition, with females showing higher fat and males greater muscle mass. Ageing increases fat and decreases muscle. These findings emphasize the need for targeted nutritional and health interventions in this vulnerable tribal group.

A Bibliometric analysis and visualization on Ageing in Place (AIP) in the gerontological research

Subham Sharma

Background and Objectives: The rapid demographic transition towards an ageing society has made Ageing-in-Place (AIP) a central paradigm in gerontological research and policy discourse worldwide. The notion of Ageing-in-place indicates supporting older adults to remain in their own homes and communities for as long as possible which has gained significant traction for its contribution to well-being, quality of life, and cost-effective nature. It is emphasized as a preferred model of long-term care (LTC), as it focuses home and community-based support rather than institutionalization. In India, the National Policy on Senior Citizens and other programmes on senior citizens also highlighted the importance of AIP by promoting community-based care and enabling older adults to remain in their homes and familiar surroundings for as long as possible for their well-being. This bibliometric study aimed to: (i) trace the trends and development of research on AIP over the years, (ii) examine the methodological approaches and theoretical frameworks applied in the field, and (iii) identify the key dimensions of AIP.

Data and methods: This study analysed a dataset of 1,113 peer reviewed publications retrieved from the Scopus database, English language and publication year range 2000-2025 which were screened following the protocols of PRISMA guidelines. This study applied trend analysis as well as performance analysis using R Studio Biblioshiny package, and utilized VOSviewer for science mapping which included co-authorship analysis, co-occurrence keywords analysis, citations analysis, co-citation analysis and bibliographic coupling to visualize the intellectual structure and evolving research themes in the form of bibliometric maps.

Results: The findings reveal a steady growth of AIP research between 2000 and 2010, with an accelerated increase after 2010. The intellectual foundation of the field is shaped by seminal works of Wiles et al. (2012) and Sixsmith and Sixsmith (2008), which conceptualize AIP from the perspectives of older adults and found to be core aspect of environmental gerontology. Ageing and Society, The Gerontologist, and Journal of Housing for the Elderly emerged as the leading publication outlets. The developed nations were pioneers to adopt this policy for the well-being of the elderly. Later, contributions from Asian countries including China, Singapore, Malaysia, and India have grown in recent years, highlighting a gradual diversification of research hubs. Science mapping highlights the multidimensionality of AIP, spanning housing and environmental adaptations, health and care, social support and networks, and emerging technological solutions. Methodologically, qualitative approaches dominated early research, while recent years have witnessed greater use of quantitative surveys, mixed-methods designs, and technological assessments.

Conclusion: This bibliometric study contributes to the understanding of AIP as an evolving interdisciplinary field, identifies global research trajectories, and underscores the need for greater engagement from low and middle-income countries. For India, prioritizing AIP research and practice can help address various challenges of population ageing, foster inclusive and age-friendly environments, and support healthy and successful ageing for its rapidly expanding elderly population.

The Toll of Deaths during the COVID-19 Pandemic Period for India and its States: Unravelling the losses in life expectancy using SRS mortality data

Suryakant Yadav

Global life expectancy at birth (e_0) dropped 1.8 years between 2019 and 2021 due to the COVID-19 pandemic, and India is not untouched by this. This paper aims to analyse how age groups and sexes contributed to losses in e_0 in India and 22 states during the pandemic year compared to the non-pandemic year. The Sample Registration System (SRS) report 2019-21 was used to calculate the abridged life table from the Chiang method, and thereafter, the decomposition method was applied to analyse the age-sex-specific contribution to the change in e_0 . India's e_0 declined from 70.5 years in 2019 to 68.8 years in 2021, where men lost 2.32 years and women 0.77 years in e_0 during the pandemic period 2020-2021. Whereas, the toll of deaths in the pandemic period of 2021 was calculated at 22.3 lakhs compared to 2019. Out of which, 14.9 lakhs were in men and 7.4 lakhs in women. Furthermore, adults were more affected by the COVID-19 pandemic compared to older people. However, the loss of India's e_0 will be a quick rebound, as evident in several high-income countries, despite being hit hard by the pandemic.

Is the remittance driver of intra and inter household quarrels?

Sutapa Sarkar

Migration is akin to a shimmering summer rain for poverty-stricken households bringing solace and renewal, yet overshadowed by the weight of looming quarrels. This study examines disputes over the use of remittances from both international and inter-state migration, both within households and across other households. The analysis is based on primary survey data collected in 2024 from 432 left-behind women in Murshidabad district, West Bengal. The study employed a multi-stage sampling technique, selecting the most suitable method from six applied techniques. When multiple left-behind women (LBW) were present in a household, the Kish table was used to ensure an unbiased selection. The survey incorporated a triangulated approach, combining both qualitative and quantitative data collection methods. The analysis utilized descriptive statistics, cross-tabulation with the chi-square test, salience analysis with the t-test, and binary logistic regression. The study finds that remittances from emigrants are typically sent monthly, whereas those from out-migrants arrive either weekly or monthly. On average, emigrants send approximately USD 305 per month, while out-migrants send only USD 160, though with lower variability. Salience analysis reveals that left-behind women (LBW) of emigrants primarily allocate remittances to their children's education (salience: 4.32), followed by food (3.93) and housing. In contrast, LBW of out-migrants prioritize food (salience: 10.65), followed by healthcare (9.07) and education (3.56). Among both groups of left-behind women (LBW), nearly half reported that remittances lead to intra- and inter-household disputes. Intra-household conflicts are influenced by factors such as household size, the husband's age, and alcohol consumption. Qualitative findings indicate that disputes within households often stem from in-laws seeking a share of the remittance, while jealousy among neighbours fuels conflicts between households. Concerted efforts are needed to raise awareness among LBW about the importance of harmonious relationships for a healthier and more stable life.

Impact of maternal and child interventions on perinatal outcomes: A three-year analysis

Tila Khan

Background and Objectives: Despite efforts to improve maternal and newborn health services in India, substantial inequities persist particularly in hard-to-reach areas like deltaic and mountainous regions with limited access to health facility. Critical challenges are high maternal malnutrition, anaemia, adolescent pregnancies, and neonatal deaths. To address these gaps, this study analyses an ongoing three-year community-led maternal and child health intervention by the Child in Need Institute in Gosaba a remote riverine block in South 24 Parganas district and three blocks (Kalimpong-1, Kalimpong-2 and Rangli-Rangliot)- in the hilly Darjeeling district of West Bengal, focusing on system strengthening, behaviour change, and early risk prevention.

Data and Methods: From September 2023 to July 2025, we conducted a prospective cohort study among high-risk pregnant women in four blocks: Gosaba (n=1419) in the south and Kalimpong-1 (n=556), Kalimpong-2 (n=549) and Rangli-Rangliot (n=502) in the north. High-risk pregnant women were enrolled from Anganwadi/Subcenters and followed from pregnancy through post-partum. Frontline workers were trained and mobilized for BMI measurement at registration, counselling for four antenatal care visits, iron folic acid supplementation, dietary diversity, haemoglobin monitoring, monthly gestational weight tracking, birth preparedness, institutional deliveries, post-natal care, family planning, and child growth tracking during routine visits. Maternal and perinatal outcomes were compared between cohorts enrolled in 2023, 2024, and 2025, with all deliveries occurring in 2024-2025. Categorical variables were compared by chi-2 tests and continuous by rank sum tests.

Findings: The study enrolled 410 women in 2023, 1744 in 2024 and 872 in 2025. In 2023, the majority (63%) of enrolment was from Gosaba, declining to 44% in 2024, and 45% in 2025 and the remaining from north. Northern women were older (median age 29) and had higher family income [INR 10000 (IQR:7000-20000)] than south [median age 19 years; INR 7000 (5500-8000)]. Adolescent pregnancies declined from 43% (2023) to 32.4% (2025), mostly from south (97.5%). Low BMI cases decreased from 27.5 - 22.7% during 2023-2025, $p=0.05$, while high BMI rose 20.48 - 35.57% ($p=0.026$), more common in the north (36.6%). Gestational anaemia declined from 65% (2023) to 36% (2025) $p<0.001$, with reductions from first to fourth ANC visits [65 - 41.1% in 2023 ($p<0.001$); 36.3 - 27% in 2025 ($p=0.1$)]. IFA consumption for 180 days improved from 10% (2023) to 18.7% (2024), $p<0.001$. Gestational weight gain marginally improved, median 7 (IQR: 5.7-8.6) kg in 2023 to 7.6 (6-9) kg in 2025, $p=0.49$. Institutional deliveries increased from 98.9 - 100%, $p=0.4$. Low birth weights declined from 11.9 - 1.26% ($p<0.001$), largely from south (10.3%), while neonatal deaths and still births marginally declined [0.8 - 0% ($p=0.5$); 2 - 1.2% ($p=0.6$)]. Detection of danger signs during first PNC declined (4.8 - 3.3%, $p<0.001$), and receipt of JSSK benefits increased (31.9 - 52.8%, $p=0.001$).

Conclusion/ Policy Implications: This community-led intervention showed encouraging results in improving the maternal and perinatal outcomes in remote West Bengal, reducing anaemia and low birth weight, while decreasing danger signs in the newborn during first PNC. The results demonstrate that participatory, system-strengthening approaches can bridge inequities in underserved regions. Policy adoption and scale-up of such community-driven models within government programs could accelerate progress toward national maternal and child health goals, particularly in hard-to-reach and marginalized geographies.

Understanding Knowledge Attitude and Practices of ASHA Workers in Addressing Maternal Mental Health: A Qualitative Study from Uttar Pradesh, India

Yogita Kharkwal

This study investigates the perceptions and experiences of Accredited Social Health Activists (ASHAs) concerning mental health of pregnant and lactating women in Uttar Pradesh (UP), India. For this study semi-structured in-depth interviews conducted with 15 ASHA workers from rural and semi-urban areas, the study explores their understanding of mental health, their roles specifically in Maternal health care, their awareness about mental health and extent to which psychological well-being is addressed in their routine work.

Findings of the study reveals that, the ASHA workers primarily associate maternal health with physical indicators such as height-weight monitoring, tetanus injections, and distribution of iron supplements. Mental health concerns including stress, anxiety, and emotional distress are largely overlooked, with no training or guidance provided to ASHAs in this area. The absence of mental health modules in existing maternal health programs reflects a broader systemic neglect. This study underscores the urgent need to integrate mental health education into ASHA training and embed psychological screening and support within ANC protocols, to ensure a more comprehensive and holistic approach to maternal healthcare in Uttar Pradesh.

Keywords:

Maternal health, mental health, ASHA workers, antenatal care, psychological well-being, healthcare integration, qualitative study, mental health training, maternal health programs, community health workers, mental health screening.

A Study on Women Migrant Workers of Kendrapara District of Odisha to Kerala

Dr. Liza Swain

In recent years, Kerala is experiencing an unprecedented flow of migrant workers from different parts of India. Higher wages, large employment opportunities and shortages of Local labourers make Kerala a profitable job market for workers from outside the State. Since the day the lockdown was announced and inter-state transport stopped, around 9000 migrants from different districts of Odisha working in Kerala's Ernakulam district had been exploring ways to travel back to their homeland. As report says (Odisha women,2021) around 151 women from Odisha who were working at KITEX Garments factory in Kerala.

Linkage the Digital Divide: Impact of Digital Health Initiative on Reproductive Healthcare among Rural Women in Bihar

Anjum Khatoon

India's digital health initiatives aim to transform healthcare delivery through technology-driven, inclusive, and citizen-centric systems. This study examines the role and effectiveness of digital health initiatives introduced by the Government of India to improve reproductive healthcare services for rural women in Bihar. Women living in remote areas often face multiple challenges, including limited health infrastructure, low income, gender inequality, and lack of awareness about healthcare options. The Ayushman Bharat Digital Mission (ABDM) aims to build an inclusive, technology-driven health ecosystem by integrating providers, patients, and insurers through digital platforms like EHRs, ABHA, e-Sanjeevani, Kilkari, and AI-Sneh aligned with the Digital India mission, it bridges the digital divide to ensure equitable, data-driven, and patient-centric healthcare across India. Using secondary data from government reports, digital health program reviews, and surveys such as NFHS and HMIS report. The study focuses on key indicators such as digital literacy, the use of mobile-based health consultations, and the impact of digital programs on awareness and maternal and child health among rural women, gaps remain due to poor internet infrastructure, low digital skills, and socio-cultural barriers. The findings highlight the need for stronger community engagement, improved technology access, and better training to ensure that digital initiatives reach the most marginalized groups. Strengthening implementation at the grassroots level and combining technology with human support systems can help achieve equitable and effective reproductive healthcare delivery in Bihar's rural areas.

Keywords: Digital Health, Reproductive Healthcare, Rural Women, Bihar etc.

Eradication of Period Poverty: A Case Study in Urban Slums

Joyita Khan

Menstrual Hygiene refers to the practices and habits that help individuals to manage their menstruation with dignity, comfort and cleanliness which involves using of Sanitary Napkins and practicing good hygiene during periods to prevent infections and discomfort.

Here, Environmental Management highlights the Sustainable development goals of 6 (clean water and Sanitation) and Goal 3 (Health and Well-being) to observe whether the women in the urban slum areas are accessible to clean water and period friendly toilets and how they maintain hygiene during their periods. The reviews of various literatures and observations by synthesizing primary data of the urban slum areas particularly slum areas of Bidhannagar Municipal Corporation and Kolkata Municipal Corporation; it has been observed that Period Poverty is an emerging issue in these areas. The term "Period Poverty" refers to the inadequate access to menstrual products, education and resources affecting individuals' ability to manage menstruation with dignity. Period Poverty affects many individuals worldwide, particularly in low-income communities which can impact their health, education and wellbeing. Efforts to address period poverty include providing affordable menstrual products, promoting menstrual health and education, improving access to sanitation facilities and reducing stigma about menstruation. So, many countries are efforts to reduce poverty by spreading awareness about periods and helping women to access menstrual hygiene products are seen. (Menstrual Hygiene practice and associated factors among adolescent primary school females in Dale Woreda, Sidama, Ethiopia: a cross-sectional study, Vol.7- 20th February 2025, Amanuel Ayele, Meskerem G/Mariam, Hunachew Beyene, Alemu Tolcha, Dansamo Tedisco, Teshale Shalamo, Teshale Belayneh.) Every girl's menstrual hygiene can be maintained with dignity if access to menstrual products, proper educational facilities and period friendly toilets can be ensured. To prevent taboo on menstruation there should be focus on proper pad disposal facilities in every ladies toilet, awareness and education camps about period hygiene in every slum area as well as community-based initiatives to promote sustainable menstrual practices and waste management as women and children are the ones who become vulnerable to harmful infections and diseases. Ensuring access to flush toilets, clean water and government aid not only for price reduction of commercial branded sanitary pads and at the same time to provide Free Sanitary Napkins to the women belonging to the below poverty line Category is very important to achieve the goals of Sustainable Development. The Methodology of this paper is based on the Data Analysis through Purposive Sampling, Statistical Techniques using Primary and Secondary Data. Reduction of period poverty and increasing knowledge about periods highlights the enlightenment of this paper.

Keywords: Menstrual Hygiene, Period Friendly Toilets, Period Poverty, Free Sanitary Napki

Can Life Skills Reignite Confidence in Education for Adolescents? An Empirical Exploration?

Somenath Ghosh

Background and Objectives of the study: Adolescents often struggle to develop confidence in their ability to complete their education, particularly those in underprivileged urban areas. Challenges such as low motivation, poor study habits, and external distractions can hinder academic progress. Bandura's Social Cognitive Theory (1986) emphasizes that adolescent behaviour is shaped by personal, behavioural, and environmental factors, which can contribute to learning gaps and diminish Academic Behavioural Confidence – the belief in one's academic capability (Sander, 2009). Since self-efficacy is central to this confidence and life skills are known to enhance self-efficacy, this article examines the potential link between adolescents' life skills and their academic behavioural confidence through empirical exploration. Moreover, the paper aims to examine gender wise variations in Academic Behavioural Confidence, along with differences in how strongly life skills influence this confidence across male and female adolescents.

Data and Methods: To test the hypothesis that life skills development enhances adolescents' motivation and belief in their ability to complete education, a cross-sectional study was conducted in the Paharpur slum area of Kolkata with a randomly selected sample of 323 adolescents. The sample size was determined using Cochran's formula with a 5% margin of error and 95% confidence interval. Three schools were randomly chosen, with girls comprising 75% of the student population. Data was collected using a tool comprising 50 vignette-based questions to assess life skills and 22 Likert-scale items to measure Academic Behavioural Confidence (ABC). Vignette responses were scored based on relevance, and composite scores were generated for each life skill dimension. ABC responses were rated on a five-point Likert scale, adjusted for positive and negative statements, and aggregated into a composite score. Gender wise differences in Academic Behavioural Confidence (ABC) scores and life skills were analysed using mean difference tests. To explore the relationship between adolescents' life skills and their ABC, the study employed both correlation analysis and multiple linear regression. Pearson correlation coefficients were used to determine the strength and direction of bivariate associations, while the regression model assessed the relative impact of cognitive, emotional, and social life skill dimensions in explaining variations in ABC.

Findings: Correlation and regression analyses provide strong evidence that adolescents' life skills positively influence their Academic Behavioural Confidence (ABC). Significant positive correlations were observed between ABC and cognitive ($r = 0.3546$), emotional ($r = 0.4266$), and social ($r = 0.4081$) life skills, with emotional skills showing the strongest association. Regression analysis further highlights the significant effect of emotional life skills on ABC ($\beta = 1.283$, $p < 0.01$), while cognitive and social skills, though positively associated, did not show significant contributions when all predictors were included. The adjusted R^2 of 0.2053 suggests that 20.5% of the variation in ABC is explained by the combined influence of these life skills. A significant gender difference was observed in Academic Behavioural Confidence (ABC), with female adolescents scoring approximately 12 points higher than males ($t = 3.8188$, $p < 0.0001$). Emotional ($t = 2.49$, $p < 0.0065$) and social ($t = 3.62$, $p < 0.0002$) life skill scores also differed significantly at the 1% level, with females consistently outperforming males. Furthermore, gender-specific regression analyses revealed that emotional skills significantly influenced ABC for both groups (coefficients: 2.36 and 0.32; $p < 0.000$ and $p < 0.023$, respectively). These findings underscore the pivotal role of emotional skills in enhancing adolescents' academic confidence.

Conclusions: The analysis highlights a strong link between life skills development and Academic Behavioural Confidence (ABC) in adolescents, with emotional skills playing a pivotal role. This reinforces the value of Magic Bus's life skills education program, which focuses on building cognitive, social, and emotional competencies to empower youth—especially in underserved urban areas—to navigate their educational journeys with confidence. These findings highlight the critical importance of emotional skill-building—especially self-awareness and resilience—in enhancing Academic Behavioural Confidence (ABC) is important, alongside the cultivation of other essential life skill domains. To assess long-term impact, ABC indicators should be integrated into program monitoring frameworks. Interventions must be tailored to the unique socio-environmental challenges of slum communities, where peer pressure and distractions often hinder academic progress. Sustained success will also depend on active collaboration with schools and parents to reinforce life skills beyond the classroom and create stable, supportive environments for holistic adolescent development.

Fintech and Older adults: A Global Synthesis of Enablers, Barriers, and Research Trends for Inclusive Digital Finance

Dr. Angan Sengupta

Abstract: FinTech innovations offer immense potential for enhancing financial inclusion among vulnerable populations, particularly older adults. Existing research on FinTech adoption in this demographic remains fragmented and limited. Hence, this study presents a detailed understanding on the distribution of the scientific manuscripts across geographies, the primary enablers and barriers influencing FinTech adoption among older adults. The review also attempted to critically integrate thematic content analysis and cluster analysis to identify dominant research themes in its pursuit of enhancing the understanding of FinTech adoption among older adults. A tri-method review approach was used, integrating systematic, bibliometric and content analysis. A total of 204 Scopus-indexed publications from 2001 to 2025 were reviewed using the PRISMA 2020 protocol. The fifty most-cited studies were subjected to in-depth content analysis to extract dominant research themes and methodological trends. Most impactful research themes are identified through tree map visualizations and keyword thematic mapping in the literature on FinTech adoption among older adults. **Findings** show that United States leads in publication output and PLOS ONE emerges as the most influential journal. Five thematic clusters were identified: (1) Digital Financial Inclusion and ICT adoption; (2) Cognitive perspectives on internet use; (3) Healthcare financing and economic challenges; (4) Psychological and organizational dimensions in elder caregiving: health, motivation and crisis responses; (5) Digital finance, social isolation, and financial well-being. Despite growing academic interest since 2021 in the area of FinTech adoption among older adults, studies from developing societies remains limited. The overall findings from this study highlight that socio-economic conditions significantly influence cognitive and technological engagement among older adults, while helping in achieving social and financial inclusion. However, there is need for context-specific policy interventions and inclusive FinTech product designs that cater to underprivileged populations. Further research needs to develop understanding of regional socio-cultural dynamics in FinTech adoption among older adults.

Can Play-based Life skills Education Transform the Gender Attitude and Perception of Adolescents in Urban Slums?

Sukanya Bose

Background and Objectives of the study

One of the fundamental questions surrounding gender is how individuals can develop a more gender-sensitive mindset and attitude. Cultivating life skills from early adolescence may play a crucial role in shaping this awareness and fostering perceptions. This paper aims to explore the extent to which life skills education among adolescents can influence their perceptions and attitudes toward becoming more gender sensitive. The dedicated life skills training invokes social and emotional skills within an individual that helps to stir positive change in attitude with the improvement in individual's capacity to make choices and act upon them. So, here we presume to explore such a change in the individual's foundation to Human Agency which can be pivotal in breaking the gender stereotypes that are established through gender hierarchical socialization. Therefore, an attempt has been made through empirical exploration to understand whether an intervention of life skills education (LSE) programme can help to bring in progressive changes in gender attitudes and perceptions (GAP) in adolescents. Additionally, there is an endeavour to understand how LSE is making differential effects on gender attitude and perception of girls and boys.

Data and Methods

The study adopts a non-experimental, pre-post cohort design, using primary surveys conducted at both baseline and endline stages. The Life Skills Education (LSE) program ran for three years in four government schools located in two socio-economically disadvantaged slum areas of Kolkata, engaging 800 adolescents aged 12–18. Samples were randomly and independently selected at both stages, with sizes determined using Cochran's formula and stratified by gender and grade.

The study also considers a mixed-method approach, combining quantitative and qualitative data collected through separate questionnaires. The study assessed changes in gender perception and attitude scores between baseline and endline using statistical tests and tabular analysis. Gender-wise differences in scores over baseline and endline were examined by drawing some statistical inferences, while correlations and regressions (Boxcox Regression) were applied to explore the strength and direction of relationships between life skills and gender attitude perception (GAP).

Findings

The study demonstrates a substantial increase in mean scores for gender perception (from 2.5 to 6.5) and gender attitude (from 15.6 to 20.8) following the intervention. Independent samples t-tests confirmed statistically significant improvements from baseline to endline in both gender perception ($t(119.26) = -16.49, p < .001$) and gender attitude ($t(240.97) = -13.49, p < .001$), indicating the effectiveness of the play-based Life Skills Education program in fostering gender sensitivity.

Gender attitude improvements were more pronounced among female adolescents (mean increase = 6.03, $t(141.97) = -12.51$, $p < .001$) than males (mean increase = 4.17, $t(97.32) = -6.55$, $p < .001$), while changes in gender perception were relatively consistent across both groups.

All life skills were positively associated with gender-related outcomes, with self-management and decision-making showing particularly strong influence, as revealed through Boxcox Regression at the 5% (Coeff: 0.96, $P > 0.058$) significance level. This suggests that adolescents' ability to regulate their mindset and behaviour plays a key role in shaping gender perspectives.

Conclusions

An obtruse issue like gender to be addressed calls for a holistic program-design or pedagogy. Thus, activity-based life skills programme in urban under-privileged areas can be more instrumental than lecture-based approach in bringing positive transformation in the gender-sensitivity of adolescents. Especially, improvement in self-management and decision-making skills stimulates the adolescent's mindset towards becoming more egalitarian in terms of gender. This would further lead to social and economic empowerment of the same population, particularly female adolescents.

[Keywords: Life skills, Activity-based, Gender-stereotypes, Adolescents, Self-management, Decision-making]

Beyond Calories: Addressing Micronutrient Deficiencies in India

Prarthana Das

Hidden hunger, also referred to as micronutrient deficiency, is one of India's most critical yet less visible type of malnutrition. While calorie deficiency requires individuals to consume fewer calories than they should, hidden hunger occurs whenever a diet does not have certain essential vitamins and minerals, such as, iron, iodine, zinc, folate, vitamin A and vitamin B12. Even though India has made continued strides forward with food grain production and Increased food security, we still have a "quality gap" in nutrition. The National Family Health Survey, NFHS-5, (2019-21) data indicates that 57% of women and 25% of men are anemic and that stunting and wasting due to micronutrient-related deficiencies are widespread among children.

The causes of hidden hunger in India are complex and interconnected. A diet predominantly consisting of cereals, low dietary diversity, low bioavailability of nutrients consumed from plant-based foods, and low consumption of animal-based products are all contributing factors. In addition, factors such as poverty, high cost of food, and poor maternal and child feeding practices all contribute to hidden hunger. The implications for hidden hunger are devastating. It leads to reduced cognitive development, poor immune function, decreased productivity, maternal health issues, and uncovering intergenerational cycles of malnutrition. The fight

against hidden hunger includes large-scale food fortification (iodized salt, fortified rice, fortified edible oil, etc.), biofortification of staple crops, supplementation programs (iron-folic acid tablets), and programs like POSHAN Abhiyaan (Food Security) and Anemia Mukta Bharat (Anemia-Free India). However, barriers remain in implementation, knowledge, and dietary

diversity. Confronting hidden hunger will require a multi-faceted strategy that supports public health interventions, promotes affordable nutrient-dense foods, shares nutrition education, and fosters sustainable agricultural diversification. Only then can India shift from food security to real nutritional security.

Contraceptive Neglect After Childbirth Among High-Parity Women In India

Dr. Kiran Sharma

Despite decades of investment in family planning programs, contraceptive neglect remains a persistent challenge in India, particularly among women who have already given birth to three or more children. These women are often assumed to have completed childbearing, yet many continue to experience unmet need for contraception during the critical postpartum period. The absence of timely contraceptive adoption not only exposes them to unintended pregnancies and associated health risks but also raises broader concerns for family welfare and public health goals.

This study draws on data from the National Family Health Survey (NFHS-5) to examine contraceptive use among high-parity women within two years of their most recent childbirth. It quantifies the proportion adopting modern methods and analyzes how socio-demographic factors: including education, household wealth, caste, religion, and place of residence shape contraceptive behavior. The study also evaluates the role of maternal health service utilization, such as antenatal care, institutional delivery, and postnatal check-ups, in influencing uptake. In addition, state- and regional-level comparisons highlight disparities across the country, while an assessment of program reach considers whether family planning services are effectively addressing the needs of women who have already met or exceeded their desired family size.

By situating contraceptive neglect within its social and health-system context, the research identifies where gaps persist and which groups remain underserved. The findings are expected to inform more targeted integration of family planning into routine maternal healthcare and to guide policy efforts aimed at preventing unintended pregnancies, improving maternal well-being, and strengthening the overall effectiveness of India's reproductive health strategies.

Keywords: Postpartum contraception, High-parity women, Maternal health services

Enhancing Health and Nutrition Through Local Governance Engagement

Chitra Chandra and Pintu Kabiraj

Background and Objectives

Decentralized governance in India positions Gram Panchayats (GPs) as key agents for local development through the Gram Panchayat Development Plan (GPDP). Yet, health and nutrition often remain underprioritized, overshadowed by concerns over infrastructure and livelihoods. Evidence suggests that structured community engagement can realign local priorities toward equitable health investment. Building on its extensive experience in implementing a maternal and child health (MCH)-focused intervention program in Birbhum district, West Bengal, the Child in Need Institute (CINI), with support from The Hans Foundation, explored how strategic engagement with GPs could strengthen their capacity to identify, prioritize, and address local health and nutrition needs. Started in 2023, the initiative aimed to assess whether NGO-facilitated sensitization and participatory planning processes could influence GPDP allocations toward maternal and child health, nutrition, water, and sanitation. The effort aligns with India's broader goal of achieving localized progress on the Sustainable Development Goals by reinforcing the role of Panchayati Raj Institutions (PRIs) in promoting equitable and accountable health governance at the grassroots level.

Data and Methods

The study employs a mixed-methods comparative design in Birbhum district, West Bengal. Intervention blocks (Khoyrasole, MD Bazar) where NGOs engaged in sensitizing GPs were compared to a control block (Nanoor). Quantitative data were collected from eGramSwaraj on GPDP allocations (2021–2024). Sectoral budget trends in health, drinking water, and sanitation, and women and child development were analyzed. Qualitative insights from field implementation, including the use of participatory tools like Social Resource Mapping, informed the interpretation of results. This integration allowed assessment of how NGO engagement influenced the priorities and budgetary decisions of the local government.

Results

The results showed a distinct positive shift in budget priorities. In Khoyrasole, allocations to health and related sectors rose from 15.89% in 2021 to 20.03% in 2024, while in Md. Bazar they increased from 14.22% to 19.36%. In contrast, the control block, Nanoor, recorded a decline from 18.65% to 16.30%. These patterns indicate that sustained NGO engagement contributed to stronger prioritization of health and nutrition within GPDPs. Qualitative findings revealed that SRM exercises made vulnerabilities – such as maternal anemia and child malnutrition – visually evident, thereby strengthening community voices during GPDP discussions. The process encouraged GPs to move beyond bureaucratic templates and ground their plans in local realities. Capacity-building sessions enhanced the confidence of GP members to negotiate convergence with health and ICDS departments, while advocacy for OSR utilization further broadened financial flexibility. Importantly, the process fostered an attitudinal shift among local leaders, who increasingly viewed health as a core governance responsibility rather than solely a departmental mandate.

Conclusion and Policy Implications

The study illustrates that strategic NGO facilitation, participatory tools, and fiscal flexibility can reorient decentralized governance toward health and nutrition priorities. Institutionalizing GP-NGO collaboration and participatory planning within statutory processes can make local governance more accountable, equitable, and sustainable. The Birbhum experience offers a replicable model for advancing grassroots health governance across similar South Asian contexts.

Changing Trends and Acceptance of Inter-caste and Inter-religion Marriages in India: A Study of National Family Health Survey Data

Lahu Vitthal Rathod

Inter-caste and inter-religion marriages in India have long been controversial. Traditionally, Indian society has been divided into various castes and religions, and intermarriages between them have been frowned upon. Age, education, caste, and religion are important factors in arranged marriages in India. However, with globalization and modernization, these differences are expected to diminish. Our study aimed to examine how inter-caste and inter-religion marriages, as well as age and educational roles, have changed. We used data from the last two rounds of the National Family Health Survey (NFHS), rounds 4 and 5, and applied univariate, bivariate, and multivariate methodologies to reach our conclusions. Our findings show that the age and education gap between spouses has reduced in the past few years. Inter-caste marriages rose from 12.07% in 2015-16 to 15.19% in 2019-21, and inter-religion marriages increased from 2.44% to 3.16% in the same period. Furthermore, these trends exhibit interesting variations across religion, region, caste, and class. Our findings suggest that inter-caste and inter-religion marriages are slowly becoming more acceptable, especially among the scheduled caste, Muslim religion, and urban areas. Inter-religious marriages are more acceptable in scheduled tribes, the Christian religion, and urban residences. As we move from the poorest wealth quintile to the richest, such marriages are more readily accepted. While there has been a gradual increase in such marriages, they still face significant challenges. However, social stigma and violence remain challenges, and the government must take steps to protect such couples and promote a culture of acceptance and inclusivity.

**Demographic and Environmental Interlinkages of Plastic Pollution: GIS-based Insights
from the Kolkata Metropolitan Development Authority**
Sudipa Halder and Binod Kumar Singh

Plastic pollution has emerged as a critical environmental and public health concern, yet spatially explicit assessments identifying contaminant zones remain limited. This study investigates the demographic and environmental interlinkages of plastic pollution within the Kolkata Metropolitan Development Authority (KMDA) area using a GIS-based multi-criteria decision analysis framework. An integrated Fuzzy Analytic Hierarchy Process (AHP) coupled with a decision-support algorithm was developed to evaluate thirteen geo-environmental and anthropogenic variables: Runoff, Land Use/Land Cover (LULC), Air Quality Index (AQI), Normalized Difference Built-up Index (NDBI), Population Density, Tourist Sites, Dumping Grounds, Hospital Sites, Industrial Sites, Market Locations, Wastewater Treatment Plants, Road, and Canal Networks. Weighted overlay analysis delineated five categories of plastic contaminant zones – very high (12.93%), high (19.08%), moderate (25.00%), low (28.20%), and very low (14.80%) concentrations. Validation against socio-environmental indicators highlights strong spatial correspondence between contamination hotspots and public health vulnerability, reinforcing KMDA's linkage with Sustainable Development Goal 3 (Good Health and Well-being). Among the 4 Municipal Corporations, 37 Municipalities, and 23 Panchayat Samities, the Kolkata Municipal Corporation exhibited the highest proportion (51.69%) of very high contamination zones, corresponding with the lowest total fertility rate (1.2 in 2011) and the highest dengue incidence (4,425 cases in 2023). Field validation from a representative dumping site revealed 70 identifiable plastic particles within 500 grams of soil, confirming the presence of substantial plastic debris. The proposed GIS-based approach provides an effective tool for identifying and managing plastic pollution hotspots while elucidating their demographic and environmental dimensions. The findings offer actionable insights for municipal governance, urban health management, and sustainable policy formulation at regional and global scales.

Keywords: Plastic pollution; Sustainable Development Goal; Dumping Grounds; Fuzzy AHP; Good Health and Well-being

Non-migration choices: Exploring household migration decision in Eastern Uttar Pradesh.

Vikesh Kumar and Kunal Keshri

Introduction: With 12.32 million inter-state migrants, Uttar Pradesh is the highest migrant sending state in India (Census, 2011). Uttar Pradesh is economically divided into four parts, where the Eastern region is an economically backwards region, which creates a push factor for migration. That's why this region accounts for more than 60 per cent of the total out-migration of the state. A survey – “Cause and Consequences of Out-migration from Middle Gunga Plain” conducted by IIPS, Mumbai, found that more than 50% of households were migrant households. In the migration studies, a lot of work has been done on why people migrate, but it is only one aspect of migration. So, to fill the gap of another aspect, the aim of this study is to understand why some households don't practise migration even though they are living in areas which is highly migration-prone.

Methodology: This study applies a mixed method using a convergent parallel design, where we have used both quantitative and qualitative data, which have been used independently, and then we have integrated them during the interpretation of findings. For the quantitative data, this study obtained the data from a survey, “Cause and Consequences of Out-migration from Middle Ganga Plain”, coordinated by IIPS, Mumbai. This survey covers Bihar and Eastern Uttar Pradesh. The qualitative study was conducted in 4 villages of the Shravasti district and 4 villages from the Jaunpur district, in Eastern Uttar Pradesh. The household, where none of the members have participated in labour migration over the last year, has been purposively selected. The qualitative data have been collected through semi-structured interviews of 32 in-depth interviews from non-migrant households.

Results: The result of the logistic estimates shows that young and male-headed households have a high chance of having non-migratory behaviour. Similarly, families belonging to a nuclear family, whose head of the household was educated, who had an old dependent, had a higher chance of following the non-migration path. In contrast to it, families belonging to a higher socio-economic status had a lower chance of following a non-migration path means they were more prone to migration. Qualitative interviews reveal various social and family-related factors in following the non-migration path. A respondent from Shravasti district said he thinks about migration so that he can earn more money, but my mom and dad don't allow me to go outside because I am their only son. Another respondent, who belongs to the general caste category, said that we are considered a respected family in our village, and we can migrate only if we have a professional job; otherwise, we can't migrate as a factory worker, as it would be disrespectful to our family.

Conclusion: This study highlights the constraints of the non-migratory behaviour of households. Migration in this region is considered a livelihood strategy, even though some households, due to family and social norms, are not practising migration.

Migrant Stay Dynamics: A Duration-Based Analysis of Keralite Origin to the Gulf

Rahul Kumar Jha

By situating contraceptive neglect within its social and health-system context, the research identifies where gaps persist and which groups remain underserved. The findings are expected to inform more targeted integration of family planning into routine maternal healthcare and to guide policy efforts aimed at preventing unintended pregnancies, improving maternal well-being, and strengthening the overall effectiveness of India's reproductive health strategies.

Effectiveness of Integrated Treatment in Rehabilitation Centres for Substance Use Disorder in Sikkim

Diya Tikhatri

Background: Substance Use Disorders (SUDs) are chronic, relapsing conditions that impair physical, psychological, and social well-being. Traditional treatment often focuses on either medical detoxification or psychological therapy alone, but integrated treatment approaches may yield better outcomes. Rehabilitation centres provide a structured environment where both medical and psychological interventions can be combined.

Objectives: To evaluate the effectiveness of integrated medical and psychological treatment among individuals with SUD in rehabilitation centres, specifically assessing changes in physical health, mental health, and social functioning following treatment, and examining patient satisfaction and perceived quality of care.

Methods: A quantitative, cross-sectional, analytical design was used among 56 male participants from two rehabilitation centres in Sikkim. Data were collected through a structured questionnaire and analyzed using SPSS, employing descriptive statistics, reliability tests, and inferential analyses including paired and independent t-tests and chi-square tests.

Results: Integrated treatment significantly improved emotional health, social functioning, and patient satisfaction. Mean emotional distress scores declined from 2.18 to 1.91 ($p = 0.001$), and most participants reported reduced cravings and better family relationships. Over 90% expressed satisfaction with care, and 76.8% rated staff behavior positively. Integrated care participants showed stronger relapse-prevention attitudes ($\chi^2 = 5.969$, $p = 0.051$) and better emotional regulation ($t = 2.588$, $p = 0.012$) than those under usual care.

Conclusion: Integrated medical and psychological treatment effectively enhances emotional stability, social reintegration, and satisfaction among individuals with SUDs. Strengthening family involvement and aftercare support can further promote sustained recovery and quality of life.

Keywords: Integrated treatment, Substance Use Disorder, Rehabilitation, Mental health, Patient satisfaction, Family involvement, Sikkim

Prevalence and influencing factors of Anaemia among currently married women in the districts of Bihar: Evidence from large scale survey data

SVSRK Bharadwaj, and K V R Subrahmanyam

Bihar, one of India's most populous states, reports a high prevalence of anemia among women — largely driven by low socio-economic status and significant educational disparities. The prevalence of anaemia among currently married women varies across districts and socio-economic strata. Therefore, implementing uniform policy programs without accounting for these variations may not effectively improve women's health outcomes. This study aims to examine the prevalence and determinants of anaemia among currently married women in different districts of Bihar, with the goal of informing targeted health interventions.

To achieve this, data from the National Family Health Survey (NFHS-5) were utilized, including information on anaemia status, socio-economic and demographic characteristics, reproductive outcomes, and living conditions. The analysis was conducted in three stages. First, cluster analysis using the household wealth index was performed to classify districts into distinct groups using k-means clustering and the elbow method, identifying significant clusters (K=3 or 4). Second, anaemia prevalence was estimated using simple percentages, and risk was assessed by comparing anaemic and non-anaemic women across age groups and place of residence. Finally, within each cluster, the factors influencing anaemia were identified using a Generalized Linear Model (GLM), which allows for flexible distribution assumptions suited to the data. The results were interpreted separately for each cluster to provide nuanced insights.

Migrant Stay Dynamics: A Duration-Based Analysis of Keralite Origin to the Gulf

Rahul Kumar Jha, Prof. Arkadiusz Wisniowski, Prof. Wendy Kay Olsen, Prof. Maria Pampaka

Return emigrants are a demographically, politically, and economically significant population segment of the Indian state of Kerala. In this paper, we investigate factors influencing the length of stay among Keralite migrants to Gulf Cooperation Council (GCC) countries, drawing from the sample of 2035 individuals who returned to Kerala in the 2018 Kerala Migration Survey (KMS). We utilise the survival analysis approach, with a Weibull proportional hazards (PH) regression model and the Kaplan-Meier estimator. Framed within the New Economics Migration Theory, we argue that migration is a strategic household decision aimed at overcoming local economic constraints, rather than merely an individual labour market response. Findings reveal that the longer stays in the Gulf countries were significantly influenced by socio-economic status, household size, and marital status. It shows a married individuals with average income and a low level of education in large families had the longest duration of stay. Also, compared to unmarried children, married ones spend significantly more time abroad in GCC countries. The study contributes to migration literature by quantifying determinants of the duration of stay at destination and exploring the stay dynamics of migrant's originating from Indian states.

Keywords: International Migration, Duration Analysis, Gulf Migration, Survival Analysis, Kerala Migration Survey (KMS)

Demographic and Environmental Interlinkages of Plastic Pollution: GIS-based Insights from the Kolkata Metropolitan Development Authority

Sudipa Halder and Binod Kumar Singh

Plastic pollution has emerged as a critical environmental and public health concern, yet spatially explicit assessments identifying contaminant zones remain limited. This study investigates the demographic and environmental interlinkages of plastic pollution within the Kolkata Metropolitan Development Authority (KMDA) area using a GIS-based multi-criteria decision analysis framework. An integrated Fuzzy Analytic Hierarchy Process (AHP) coupled with a decision-support algorithm was developed to evaluate thirteen geo-environmental and anthropogenic variables: Runoff, Land Use/Land Cover (LULC), Air Quality Index (AQI), Normalized Difference Built-up Index (NDBI), Population Density, Tourist Sites, Dumping Grounds, Hospital Sites, Industrial Sites, Market Locations, Wastewater Treatment Plants, Road, and Canal Networks. Weighted overlay analysis delineated five categories of plastic contaminant zones—very high (12.93%), high (19.08%), moderate (25.00%), low (28.20%), and very low (14.80%) concentrations. Validation against socio-environmental indicators highlights strong spatial correspondence between contamination hotspots and public health vulnerability, reinforcing KMDA's linkage with Sustainable Development Goal 3 (Good Health and Well-being). Among the 4 Municipal Corporations, 37 Municipalities, and 23 Panchayat Samities, the Kolkata Municipal Corporation exhibited the highest proportion (51.69%) of very high contamination zones, corresponding with the lowest total fertility rate (1.2 in 2011) and the highest dengue incidence (4,425 cases in 2023). Field validation from a representative dumping site revealed 70 identifiable plastic particles within 500 grams of soil, confirming the presence of substantial plastic debris. The proposed GIS-based approach provides an effective tool for identifying and managing plastic pollution hotspots while elucidating their demographic and environmental dimensions. The findings offer actionable insights for municipal governance, urban health management, and sustainable policy formulation at regional and global scales.

Keywords: Plastic pollution; Sustainable Development Goal; Dumping Grounds; Fuzzy AHP; Good Health and Well-being

A Spatio-temporal Analysis of Migration in Sikkim (1991-2011): Shifts in Demographic Profile

Bikram Nasipuri

This study provides a quantitative temporal analysis of migration trends into Sikkim, India, spanning two decades (1991-2011). Using migration tables from the 1991, 2001 and 2011 of Census of India, ten-year trends in migration volume, the principal source states of migrants and the motivations for migration are examined. Boundary data is taken from the Survey of India. Spatial analyses and map production have been carried out in ArcGIS software, calculations and statistical presentations have been prepared using Microsoft Excel. The results indicate a notable demographic shift, as the overall count of migrants nearly doubled in twenty years, rising from 124,997 in 1991 to 247,049 in 2011. Inter-state migration showed significant growth, especially in the 1991-2001 period (+97.41%), and has continued to increase notably. Migration to Sikkim is geographically concentrated, with two states – West Bengal and Bihar always making up more than 75% of all inter-state migrants. An exploration of the causes of migration reveals a complicated interaction of social and economic elements. Although Marriage continues to be a major factor, the overall and relative increase in Work/Employment and Moved with Household categories, particularly in the 2001 census, indicates a substantial economic attraction that altered Sikkim's demographic profile during this time. International migration to Sikkim showed a steady increase, rising from 13,087 individuals in 1991 to 18,470 in 2011. The primary international inflow into Sikkim stems from enduring historical relationships with Nepal and adjacent hill communities, reinforced by job prospects and marriage. This study establishes a fundamental empirical basis for comprehending the socio-economic evolution of Sikkim. The migration have transformed local demographics and job markets, intensified demands on urban services, and generated new challenges and prospects for inclusive development and spatial planning.

Key Words: *Sikkim, Census of India, Migration, ArcGIS, Inter-state.*

Spatial Shifts in Delivery and Postnatal Care Indicators in West Bengal: A GIS-Based Comparative Study Using NFHS Data

Dr. Subhasish Sutradhar

Abstract: Maternal health remains a key pillar of public health and sustainable development, with institutional delivery and postnatal care serving as critical indicators of health system performance. This study examines the spatial and temporal variations in delivery and postnatal care services across the districts of West Bengal using data from the National Family Health Survey (NFHS) rounds 4 (2015–16) and 5 (2019–21). District-level indicators such as the percentage of births in public and private health facilities, deliveries assisted by skilled personnel, caesarean section rates, and women receiving postnatal checks within two days were analyzed. Using Geographic Information Systems (GIS), choropleth and hotspot maps were generated to visualize clusters over time.

To strengthen spatial interpretation, the study incorporated geolocation-based clustering of health institutions (public and private) derived from state health directories and Open Government Data (OGD) sources. Hotspot analysis (Getis-Ord G_i^*) and cluster analysis were applied to detect statistically significant clusters of high and low service utilization, revealing distinct geographic disparities. Results highlight notable progress in institutional deliveries, particularly in urbanized and southern districts, whereas parts of northern and western West Bengal exhibit persistent service gaps despite increased facility density. The relationship between proximity to health institutions and higher maternal service uptake underscores the role of spatial accessibility in improving maternal health outcomes.

The findings provide geospatial insights for policymakers to identify underserved areas, optimize health facility distribution, and enhance postnatal outreach. Integrating NFHS indicators with spatial health infrastructure data presents a holistic framework for district-level maternal health monitoring and planning in West Bengal.

Keywords: Maternal health; Postnatal Care; NFHS; Hotspot analysis; West Bengal

Empowering Tribal Adolescents through Life Skills Education: Evidence from the Alluri Sitaramaraju District, Andhra Pradesh

Ajay K Singh

Background and Objectives

Education is a transformative tool that promotes social cohesion, reduces inequalities, and empowers individuals and communities. In India, despite progress in increasing enrolment and literacy through initiatives such as the *Sarva Shiksha Abhiyan* and the *Right to Education Act*, challenges remain in achieving quality learning outcomes, particularly among marginalized populations. Life skills education plays a critical role in equipping adolescents with cognitive, socio-emotional, and problem-solving abilities required to face challenges and actively contribute to society.

In the Alluri Sitaramaraju district of Andhra Pradesh, the Magic Bus India Foundation (MBIF) implemented an activity-based programme to enhance life skills, foundational literacy and numeracy (FLN), and gender equity among tribal adolescents, with the aim of establishing sustainable and inclusive educational pathways.

Data and Methods

Quantitative data were collected from a sample of 328 adolescents at baseline (69 boys, 259 girls) and 333 at endline (140 boys, 193 girls). Qualitative data included 13 interactions across two schools, using Focus Group Discussions (FGDs) and In-Depth Interviews (IDIs) with parents, government officials, community stakeholders, adolescents in grades 8–10, teachers, headmasters, and SMC members. Baseline and endline assessments measured key outcomes, including educational awareness, school perceptions, attendance, participation in academic and extracurricular activities, life skills development, gender norms, and career aspirations. The evaluation combined quantitative indicators with qualitative insights to comprehensively address the socio-cultural and contextual factors influencing tribal adolescents.

Results

The intervention led to significant improvements across multiple domains. Awareness of the importance of education increased sharply from 5.1% to 92.2%, while positive perceptions of schools rose from 77.1% to 97.3%. Awareness of the legal marriage age for girls increased, from 12.1% to 99.7%. Attendance rates improved from 96.5% to 98%, accompanied by a decline in dropout rates.

Girls' participation in classroom and extracurricular activities, especially sports, rose significantly with sports engagement increasing from 40.3% to 86.5%. Financial literacy sessions enhanced adolescents' practical understanding of savings and banking. Career awareness expanded notably from 6% to 47.5%, with boys showing slightly higher awareness (50.7%) than girls (45.1%). Gendered patterns emerged in career preferences, with girls aspiring to medicine (79.8%) and teaching (54.9%), while boys favoured engineering (58.6%) and government employment (49.3%).

Self-management and decision-making skills improved from 51.1% to 100%; resilience increased from 89.5% to 93.7%; and self-efficacy showed moderate gains, from 71.4% to 75%. Teacher and parent observations corroborated these improvements, highlighting increased confidence, discipline, and engagement among adolescents, though persistent gender- and village-level

disparities remained. The composite life skills index demonstrated overall growth, with the proportion of adolescents attaining advanced levels rising from 21.6% to 25.5%.

Conclusion

The Magic Bus India Foundation's targeted life skills education programme in the Alluri Sitaramaraju district effectively empowered tribal adolescents by integrating foundational literacy, numeracy, gender equity, and psychosocial skill development. The significant improvements in educational engagement, life skills, and career awareness underscore the potential of context-sensitive and inclusive interventions in fostering resilient and socially empowered youth. Addressing remaining disparities will be essential to ensure equitable opportunities for all adolescents in marginalized communities.

Utilization of Digital Media and Its Consequences on Health

Dr. Tej Bali Singh

Introduction: Digital media refers to content that is created, distributed, and consumed through digital devices such as smartphones, computers, and tablets. It includes social media platforms, video streaming, online games, and news websites. While digital media has revolutionized communication, entertainment, and education, its overuse has raised concerns about physical and mental health.

Materials and methods

The present study used descriptive methods and secondary sources of information like published research papers, government research documents, published books, and daily newspapers. This methodology is called content analysis.

Results

Positive Uses of Digital Media in Health

1. **Health Information Access:** Provides easy access to health information and awareness. Platforms like YouTube or health blogs can educate users about diseases, treatments, and preventive care.
2. **Mental Health Support:** Online therapy, support groups, and mental health apps offer accessible help. Social connection through digital platforms can reduce feelings of isolation.
3. **Fitness and Wellbeing:** Fitness tracking apps and workout videos promote physical activity. Guided meditation apps help in stress reduction.
4. **Telemedicine:** Facilitates remote consultations and monitoring, especially during emergencies like the COVID-19 pandemic.

Negative Consequences on Health

Physical Health Issues

1. **Eye Strain (Digital Eye Strain or Computer Vision Syndrome):** Symptoms include dry eyes, blurred vision, and headaches due to prolonged screen time.
2. **Poor Posture and Musculoskeletal Problems:** Long hours on devices can lead to back, neck, and shoulder pain.
3. **Sleep Disturbances:** Blue light from screens affects melatonin production, disrupting sleep cycles.

4. Sedentary Lifestyle: Extended screen time reduces physical activity, contributing to obesity, diabetes, and cardiovascular issues.

Mental Health Effects

1. Addiction and Dependency: Excessive use of social media or gaming can lead to behavioral addiction.
2. Anxiety and Depression: Constant comparison on social media, cyberbullying, and negative news can increase stress and depression.
3. Reduced Attention Span: Continuous multitasking and short-form content can reduce concentration and cognitive performance.
4. Fear of Missing Out (FOMO): Social media can cause people to feel left out, leading to low self-esteem and anxiety.

Mitigation and Healthy Practices

1. Digital Detox: Regular breaks from screens and "no-phone" zones or hours.
2. Blue Light Filters & Screen Settings: Use of night mode or screen filters to reduce eye strain.
3. Encouraging Offline Activities: Promote hobbies like reading, sports, or outdoor games.
4. Mindful Use of Media: Limit time on non-productive apps and engage more with educational or meaningful content.
5. Parental Guidance: Monitoring children's media use and encouraging balanced digital habits.

Conclusion

Digital media, when used mindfully, can greatly enhance health awareness and access to services. However, overuse or misuse can lead to serious physical and mental health problems. Striking a balance between the digital and real world is essential for maintaining overall well-being.

Abstract of Papers for Poster Presentation

Association between climatic factors and child underweight in India: a geo-spatial analysis using National Family Health Survey 5 (2019-21)

Abhishek Rajak

Background and Objectives: Despite various programmes aiming to improve the nutritional status of children, nearly 32% of children under age five are still underweight in India, and there is huge spatial variation across the states. This study investigating the spatial clustering of child underweight and seeing the association between climatic factors and underweight.

Methods: The study conducted an analysis on a sample of 210,504 underweight children under 5 years from 707 districts of India, utilising data from the National Family Health Survey-5 (2019-21). Various analytical techniques, including Moran's I, univariate LISA (Local Indicators of Spatial Association), bivariate LISA, and spatial regression models SEM (Spatial Error Model) were employed to examine the geographic patterns and spatial correlates of child underweight with climatic variables in the study population.

Results: The spatial analysis shows a high degree of clustering (Moran's I: 0.674) in child underweight in districts of India. Extreme temperature of districts reveals a positive association with child underweight. After controlling for socioeconomic factors, spatial regression reveals that a 1°C increase in average annual temperature would lead to a 0.462 % increase in the child underweight prevalence.

Conclusion: Overall, paper findings suggested the need for an integrated, multisectoral strategy encompassing climate adaptation, poverty alleviation, and improved maternal nutrition and education to mitigate the impact of climatic variability on child underweight in India.

Keywords: Underweight, Temperature, India, Spatial analysis, Spatial autocorrelation, Moran's I

Addressing Nutritional and Health Disparities Among Tribal Communities in India

Abinash Jena

Background and Objectives: India continues to face high rates of maternal and infant mortality, malnutrition, anemia, and morbidity challenges that are particularly acute among tribal communities. These groups often live in geographically isolated areas with poor infrastructure, limited access to quality healthcare, and lower educational attainment. Addressing these issues requires comprehensive, culturally sensitive health promotion strategies, community engagement, better educational programs for literacy development, emphasis on awareness and accessibility of health schemes etc.

Data and Methods: This study draws on both secondary and primary data sources. Secondary data were obtained from the National Family Health Surveys (NFHS-4 and NFHS-5), which provide key indicators on fertility, mortality, and maternal and child health across different population groups. Primary data were collected through a field study in a district of Odisha, involving 400 household surveys focused on food diversity and nutritional status, along with 20 in-depth interviews and 10 key informant interviews.

Findings: The findings from NFHS reveal stark disparities in child nutrition indicators between Scheduled Tribes (STs) and other groups. In NFHS-4, stunting, wasting, and underweight levels among ST children were 43.8%, 27.4%, and 45.3%, respectively, compared to 31.2%, 19.0%, and 28.8% for other groups. Although there is a slight improvement in NFHS-5, with ST indicators declining to 40.9% (stunting), 23.2% (wasting), and 39.5% (underweight), the gap between STs and others remains significant. Though, the trend shows the decline in indicators, but the difference among the group still persists with vast gap. The primary study supports these findings, highlighting the persistent poor nutritional status of tribal women and children. Contributing factors include poverty, low awareness, limited health literacy, and inadequate access to services. Now for maternal nutrition, we used Body Mass Index and Anaemia data from both rounds. Maternal nutrition indicators also highlight deep-rooted disparities. In NFHS-4, 31.7% of ST women had a BMI below normal compared to 17.8% among others. NFHS-5 shows some improvement (25.5% for STs vs. 14.5% for others), but the difference remains large. Anaemia rates among ST women increased from 59.9% in NFHS-4 to 64.6% in NFHS-5, compared to 49.8% and 56.4% for others, respectively. Both the categories have experienced significant growth for women anemia, but STs women were more exposed to poor nutrition.

Conclusion and Policy Implications: It clearly indicates that, geographical isolation, Poverty, Poor access to quality healthcare and Low awareness and accessibility are the few main reasons for deprived health indicators. The findings suggest an all-inclusive plan for tackling these challenges, with the goal of improving the health and well-being of tribal women and children in India. Provisions like, mobile health units for remote population, ownership by the tribal for promotions of health, better educational programs for literacy development, emphasis on awareness and accessibility of health as well other development schemes is desirable.

Keywords: Child health, Maternal health, Tribal, Tribal Health Nutritional Disparities

Women's Knowledge on Maternal Health Care in Bihar

Miss. Rupam Bharti

Education is very important factor in India, especially women education as it leads to social & economic growth of the country. The female education in India is highly necessary for future of the country as women are the first teachers of their children. Objectives I. To understand the maternal health care utilization by education in Bihar. II. To study the trend among women in maternity care during NFHS-4 & NFHS-5 in Bihar. Data and Methods The study uses secondary data from National Family Health Survey-4 (2015-16) & 5 (2019-2021). The sample of the study is 45,812(NFHS-4) & 42,483(NFHS-5) women aged 15-49 years. Descriptive statistics along with co-relation will be used. Results and Conclusion In the study age, religion and socio-economic status of mothers were not associated with ANC services utilization whereas mother's education, occupation and caste were associated with ANC services utilization. This research verifies positive relationship between mother's education and utilization of MCH services. Keywords Maternal Health Care, Education, ANC services, Institutional Delivery, Bihar.

Hypertension and Diabetes Across Later Life in India: A Life-Course perspective

Aditi Chakraborty

Background and Objective: Non-communicable diseases in ageing populations require urgent public health action. Hypertension and diabetes frequently co-occur and drive cardiovascular morbidity, premature mortality, and rising healthcare costs. This study profiles age-stratified incidence and prevalence of hypertension and diabetes among Indian adults aged ≥45 years and examines how socio-economic, genetic, metabolic, and behavioural factors shape disease burden across later life.

Data and Methods: This study uses Longitudinal Ageing Study in India (LASI, 2017-18) data to estimate the age-specific incidence, prevalence, and associated risk factors among the adults age 45 years and above. Outcomes are age-specific incidence rates (ASIR) and age-specific prevalence rates (ASPR) for hypertension and diabetes across four age bands (45–54, 55–64, 65–74, ≥75). Covariates are sector, religion, social group, wealth, marital/working status, living arrangement, sex, family history, BMI, cross-condition comorbidity (hypertension+diabetes), alcohol/tobacco use, physical activity, and sleep problems. Modified Poisson regression with robust standard errors was applied to estimate adjusted prevalence ratios (PRs) and age-stratified incidence ratios (IRs).

Findings: Using LASI 2017–18, we profile age-stratified incidence and prevalence of hypertension and diabetes in Indians aged 45+. Hypertension prevalence rises steadily from 19% (45–54) to 34% (≥75), with incidence highest in later life and peaking in urban 55–64 and rural ≥75. Diabetes prevalence increases to 16% at 65–74 and declines thereafter; incidence peaks at 55–64 and then tapers. Urban residents show consistently higher burden than rural. A clear upward socio-economic gradient is observed: richer and socially forward groups have higher rates, whereas ST/SC groups are lower. Currently working individuals have lower burden than those never or no longer working; living alone confers small, age-dependent differences. Women have greater hypertension burden, whereas men slightly exceed women for diabetes. Family history strongly predicts both conditions, though effects attenuate with age. Higher BMI displays a graded association, with overweight/obesity conferring the largest risks, especially at young older ages. Cross-condition comorbidity is considerable (diabetes+hypertension; hypertension+diabetes). For hypertension, physical inactivity and sleep problems increase risk; tobacco becomes predictive only at older ages. For diabetes, behavioural factors are generally weak or counterintuitive, likely reflecting reporting and survival biases.

Conclusion: The findings highlight the need for life course oriented, socio-demographically responsive strategies to prevent and manage hypertension and diabetes in India's ageing population.

Keywords: Hypertension, Diabetes, Ageing, life course risk factors

Loneliness and Its Health Correlates among Older Adults in India: Evidence from LASI

Akriti Singh Rajpoot

Background and Objectives: Loneliness is a subjective experience that arises from the perceived gap between desired and actual social relationships. It is recognised as a major contributor to psychological distress among older adults, with significant implications for their health and well-being. Rapid demographic ageing, shifting family structures, and broader social transitions have increased the vulnerability of older adults to loneliness. While loneliness has been widely documented in high-income countries, less is known about its prevalence and correlates in the Association of Southeast Asian Nations (ASEAN) member states, particularly in India. Therefore, this study aimed to examine the prevalence and determinants of loneliness among older adults in India and its associations with key health outcomes.

Methods: Data are drawn from the Longitudinal Ageing Study in India (LASI) Wave-1 (2017-2018), comprising 66,606 individuals aged 45 years and above excluding missing values. Loneliness was assessed using the question, How often did you feel alone?. Socio-demographic and health-related correlates were examined through descriptive analysis, and multinomial logistic regression models.

Results: The prevalence of severe loneliness among older adults is 11.81% (10.35% in men and 13.09% in women). Socio-demographic variables such as marital status (RRR 2.55, 95% CI 2.38-2.74), place of residence (RRR 1.07, 95% CI 1.00-1.15), economic status (RRR 1.23, 95% CI 1.11-1.35), and perception of neighbourhood safety (RRR 1.35, 95% CI 1.24-1.47) are significantly associated with the loneliness. However, health-related correlates included number of chronic conditions, number of Activities of Daily Living (ADL)(RRR, 1.25, 95% CI 1.10, 1.42), and Instrumental Activities of Daily Living (IADL)(RRR 1.25, 95% CI 1.12, 1.40), self-reported unhealthy health status (RRR 1.12, CI 1.04, 1.20), sleep disturbance (RRR 2.26, 95% CI 2.02-2.53) also found to be significantly associated with loneliness.

Conclusion: Loneliness affects a significant proportion of older adults in India and is closely linked with adverse health and social factors. Those who are unmarried, functionally limited, physically inactive, or socially less engaged are particularly vulnerable. Addressing loneliness through targeted policies and community-based interventions is essential to promote healthy and active ageing.

Keywords: Loneliness, Older adults, Health outcomes, Social networks, Longitudinal Ageing Study in India (LASI).

Age at Menarche and its Association with Obesity Risk among Indian Women: Evidence from NFHS-5

Anaswara B G

Background and Objectives: The timing of menarche represents a key biological milestone in a woman's reproductive life course and has been widely recognized as an important determinant of long-term health outcomes. Early menarche has consistently been linked to higher risks of obesity, type 2 diabetes, cardiovascular disease, and certain cancers, while later onset is often associated with undernutrition and delayed growth. In the Indian context, where both undernutrition and obesity coexist as dual public health challenges, it becomes crucial to understand how variations in pubertal timing may shape nutritional status and metabolic risks among young women. However, nationally representative evidence on the relationship between menarcheal age and obesity in India remains limited.

Objectives: The study examines the relationship between age at menarche and obesity among Indian women aged 15–29 years, utilising large-scale, nationally representative data from the fifth round of the National Family Health Survey (NFHS-5). Specifically, the study examines how the timing of menarche relates to both general and abdominal obesity, as measured by body mass index (BMI), waist circumference, and waist-to-height ratio (WHtR).

Methods: Data were drawn from NFHS-5, which provides comprehensive information on reproductive health, nutrition, and anthropometry. The analytic sample comprised 230,045 women aged 15–29 years who reported their age at menarche and had valid anthropometric measures. General obesity was defined as BMI ≥ 25 kg/m², while abdominal obesity was classified using standard cut-offs for waist circumference and WHtR. Age at menarche was categorized into three groups: <12 years (early), 12–14 years (average), and >14 years (late). Descriptive statistics were used to examine the distribution of nutritional status across menarcheal categories. Logistic regression models were then employed to estimate the odds of obesity by age at menarche, with <12 years serving as the reference category.

Results: The descriptive analysis revealed that the majority of women (81.4%) experienced menarche between 12–14 years, 3.7% had early menarche (<12 years), and 15.0% reported late onset (>14 years). Early menarche was disproportionately more common among women with obesity (6.3%) and overweight status (5.0%), compared to those with normal BMI (3.9%) or underweight status (2.8%). Logistic regression confirmed a significant inverse association between menarcheal age and obesity. Compared to women with early menarche (<12 years), those with average menarche (12–14 years) had 44% lower odds of obesity (OR = 0.56, 95% CI: 0.49–0.64, $p < 0.001$), while those with late menarche (>14 years) had 43% lower odds (OR = 0.57, 95% CI: 0.49–0.66, $p < 0.001$). These findings remained statistically robust, highlighting that early pubertal onset markedly elevates the likelihood of obesity.

Conclusions: The study provides strong evidence, based on nationally representative data, that early menarche is a significant predictor of obesity among young Indian women, while later onset is more strongly associated with underweight status. These results are consistent with global findings and underscore the role of pubertal history in shaping adult health risks. The findings call for the integration of menarcheal timing into obesity risk assessments and preventive health strategies.

Temporal changes in socio-economic inequality in distress financing for caesarean deliveries in India, 2015-21

Ankita Roy

Background and Objectives: The global rise in caesarean deliveries has heightened financial risks for poorer populations, particularly in low- and middle-income countries. In India, caesarean rates increased from 17.2% in 2015 to 21.5% in 2021. Using data from the last two rounds of National Family and Health Surveys (NFHS), this paper tests the hypothesis of whether the socio-economic (SES) inequality in distress financing for caesarean deliveries has increased in India.

Methods: We analysed 67,497 caesarean births using data from NFHS-4 (2015–16) and NFHS-5 (2019–21). Births for which the OOP payment was met by selling properties/jewellery or borrowing from friends, relatives, and money lenders were labelled distress financing. The independent variables analysed were time, health insurance coverage, OOP payments, wealth status, place of delivery, birth order, mother's age, education, caste, and religion. We have used descriptive statistics, bivariate analyses, and decomposition analyses to understand the changes in socio-economic variations and inequality in distress financing.

Results: Distress financing declined nationally from 31.2% in 2015-16 to 23.1% in 2019-21. The decrease in distress financing has been observed across socio-economic groups in the country. The concentration index improved from -0.275 to -0.165, indicating reduced SES inequality in distress financing for caesarean delivery in India. Among all states, Bihar had the highest SES inequality in distress financing for caesarean delivery (CI: -0.327), while Himachal Pradesh had the lowest (CI: -0.045). However, state-level disparities persist. Decomposition analysis shows wealth and maternal education as key drivers of inequality.

Conclusions: Rising caesarean rates and persistent interstate inequities suggest uneven policy effectiveness. Targeted reforms to reduce financial hardship and promote equitable access to maternal health services are needed.

Assessing Women's Physical Health in India: Classical Regression and Machine Learning Approaches

Anshul Pandey

Background: Women in South Asia face a critical double burden of malnutrition, with undernutrition persisting alongside a rapid rise in overweight and obesity. Globally, obesity has reached epidemic levels, nearly tripling since 1975, with 15% of women classified as obese. At the same time, developing countries have experienced declining undernutrition but rising overweight and obesity among women of childbearing age, highlighting a double-edged sword effect of economic progress. In India, fertility and mortality have declined, but lifestyle-related diseases have surged, with women disproportionately affected by obesity, particularly among wealthier households. In this context, machine learning (ML) has emerged as a powerful approach to predict body mass index (BMI), identify health risks, and inform interventions to address inequities in women's health.

Data and Methods: The study utilizes the fourth wave of the National Family Health Survey (NFHS-4), 2015–16. Descriptive statistics, bivariate and multivariate analysis was used to check the significant relationship between overweight and obesity, and other background characteristics. The primary measures for evaluating physical health are Body Mass Index (BMI). We will analyze the prevalence and trends of BMI among Indian women by utilizing district level data provided by all three rounds of the NFHS (NFHS III to V). The primary factors of BMI will be evaluated by utilizing methodologies such as LASSO, Elastic Net. We applied classical regression and machine learning model to assess determinants of underweight (BMI < 18 kg/m²) and overweight/obesity (BMI ≥ 25 kg/m²).

Results: Supervised Machine Learning models, particularly support vector machines and k-nearest neighbors, outperformed traditional methods in predicting women's BMI and nutritional status in India. ML applications also demonstrated potential in forecasting the prevalence of overweight and obesity. Socioeconomic status, age, and education consistently emerged as strong predictors of obesity. Rural–urban gap exists in women's nutritional status: 13% of rural women are underweight compared to 9% of urban women, while the burden of overnutrition is reversed, with 43% of urban women being overweight or obese compared to 28% of rural women. And women from the richest quintile were nearly six times more likely to be obese than those from the poorest households, with inequalities highest in eastern and central regions. SES explained 29% of reduction in undernutrition and 46% of increase in overweight/obesity. Over a decade, India witnessed significant reductions in underweight prevalence but parallel increases in overweight, particularly among urban and affluent women, confirming a nutrition transition effect.

Conclusion: The reviewed evidence highlights the urgent need for integrated, equity-focused interventions to address both undernutrition and obesity among women in South Asia. Machine learning offers promising predictive tools to enhance early detection and personalized interventions but must be implemented with caution to avoid reinforcing biases and disparities. Policymakers should prioritize multidisciplinary strategies that combine economic, nutritional, and technological approaches to reduce the double burden of malnutrition and improve women's health outcomes across diverse socioeconomic settings.

Sex Preferences and Contraceptive Use among Tribal Women in India: A Regional Analysis

Anubhav Verma

Unlike the patriarchal nature of the Indian society, the tribal communities were considered an egalitarian society where gender biases were not so evident. However, with the influence of mainstream culture, it can be seen as a glimpse of sex preferences at the birth of a child. Despite the extensive research on family planning among tribal women all over the country, there is a relative dearth of literature on the effects of the sex composition of living children on contraceptive use among tribal women. The sex composition of living children as a measure of sex preference has been found the most important determinant of contraceptive use. Therefore, the study becomes vital to examine the relationship between the sex composition of the living children and contraceptive use among tribal women across different regions of India, using the data of the National Family Health Survey (NFHS-5). The descriptive analysis shows that the contraceptive rate was lowest among the tribal communities in India, showing female sterilization as the most prominent method of contraception. The northeastern region, followed by central and eastern regions, showed the lowest rate, with Meghalaya, Tripura, Bihar and Jharkhand showing the lowest rate. The multivariate logistic regression found the impact of socioeconomic and demographic characteristics of the population on the usage of family planning methods, with the women in the middle age group showing a higher likelihood of using contraception. A positive correlation was found between the contraceptive methods, the exposure of family planning messages, and the number of living children. A negative correlation was also evident between the contraceptive methods and wealth quintile, age at marriage, household size and ideal number of children. The study found that contraceptive use was closely associated with the sex composition of the living children. Women without sons had consistently lower contraceptive use across all the regions, whereas usage increased with the number of sons, showing a positive correlation between son preference and contraception. Among women with only one child, those with a daughter were consistently less likely to use contraception than those with a son, except in the Southern and northeastern regions, not showing any correlation between contraception and sex composition. Contraceptive usage was highest among those with two sons and significantly lower for those with two daughters, especially among women with two children, especially in the Northern, Central, and Western regions. A similar pattern was observed among women with three or more children, with contraceptive use declining as the number of daughters increased. Women with only daughters were significantly less likely to use contraception compared to those with only sons, further reinforcing the strong preference for male children. The effect of the son preferences on contraception was strongest in the northern region, followed by the central and western regions and lowest in the northeastern region, followed by the eastern region. The region-wise sex preference effects represent the regional influence of culture. The findings underscore the persistent influence of son preference on family planning decisions, leading to delayed or lower contraceptive adoption among women with only daughters. Regional disparities further highlight the need for targeted interventions to address gender-biased contraceptive behaviors and promote equitable reproductive health policies among tribal women.

Navigating the Digital Finance Transition: A Phenomenological Study of Older Adults' Motivations, Barriers, and Social Influences in India

Anupama S & Dr. Angan Sengupta

Purpose: The aim of this study is to explore the motivations, barriers, and social influences that drive the adoption of digital finance among older adults in India. By focusing on Kerala and West Bengal—two ageing states with contrasting socio-economic and digital profiles—the study seeks to uncover how contextual differences influence the financial behaviors of older adults during the digital finance transition.

Design/methodology/approach: A qualitative phenomenological approach was employed, in which in-depth interviews with older adults were undertaken to capture their lived experiences. Data were analyzed thematically to identify six interrelated themes such as personal empowerment and independence, learning, support and growth, intergenerational and social dynamics, motivation, necessity and future orientation, continuity of cash usage, and systemic and human-centered issues.

Findings: The research finds digital finance adoption among the elderly influenced by a mix of empowerment, necessity, and social influence, and ongoing use of cash and embedded concerns regarding security and usability. Kerala, representing a case of advanced ageing, high literacy, highest share of elderly in India, digital preparedness, and a remittance-driven economy presents a distinct context. In contrast, West Bengal, with its rapidly growing older adult population, lower literacy levels, more pronounced rural-urban divides and heterogeneous socio-economic characteristics reflects a different scenario. Together these contrasts highlight two significantly different ageing finance realities within India.

Originality/value: This article complements research on ageing and FinTech by showing that the adoption of digital finance should not be seen as a technological process only, but as a socially embedded, multi-dimensional transition. It provides concrete recommendations for policy makers, financial service providers, and FinTech companies, who can design age-inclusive, secure, and culturally sensitive digital finance ecosystems in India and beyond.

Keywords: Digital finance, FinTech adoption, older adults, financial inclusion, social influence

Environmental Risk Factors for Type 2 Diabetes in Urban India: Insights on Artificial Light at Night and Greenness Exposure

Arabindo Tanti

Introduction: Cardiovascular diseases (CVDs) are the leading contributors to morbidity and mortality worldwide, driven in part by increasing urbanization and lifestyle transitions. Among these, type 2 diabetes mellitus (T2DM) represents a major cardiometabolic risk factor and is growing rapidly in India. Apart from lifestyle and traditional risk factors, rapid urbanization has introduced environmental risk factors for T2DM, including widespread exposure to artificial nighttime light and declining access to green spaces, both of which influence circadian rhythm, metabolic regulation, and lifestyle behaviours. Yet, evidence on how these environmental exposures shape diabetes risk in the Indian context remains limited.

Objectives: This study aimed (i) to examine nighttime light exposure (NTL) as an environmental risk factor for type 2 diabetes among urban adults in India, and (ii) to evaluate the effect of residential greenness, measured using the Enhanced Vegetation Index (EVI), on diabetes prevalence in urban settings.

Data and Methods: We utilized nationally representative data from the fifth round of the National Family Health Survey (NFHS-5, 2019–21). The study included a total sample of 31,546 men and 214,764 women aged ≥ 15 years residing in urban areas. The outcome variable was diabetes prevalence, identified through random blood sugar measurements supplemented by self-reports of prior diagnosis or treatment for diabetes. Individuals with random blood sugar >140 mg/dL, or reporting a diagnosis/medication use, were classified as diabetic.

Exposure data were derived from geospatial indicators: nighttime light composites (NTL) as a proxy for light pollution and urbanization, and the Enhanced Vegetation Index (EVI) for greenness. Mean NTL and EVI values were extracted within a 10 km buffer around each NFHS survey cluster. Multiple logistic regression models were employed for the association of exposures with diabetes, adjusting for socio-demographic and lifestyle covariates.

Findings: The overall prevalence of T2DM in urban India was 16.42%. Among men, exposure to higher levels of NTL was strongly associated with diabetes. Compared with the lowest quartile, the 2nd, 3rd, and 4th quartiles of NTL exposure corresponded to ORs of 1.83 (95% CI: 1.09–3.10, $p = 0.023$), 2.04 (95% CI: 1.26–3.31, $p = 0.004$), and 1.89 (95% CI: 1.17–3.04, $p = 0.009$), respectively. Low greenness exposure further elevated risk, with OR = 1.46 (95% CI: 1.11–1.94, $p = 0.008$) compared to high greenness, while sparse greenness was not significant (OR = 0.88, 95% CI: 0.74–1.06, $p = 0.192$). Among women, NTL exposure also demonstrated a significant but smaller effect: the 2nd, 3rd, and 4th quartiles showed modestly increased odds of diabetes at 1.08 (95% CI: 1.05–1.11, $p < 0.001$), 1.12 (95% CI: 1.09–1.16, $p < 0.001$), and 1.09 (95% CI: 1.06–1.13, $p < 0.001$), respectively. Interestingly, greenness displayed a contrasting pattern in women: compared to dense greenness, residence in low (OR = 0.70, 95% CI: 0.66–0.74, $p < 0.001$) or sparse (OR = 0.85, 95% CI: 0.83–0.87, $p < 0.001$) greenness areas was associated with lower odds of diabetes.

Monitoring Spatial Pattern of Birth Weight in India Using Statistical Process Control Techniques

Ayushi Chourasiya

Child health is one of the key indicators for assessing the health infrastructure of a country, and among various determinants, birth weight serves as a critical measure. Both low birth weight (LBW) and high birth weight (HBW) pose significant risks to the health of both the newborn and the mother, often leading to short and long-term complications. Therefore, monitoring birth weight is essential for improving maternal and child health outcomes and ensuring the overall health development of a nation.

This study utilizes Statistical Process Control (SPC) techniques, specifically control charts, to examine patterns and variations in birth weight across six major regions of India—Central, Eastern, Northern, North-Eastern, Southern, and Western—as well as by place of residence (urban/rural) and social caste categories. The analysis is based on data from the birth file of the National Family Health Survey (NFHS-5), focusing on the birth weight of the last-born child during the reference period 2016 to 2020.

The control chart approach enables the identification of statistically significant deviations and potential areas of concern or improvement in birth weight trends across regions. Findings indicate that the Southern region consistently exhibits the most reliable and stable birth weight patterns, which may be attributed to better prenatal care, higher rates of institutional deliveries, and more robust health infrastructure.

Guarding the Future: Tackling Substance Use and Mental Health Challenges in Adolescence

Bibaswan Majumdar

Background: Adolescence is a period of rapid growth and transition, marked by physical, emotional, and social changes. During this stage, with growing independence, stronger peer connections, and new opportunities for learning, young people also begin shaping their identity and future goals. However, this period can also expose them to risky behaviours, including the use of substances like tobacco, alcohol, cannabis, inhalants, and drugs. While exploration is natural, peer pressure, family environment, and academic stress often increase vulnerability. Beyond physical risks, substance use is closely tied to depression, anxiety, and emotional instability, threatening healthy development and overall well-being.

Research Methodology: This study adopts a qualitative review approach, synthesising evidence from cross-sectional and community-based studies conducted in India between 2010 and 2025. The analysis draws on peer-reviewed literature, national surveys (including NFHS-5 and UDAYA), and context-specific research to map patterns of adolescent substance use and its association with mental health outcomes. Particular attention is given to the influence of familial environment, peer dynamics, and school settings in shaping behaviours.

Results: Research shows that adolescent substance use is a widespread concern. Nearly one-third of young people visiting primary health centres report using substances, mainly tobacco, alcohol, and cannabis. Various studies connect alcohol use with poorer psychological well-being, while studies in urban slums found prevalence as high as 34%, often associated with broken homes, parental use, and low education levels. Although adolescents are influenced by parents and even grandparents in matters of consumption, peer pressure is often the strongest factor driving initiation. National surveys such as NFHS-5 and UDAYA highlight variations across gender, regions, and community settings. On a positive note, school-based awareness programs have proven helpful in preventing use and strengthening coping strategies in adolescents against peer pressure for such consumptions.

Conclusion: Adolescent substance use poses a critical challenge to both mental health and overall development, demanding urgent attention beyond individual behaviour. Evidence highlights the need for multi-level interventions that combine family and community support with structured, school-based prevention programmes. Strengthening life-skills education, early counselling services, and peer-led awareness initiatives can play a pivotal role in reducing initiation and sustaining resilience. At the policy level, integrating adolescent substance-use prevention into national health and education programmes, alongside stronger regulation of access to tobacco and alcohol, is essential. A comprehensive approach that unites families, schools, health systems, and policymakers will be key to safeguarding the well-being and future potential of young people.

The Impact of Gender-Based Violence on Reproductive Health Outcomes Among Indian Women: Evidence from NFHS-5

BIPUL KUMAR ROY

Background and Objectives: Gender based violence and specially the Intimate partner violence plays a critical role in public health challenge with wide ranging consequences for women s reproductive health. From the evidences from the low- and middle-income countries, including India, suggest that the GBV can influence the contraceptive uptake, maternal health utilization and reproductive outcomes.

Methods: For this study we analyzed data from National Family Health Survey-5 (NFHS-5), which focuses on ever-married women aged 15-49 years. The three logistic regression model were estimated using the survey-adjusted commands(svy) to access- (a) the association between GBV and modern contraceptive use, (b) the effect of IPV on antenatal care (ANC) utilization (≥4 visits), and (c) the relationship between GBV and adverse reproductive outcomes (unintended or terminated pregnancies). Some adjustments were made for sociodemographic and household level confounders.

Results: Women who were exposed to GBV had found significantly higher odds of using modern contraceptive (OR-1.31;95%CI-1.01-170; p=0.044). In contrast, IPV exposure was associated with lower likelihood of attending ≥4 ANC visits (OR: 0.60; 95% CI: 0.44 0.83; p = 0.002). The relationship between GBV and adverse reproductive outcomes, however, was not statistically significant (OR: 1.17; 95% CI: 0.73 1.88; p = 0.510).

Conclusion: The findings highlight the complex role of GBV in shaping reproductive health outcomes among Indian women s. However, the exposure to violence may drive to higher contraceptive uptake, it simultaneously reduces the risk of maternal healthcare utilization, potentially undermining the safe pregnancy outcomes. This underscores the need for integrated intervention that address GBV along with reproductive and maternal health programs in India.

Obstetric violence and its association with postnatal depression among women in Rural India

Deepak

Background and Objectives: Mistreatment, abuse, or neglect during childbirth is known as obstetric violence, which is increasingly recognized as a human rights issue with significant public health impacts. Research shows that traumatic childbirth can profoundly affect maternal psychological health and undermine positive parenting. Marginalized women, such as those from Scheduled Castes and Tribes in rural backgrounds, may face a higher risk of both OV and poor mental health consequences due to systemic inequities. Understanding how these issues are connected is essential to ensure mothers get safe, respectful, and complete care during and after pregnancy. This study provides primary evidence on the link between OV and Postnatal depression among rural women in Jharkhand, a region marked by social and infrastructural disadvantage.

Objective: This study investigated the association between obstetric violence and postnatal depression (PND) among women in rural Jharkhand, India.

Methods: A longitudinal community-based study was conducted at two time points: late pregnancy (n=246) and postpartum (n=189). Obstetric violence was assessed using a validated typology aligned with the WHO and Bowser and Hill's framework. At the same time, postnatal depression was measured using a Hindi-translated and reliability-tested Four-Dimensional Symptom Questionnaire (4DSQ). Logistic regression models were used to examine the sociodemographic correlates and associations between obstetric violence and PND.

Results: More than half (56.1%) of the respondents reported experiencing obstetric violence during childbirth, predominantly physical abuse (47.6%) and non-dignified care (33.9%). The prevalence of postnatal depression was significantly higher among those exposed to obstetric violence (55.7%) than among those not exposed (28.9%). Adjusted analysis showed that women experiencing any form of obstetric violence had over threefold higher odds of PND (OR=3.11, $p<0.01$). Neglected care and privacy violations were the strongest predictors. Caste identity, limited media exposure, and nuclear family structure were significant factors.

Conclusion: In rural India, obstetric violence is common and closely linked to PND. Promoting fair and considerate maternity care requires addressing disrespectful care behaviors and including mental health screenings in maternal health services.

Keywords: Obstetric violence, Postnatal depression, Maternal mental health, Respectful maternity care, Rural India, Health inequity

Heat Stress and unequal Nights: Analysing the impact of Heatwaves on sleep disorders among the slum dwellers of Delhi (NCT)

Deepak Verma

Heatwave is a major climatic threat to the Global world as its frequency, intensity, and duration are increasing with each passing year. Nights for the people are not equal because the capacity to secure restorative sleep during these events is unequal, shaped by socioeconomic means and living environments such as slums. This study aims to assess the prevalence of heat induce sleep disorders among the slum dwellers of Delhi (NCT) during the heatwave days especially during the months of April May and June, when Sometimes mercury reaches to 52°C in some parts of Delhi. A survey of 520 individuals (aged 18years or above) was conducted collecting data on socioeconomic, demographic and health characteristics. Modified Jenkins Sleep Scale was used to assess the quality of sleep of the slum dwellers based on their sleep related difficulties in last 15 days during extreme hot days. It categorises the sleep related discomfort or anomalies due to heat in four categories: Never, rarely (1-2 nights per week), Occasionally (3-4 nights per week) and Frequently (5 or more nights per week). Never/Rarely were recoded as 0 no, and Occasionally/Frequently was recoded as 1 yes. If the respondent reported having any of the above problems, he/she was defined as suffering from a heat induced sleep discomfort.

The present study reported that almost 27 % of the slum dwelling population of Delhi (NCT) suffered from the heat induced sleep discomfort during peak summer months. The individuals with sleeping problems due to heat stress were explicitly linked to the chronic disease, Wealth Quintile, nature of occupation, inadequate ventilation, socio economic and demographic factors. Older adults with chronic disease reported highest percentage of sleep discomfort (35%) during heatwave.

Based on multivariate regression analysis, it was revealed that sleeping problems due to heat were associated with a twofold increase in presence of chronic disease (AOR: 2.02; 95% CI: 1.88, 2.17) and for poorest wealth quintile it was 1.5 times (AOR: 1.52; 95% CI: 1.32, 1.68).

The present study concluded that a significant proportion of the older adults suffered from heat induced sleep discomfort. Hypertension and Cardiovascular disease that exacerbate with high temperature leads to anxiety and stress ultimately enhanced the risk of poor quality of sleep.

The study has clinical relevance as sleep problems offer a means for identifying those who are more vulnerable in deprived settings during heatwave like climatic catastrophes and advocates for proper intervention for mitigation measures so that concomitant ill effects of heat can be reduced in the slums of Delhi.

Keywords: Sleep discomfort, Heatwave, heat stress, slum

Epidemiology of Malaria in India

Divyanshi Verma

Background and Objectives: Malaria is a huge public health problem in terms of morbidity and burden on health care facilities in India. According to National Centre for Vector Borne Disease Control (NCVBDC) about 95% population in the country resides in malaria endemic areas and 80% of malaria reported in the country is confined to areas consisting 20% of population residing in tribal, hilly, difficult and inaccessible areas.

Methods: Study has been conducted using data from National Centre for Vector Borne Disease Control (NCVBDC) from 2001-2023 for trend analysis. Geospatial analysis has been done based on the latest data to show the prevalence, testing rates, case fatality and mortality due to the two commonly reported human malaria parasites (*P falciparum* and *P vivax*) in India.

Result: The study result of temporal trend of Malaria indicators shows the gradual decline in malaria cases, deaths and Annual Parasitic Incidence (API) over the years. And if we investigate spatial distribution the API of *P falciparum* shows that mostly the cases are concentrated in the states of Tripura, Mizoram, Odisha, and parts of Chhattisgarh and Andhra Pradesh. While the *Pvivax* cases are mostly concentrated in parts of Gujarat, Jharkhand, Chhattisgarh, UP and Rajasthan. The percentage of *P vivax* is high as compared to *Pfalciparum* that is 60% and 40% respectively but the percentage of death due to *P falciparum* is 77% and death due to *P vivax* is 23% which shows that the cases of *P vivax* are treatable while the *P falciparum* is most deadly species of Malaria in India. The most interesting finding of the study shows that inspite of high case fatality of *P falciparum* and *P vivax* cases in Southern States have low mortality showing strong health infrastructure and active Malaria surveillance Programmes.

The Annual Blood Examination Rate (ABER) shows that Southern Indian states like Goa, Dadar and Nagar Haveli, Daman & Diu, Gujarat, Karnataka and Maharashtra has good ABER as it is touching the prescribed level of NCVBDC that is at least 10 percent while rest of the states are lagging in the Malaria testing. The Case fatality of *P vivax* is very low in Northern Plains while the *P falciparum* is the main cause of deaths due to Malaria cases in Northern Plains such as UP and Bihar, the *P vivax* cases have low mortality except only few districts.

Conclusion: This study is useful in order to make arrangements for health care services such as provision of facilities, location of facility, type of facility, expertise manpower, infrastructure at the facility, drug supply, other requirements to tackle with the burden of Malaria in India.

Interplay of Nomophobia, Smart Phone Addiction and Mental Health Among Undergraduate Students

Dr. Ranjeeta Kakoti

Background and Objectives: An increasing trend of use of mobile phones among students has develop into nomophobia. Data has now started emerging with respect to the negative physical and psychological consequences of digital dependence in mental health. The purpose of the study is to find out the prevalence of nomophobia and smart phone addiction and mental health. The study also investigates on the interplay of the nomophobia, smart phone addiction and mental health among the undergraduate students.

Data and Methods: The sample of the study is 256 undergraduate students studying the college of Nagaon district. Nomophobia Scale by P S. Raja Kumar and C. Shirley Moral is used to assess the nomophobia; Smart phone Addiction Scale by P Vijayshri and Masaud Ansari for phone addiction and Mental Health Scale by P Sushma Talesara and Akhtar Bano to find out the mental health of the undergraduates.

Findings: The findings of the study were 39.4% of the undergraduate students have severe nomophobia, followed by 39% with moderate level. Out of 256 sample, 136 were addicted to smart phone with 53.1% being severely addicted. The findings also highlighted that the students with severe nomophobia were addicted to smart phone and have a negative impact on the mental health of the students.

Conclusion/ Policy Implications: The study reflects the dark reality of digital addiction and nomophobia along with mental health menace. It highlights the fact that though the world is moving toward AI and digitization, the new generation is engulfed in the trend of nomophobia and poor mental health.

The Role of Dietary Diversity in Addressing Undernutrition

Dr. Anuj Singh

Background and Objectives: Undernutrition continues to pose a severe public health challenge in low- and middle-income countries, particularly in South Asia. Despite improvements in healthcare and nutrition programs, the prevalence of undernutrition remains high. This study explores the impact of dietary diversity on undernutrition specifically stunting, wasting, and underweight among Indian children aged 6–23 months.

Data and Methods: Using data from the National Family Health Survey (NFHS), this study examined the association between levels of dietary diversity (categorized as high, medium, and low) and child nutritional outcomes. Statistical analyses involved t-tests to assess differences in mean dietary diversity across nutritional status groups and Generalized Linear Models (GLMs) to estimate adjusted relative risks for stunting, wasting, and underweight while controlling for child, maternal, and household characteristics.

Findings: Only 6.38% of children consumed food from a highly diverse set of food groups. Significant differences in mean dietary diversity were observed between children with and without stunting ($t = -3.99$, $p < 0.0001$), wasting ($t = 6.71$, $p < 0.0001$), and underweight ($t = 4.33$, $p < 0.0001$). Although the effect sizes were modest, GLM results showed that low and medium dietary diversity levels were significantly associated with higher risks of wasting (ARR = 1.07, $p < 0.05$) and underweight (ARR = 1.06, $p < 0.05$), even after adjusting for other variables.

Conclusion/ Policy Implications: Improving dietary diversity during the complementary feeding period is essential to reduce undernutrition. Policymakers should prioritize interventions that promote the inclusion of nutrient-rich foods to enhance child health outcomes and break the cycle of intergenerational malnutrition.

Keywords: Dietary diversity, undernutrition, stunting, wasting, underweight, complementary feeding, NFHS, child health.

Advancing Transgender and LGBTQ+ Inclusion in Global Medical Practice.

Dr. Birendra Kumar Jaiswal

Background: Healthcare systems worldwide have made notable progress in many areas, yet significant inequities remain for transgender and LGBTQ+ individuals. These populations frequently encounter barriers to access, stigma, and substandard treatment, which contribute to poorer health outcomes compared to the general population. In many regions, transgender individuals are especially vulnerable due to lack of legal recognition, limited access to gender-affirming care, and widespread discrimination in medical settings. Medical education often omits LGBTQ+-specific content, leaving healthcare providers underprepared to address diverse patient needs. This exclusion perpetuates systemic bias and adversely affects both physical and mental health outcomes for these communities.

Objectives: The primary objective of this study is to assess the current status of transgender and LGBTQ+ inclusion in medical practice globally. Specific aims include: Identifying systemic and institutional gaps in healthcare delivery for LGBTQ+ populations. Evaluating the representation of LGBTQ+ topics in medical curricula worldwide. Analyzing successful case studies of inclusive practices. Recommending strategies to improve inclusivity, equity, and access for LGBTQ+ individuals in healthcare.

Data: Data for this study were collected through a combination of primary and secondary sources: A literature review of over 150 peer-reviewed articles and WHO/UNAIDS global health reports published between 2010 and 2024. Analysis of healthcare policies from 25 countries across five continents. Online surveys completed by 150 medical professionals and 200 LGBTQ+ patients from North America, South America, Europe, Asia, and Africa. Interview data from 30 transgender individuals who had accessed gender-affirming healthcare.

Methods: A mixed-methods approach was adopted to ensure comprehensive analysis: Quantitative methods included statistical analysis of survey responses using descriptive and inferential statistics to assess trends in inclusivity and discrimination. Qualitative methods included thematic content analysis of interviews and open-ended survey questions to understand lived experiences and institutional practices. Policy evaluation frameworks were applied to assess inclusion in national healthcare strategies. Comparative analysis highlighted regional variations and best practices.

Findings: 68% of LGBTQ+ respondents experienced discrimination in healthcare settings, and 72% felt their providers lacked knowledge of LGBTQ+ health needs. Only 19% of surveyed medical schools included LGBTQ+ health as part of required training. Countries like the Netherlands, Canada, and Argentina, which have progressive healthcare policies, showed significantly higher patient satisfaction and outcomes. Gender-affirming care was largely inaccessible or unaffordable in low- and middle-income countries. Providers who received LGBTQ+ sensitivity training reported greater confidence and competence in treating diverse patients.

Conclusion:

LGBTQ+ inclusion in global medical practice remains inadequate, but targeted interventions can bring meaningful change. Integrating LGBTQ+ health into medical education, reforming

discriminatory policies, and engaging community stakeholders are essential steps. Healthcare providers must be equipped with cultural competence and supported by inclusive systems. Advancing equity for LGBTQ+ and transgender individuals is not just ethically necessary it is fundamental to universal health coverage and global public health. Collaboration, education, and advocacy are key to building a truly inclusive healthcare future.

Knowledge, determinants of Sexual and Reproductive health among urban youth of Kolkata

Dr. Chandramallika Biswas

Background and Objectives: In the life cycle of the human being, adolescence and youth are the most critical stages of life. Psychologists call this period as a state of storm and stress. It is a state of rapid changes in physical, psychological and social behaviour. Reproductive health occupies a central position in the identity of health as well as the development of a given population. Majority of the youth are unaware about the physical and psychological changes due to ignorance and illiteracy. Not only the ignorance but the lack of sex education and shyness increase the problems and risks of early pregnancies and STDs.

Objectives: The major objectives of the paper are as follows: 1. To study the level of awareness on reproductive health and HIV/ AIDS knowledge among urban educated youth. 2. Study and analyse the determinants affecting their level of reproductive health and HIV/ AIDS knowledge. 3. To study and understand the need for sex-education among the urban educated youth.

Data: The data for analysis was collected from primary field survey among 455 urban educated youth.

Methods: The methods used are percentage distribution, cross-tabulation along with chi-square test, computation of Reproductive Health and HIV/ AIDS knowledge index and ordinal regression using SPSS.

Findings: It was found that reproductive health knowledge was low among the lower age groups, among unmarried youth, among students and also among some professions. Complete reproductive health knowledge was found only among a handful of youth. They lacked some of the basic information on reproductive health which was partly due to their ignorance or due to the absence of a proper channel of such information. In case of HIV/ AIDS awareness, media played a significantly positive role while lifestyle risks and habits posed as a negative threat to correct knowledge. Among students in colleges and universities, the Red Ribbon Clubs and peer discussions had a role in creating higher awareness. The lack of correct knowledge about HIV/ AIDS and its transmission, prevention and misconceptions can still be attributed to the nature of ignorance among youth towards some health and HIV/ AIDS related information. It was seen that young people do not have any reliable source of sex-education and hence gather information from friends, TV and newspapers. In the absence of any formal source of sex education, there lies a need for a one-to-one personal education on sexuality and health-related issues.

Conclusions/ Policy Implications: 1. Due to incomplete knowledge on SRHR, more workshops should be conducted at institutional level and parents should be sensitized to break the ice at family level. 2. There should be some counseling cell in the educational and grassroots urban health centers for the youth to discuss these issues. 3. The findings suggest that the main sources of knowledge on sex-education among youth are from friends, TV, newspapers, magazines and internet. Thus need for interpersonal level sex-education programmes for adolescent and youth at educational institutions.

Out-of-Pocket Expenditure of Slum Dwellers

Dr. Rashmi Shukla

Background & Objectives: Health is a fundamental part of a decent life. The widespread occurrence of communicable and non-communicable diseases results in high healthcare costs. Urban poor households, especially those in slums, are the most affected due to the insufficiency of public healthcare systems. They must rely on private healthcare and face out-of-pocket (OOP) expenses, which can put them at greater risk of catastrophic health costs. This study aims to estimate out-of-pocket healthcare expenditures using household surveys in both slum and non-slum areas of Lucknow city in India.

Data & Methods: The present research work is based on primary data. The data was collected from Lucknow district through a uniformly designed structured interview schedule. Lucknow has been selected at the first stage using the multistage sampling technique. In the second stage, one ward of each zone was randomly selected, covering all eight zones. In the last stage, 30 households were selected from each zone: 10 households from non-slum areas, 10 households from notified slums, and 10 households from non-notified slums. The study covered a population of 1178 in the two hundred forty households surveyed in eight zones of Lucknow. The Cost of Illness method (COI) has been used to measure the health cost of slum dwellers. The COI method is the first economic evaluation technique used in public health to assess the financial burden of diseases on society. This study examines both direct and indirect health costs.

Findings: The study finds that waterborne diseases were more prevalent in the study area, and slum dwellers suffered more from waterborne diseases such as diarrhea, cholera, typhoid etc. The reason may be inadequate safe drinking water and sanitation facilities in slum areas. The study calculated direct and indirect health costs and found that the direct cost accounted for about 3/4th of the total costs for acute and chronic diseases. The study also found considerable variations in healthcare expenditures among slum and non-slum households. Non-slum households spent the highest on health in absolute terms. However, slum dwellers were found to spend a higher proportion of their income on healthcare compared to non-slum residents, and their OOP expenditures were found catastrophic as per the WHO Criteria.

Conclusions: The study revealed that OOP direct health costs are regressive, imposing a greater burden on poor families than better-off families, and slum dwellers face catastrophic health expenditure. So the government should increase per capita public investment in health and ensure the provision of adequate infrastructure for the public healthcare system. The government should also focus on preventive healthcare measures to curb the spread of diseases.

Sankalp themes for rural population: a study in some Gram Panchayats in West Bengal

Dr. Sabari Bandyopadhyay

Background and Objective: Gram Panchayats (GPs), as Local Self Government, play a significant role to improve the welfare of the rural population. GP formulates Gram Panchayat Development Plan (GPDP) every year to have an integrated plan for its area. Ministry of Panchayati Raj GOI has prescribed for localization of the Sustainable Development Goals (SDGs) and the GPDP should focus on attaining the localized SDG targets as possible through local interventions. In order to prepare such plans in a structured manner, they prescribed that the GPDP should have 9 thematic components and a GP should take one or two Sankalp themes to focus on certain themes every year. In this backdrop the present study analyses GPDP, 2025-26 to find the planned interventions GPs are making for their Sankalp themes to achieve SDGs.

Data and methods: The study has used mainly secondary data from <https://egramswaraj.gov.in/>, Census of India 2011 data, Socio Economic and Caste Census, 2011 data, Mission Antyodaya data. Two districts of West Bengal namely Uttar Dinajpur and Malda have been selected purposively as these districts are in the first two positions in West Bengal concerning the decadal population growth rate in 2001-2011. The decadal population growth rates of the two districts are 23.15% and 21.22% respectively as per Census of India data, 2011. From each of the two districts, one block has been selected purposively as these blocks are holding the first position based on the decadal rural population growth rate among all blocks of the respective districts. The selected blocks are Goalpokhar I from Uttar Dinajpur district; Harishchandrapur II from Malda district. All the 23 GPs in the selected blocks have been considered for the study. Simple statistical tools have been used for the study.

Findings: The study has observed that all GPs of the two selected blocks have taken two themes as Sankalp themes, out of the nine themes -(1) Poverty-free and enhanced livelihoods village, (2) Healthy village, (3) Child Friendly village, (4) Water Sufficient village, (5) Clean and Green village, (6) Self-sufficient infrastructure in village, (7) Socially Secured village (8) Village with Good Governance, (9) Women friendly village. The GPs of Goalpokhar I has taken themes 6 and 7 whereas GPs of Harishchandrapur II have taken themes 1 and 3 as Sankalp themes. The major sources of fund are XV Finance Commission, 5th State Finance Commission Fund and Own Source Revenue (OSR) of GP. Whatever be the themes infrastructure related activities are very prominent in both the blocks.

Conclusion/Policy implication: The paper concluded that infrastructure is very important but proper use of the infrastructure is also very important. Awareness generation are needed for this. Awareness generation programme is very cost-effective programme, with very good impact on the villagers. GPs may use more of its OSR to aware the villagers and this will pave the way for achieving SDGs.

Cultural, Traditional and Rituals barrier to access Healthcare among Tribal Communities in Mandla District of Madhya Pradesh

Dr. Shatrughan Prasad

Healthcare access among tribal communities remains a major public health concern in India, particularly in regions with strong cultural and traditional belief systems, where a significant proportion of the population depends on indigenous practices and traditional healers for treating various morbidities and illness. Despite the availability of government health services, cultural, traditional, and ritual barriers continue to influence healthcare-seeking behavior and limit the utilization of modern medical facilities.

This study was conducted in Bijadandi block of Mandla district of Madhya Pradesh during 2019-20. Bijadandi block has the highest proportion of tribal population (82%) compared to the other blocks of this district (Census, 2011). The major aim of this study was to explore the health status and cultural, traditional and ritual healthcare practices and barrier to modern healthcare access among tribal communities in Bijadandi block of Mandla District. To fulfill the objectives of this study, a household schedule was prepared for field. Other than household schedule, the Focus Group Discussions (FGD), In-depth interviews and observational method were also used among tribal communities and healthcare professional, working in tribal area.

The information was collected from total 39 tribal communities on their health status and treatment seeking behaviors and barrier of accessing healthcare services. The study found that the tribal communities of this district is deeply rooted cultural beliefs, perceptions of illness, and faith in supernatural or spiritual causes for health and healthcare seeking as well as. Traditional healers, rituals practices and home remedies are often the first line of treatment, delaying timely access to modern healthcare. However, cultural, traditional and ritual taboos also play a critical role in postponing or avoiding to access modern healthcare services and still persist among tribal communities in the studied area. Additionally, language gaps, mistrust in modern health systems, gender-based restrictions and low health awareness further exacerbate the situation. This study also found that tribal communities never go for treatment for small pox because they believe that this small pox is the form of god and they practice some ritual activities for seven days at their home. Other than this, they also practice some home based remedies for Loo and never use modern healthcare. They also do the Jhad-Fuk when someone fallen ill/sick their home which is also one of the barrier to access modern healthcare facilities among tribal communities.

This research emphasizes the urgent need for an inclusive healthcare strategy in Mandla that integrates traditional practices with biomedical services, enhances community trust, and addresses cultural sensitivities. Strengthening health education, training local health workers within tribal communities and fostering collaboration between traditional healers and formal health providers may significantly improve both health and healthcare seeking in the region.

Keywords: Healthcare, Tribes, Cultural, Traditional, Ritual, Mandla, Madhya Pradesh.

Social Media Addiction and Its Association with Sleep Quality among Medical Students in Tamil Nadu, India

Dr. Srigotham Subramaniam

Background and Objectives: In today's connected world, online platforms have reshaped how people communicate, access news, and maintain relationships. With billions engaging daily, these tools offer convenience but also pose risks like excessive engagement, which may disrupt daily routines and health. Among healthcare trainees, who face intense study demands, heavy reliance on such networks could impair rest, leading to reduced focus and output. This pattern raises concerns for their overall welfare and future roles in patient care. Prior research links prolonged screen time to delayed rest onset and fragmented cycles, exacerbated by device emissions and interactive features. The study sought to measure the extent of dependency on these platforms and examine its connection to rest adequacy in undergraduates at a teaching institution.

Materials and Method: This study targeted MBBS students at Tiruppur Medical College and Hospital, Tamil Nadu. From a pool of 950 students, 850 consented and joined, with 800 reporting recent non-study-related platform activity. Conducted from November 2024 to March 2025, data gathering used a validated form shared via class coordinators in casual campus settings. The Bergen Assessment Tool evaluated platform dependency via six elements on a five-level response, totaling 6-30, with 24+ indicating high risk. A custom query form captured demographics and habits, while the Pittsburgh Rest Evaluation measured seven aspects summing to 0-21, where 5+ signaled inadequate rest. Analysis in SPSS 26 involved summaries, t-tests, variance checks, and multivariate modeling to identify links, with ethics clearance and participant agreement secured.

Results: Participants averaged 21.2 years, with 60.5% females and 18.5% showing elevated dependency. Most accessed via phones, 35.2% checked immediately upon rising, and 78.9% for news updates. About 28.7% felt drawn into the digital realm, 22.1% stayed up all night occasionally, and 31.4% experienced visual strain from extended sessions. Dominant apps included messaging (88.2%), visual sharing (83.1%), and ephemeral content (46.5%), with 26.3% exceeding three hours daily. A small 3.8% compulsively captured and shared multiple self-images. Links emerged with females, early-morning checks, news-seeking, long durations, eye fatigue, specific apps like ephemeral ones, and frequent self-captures. Rest components perceived adequacy, onset delay, length, interruptions, aids, and daily impairment correlated significantly ($r=0.612$, $p<0.05$). Modelling confirmed predictors: gender, morning habit, update reliance, over three hours, visual discomfort, certain apps, and image-sharing urges, alongside rest factors except efficiency.

Conclusion: Studies show a strong link between social media addiction and diminished sleep quality in medical students, where excessive use disrupts rest patterns, raising dependency that worsens sleep. This affects mental and physical health, academic success, and well-being. A cycle of insomnia and heightened engagement exists; limiting pre-bedtime use may improve sleep preparation. Further research is needed for effective interventions. Institutions should offer workshops on digital limits and sleep habits, while policies promote nightly screen-free periods for lasting health benefits.

Rural Male Out-Migration and Remittances: An Insight from Nadia District of West Bengal

Faruk Biswas

Nadia district is located on the left bank of the Bhagirathi River to the west and bordered by the international boundary to the east. Despite its rich alluvial soil, the district remains underdeveloped in terms of agriculture, economy, and industry. Challenges such as unemployment, underemployment, disguised employment, low overall productivity, a poorly functioning labour market, and sectoral labour misallocation make it difficult for marginal cultivators and agricultural labourers to sustain their livelihoods. This study examines the patterns and causes of rural male out-migration, as well as the dynamic benefits of remittance flows for rural migrant households in the Chapra Community Development (C.D.) block of Nadia district, West Bengal. The study was based on primary data collected from 300 households (n=300) among 10 villages of the study area. Descriptive statistics, along with logistic regression, migration flow map, Herfindahl-Hirschman Index (HHI), and Simpson Index of Diversification (SID) have been employed to fulfil the objectives of the study. The findings reveal that the majority of rural male migrants are domestic rather than international. They are predominantly young with lack of skills. Migration is primarily directed toward Maharashtra, Telangana, and Kerala, driven by economic opportunities. At their destinations, migrants are mainly employed in sectors such as hospitality and construction, transitioning from their previous roles as cultivators, agricultural labourers, or students in their home villages. The study also identifies significant variations in average remittance amounts depending on the destination, type of migration, and employment sector. International migrants generally remit higher amounts compared to domestic migrants. Remittances play a vital role in fostering economic growth and development, serving multiple long-term purposes. While a smaller portion of remittances is used for daily household consumption, education, and healthcare, a significant share is allocated toward home construction, land purchases, debt repayment, and luxury items.

The study suggests that rural out-migration and remittances significantly improve the households livelihood patterns and well-being. Moreover, there are numerous negative impacts of male out-migration in the place of origin, but remittance flow inevitably appears to be a successful and significant livelihood strategy for household wellbeing.

Keywords: Domestic migration, International migration, Household consumption, Nadia, Rural male out-migration, Remittances flow

Does Health Insurance Reduce Out-of-Pocket Spending for Lifestyle Diseases? Evidence and ML Risk Stratification from LASI-Kerala.

Kishor R

Lifestyle diseases such as diabetes, hypertension, and cardiovascular conditions have emerged as the leading causes of hospitalization and financial stress in Kerala. These conditions are highly prevalent among older adults and their treatment often results in substantial out-of-pocket expenditure. Although health insurance coverage in Kerala is higher than in many Indian states, there is concern that existing schemes do not fully protect households from large medical bills. A critical issue is catastrophic health expenditure, where medical costs consume a considerable share of household resources and drive families into financial hardship. Understanding the protective role of insurance and identifying those who remain most vulnerable is therefore important for sustainable health financing.

This study seeks to evaluate whether health insurance meaningfully reduces out-of-pocket spending and the likelihood of catastrophic health expenditure among older adults with lifestyle diseases in Kerala, while also using machine-learning methods to predict which individuals are at greatest risk. The analysis will draw on the Kerala sample of the Longitudinal Ageing Study in India (LASI, Wave I, 2017–18), a nationally representative survey of adults aged 45 years and above that provides detailed information on health, insurance coverage, hospitalization history, medical spending, and household consumption. These data allow an assessment of the financial implications of lifestyle diseases and the extent to which insurance mitigates costs.

The analysis will begin by comparing insured and uninsured groups in terms of hospitalization rates, average out-of-pocket payments, and incidence of catastrophic health expenditure. Statistical models will then be used to adjust for differences in age, sex, education, household wealth, and place of residence. Logistic regression will estimate the association between insurance and the likelihood of catastrophic spending, while a two-part model will be applied to out-of-pocket expenditure, first estimating the probability of any positive spending and then modeling the level of expenditure among those with costs. Together, these models are expected to provide a clear picture of the financial protection offered by health insurance.

In addition to these regression models, machine-learning approaches will be implemented to develop a predictive risk score for catastrophic expenditure. Regularized logistic regression, Random Forest, and XGBoost will be trained to capture both linear and non-linear relationships. Model performance will be evaluated using area under the ROC curve, calibration, and lift charts, while SHAP values will highlight the most influential predictors, including multimorbidity, insurance type, wealth, and prior healthcare use. This predictive layer adds value by identifying small groups with disproportionately high risk, supporting targeted interventions.

The study is expected to contribute evidence on whether insurance reduces financial risks associated with lifestyle diseases in Kerala and demonstrate how predictive analytics can support more effective insurance design. The findings will be relevant for policymakers,

insurers, and healthcare planners by highlighting gaps in current protection and pointing to strategies that focus on poorer households and those with multiple chronic conditions. By integrating conventional statistical analysis with modern machine-learning tools, the study aims to combine policy relevance with methodological innovation, offering insights that can strengthen both equity and sustainability in health-insurance programs.

Keywords: Kerala; LASI; lifestyle diseases; health insurance; out-of-pocket spending; catastrophic health expenditure; machine learning

Access to menstrual hygiene resources and women s health and participation: a mixed-method study

Mahashweta Chakrabarty

Background and Objectives: Access to menstrual health and hygiene (MHH) resources including access to period products, safe toilets, water, soap, and disposal facilities, is essential for safeguarding women s physical and mental health. Inadequate access not only increases vulnerability to reproductive tract infections (RTIs) but also exacerbates stress, anxiety, and depression. Moreover, poor MHH support restricts women s educational, socio-economic, cultural, and religious participation, reinforcing exclusion and gender inequities. Despite wide recognition of these challenges, empirical evidence linking MHH access with both health outcomes and participation remains limited. This study addresses this gap by estimating the impact of MHH access on physical and mental health, and exploring how inadequate access hinders women s everyday participation and wellbeing.

Data and Methods: This mixed-method study combined quantitative and qualitative approaches. Primary data were collected through a multistage sampling design across 18 blocks of Hooghly district, West Bengal, covering 587 women aged 15–24 years (95% response rate), selected using probability proportional to size. The main exposure variable was access to MHH resources, defined as correct knowledge of menstruation, use of hygienic products, daily water availability at changing places, period-friendly improved toilets, soap and water for handwashing, and safe disposal mechanisms. Women with all components were coded as having access (1), otherwise (0). Propensity score matching (PSM) was applied to estimate the impact of access on RTI symptoms and psychological distress. Additionally, 10 in-depth interviews were analyzed using deductive and inductive thematic approaches to capture barriers to educational, socio-economic, and religious participation.

Findings: In Hooghly district, 5.6% of women reported RTI symptoms. Disaggregation by access to MHH resources revealed stark inequalities: only 0.7% of women with adequate access reported RTIs compared to 7.3% without access ($\chi^2=9.224$; $p=0.003$). PSM confirmed that access to MHH resources reduces the probability of RTI symptoms by 6.7 percentage-points ($p<0.001$), underscoring the protective effect of improved access. Menstrual health challenges extended beyond physical illness. Overall, 84% of women experienced at least one psychological distress during menstruation, with stress (82.8%) and anxiety (81.6%) more prevalent than depression (43.9%). However, access again proved critical: while 68.5% of women with adequate access reported psychological distress, the figure rose to 89.3% without access ($\chi^2=35.809$; $p<0.001$). After adjusting for confounders through PSM, adequate access lowered the probability of experiencing symptoms of psychological distress by 15.1 percentage-points ($p=0.041$). Qualitative insights revealed that inadequate access curtailed participation across domains: school and tuition absenteeism, wage loss in informal work, ritual exclusion, and social isolation. Emergent themes highlighted silence around menstrual pain, reproduction of restrictions by women, gendered infrastructure deficits, and intergenerational hopes for menstrual dignity.

Conclusion/Policy Implications: Findings demonstrate that inadequate access to menstrual health and hygiene resources significantly increases women s vulnerability to RTIs and psychological distress while also curtailing their education, work participation, and social-religious inclusion. Ensuring universal access to safe products, private toilets, water, and disposal facilities must therefore be treated as a public health and gender equity priority. Integrating MHH into health, education, and workplace policies is critical to safeguarding women s wellbeing, and full participation in society.

Impact of Population Growth on Health and Educational Infrastructure in selected blocks of Rarh and Barendri Regions in Murshidabd, West Bengal.

Manab Ghosh

Background and Objectives: Population growth is a pressing issue affecting both developed and developing countries. The United Nations emphasizes the need for sustainable development, particularly in health and education sectors (SDG-3 and SDG-4). India, as a developing country, is grappling with the consequences of rapid population growth, which exerts pressure on its healthcare and educational infrastructure. West Bengal, the fourth most populous state in India, faces challenges in delivering equitable services across its districts. Murshidabad, a border district, has witnessed significant demographic changes over the past two decades. This study aims to examine the impact of population growth on health and educational infrastructure in selected blocks of Murshidabad, covering both the Rarh and Barendri physiographic regions.

Data and Methods: The study is based on both primary and secondary data. Secondary data were obtained from the Chief Medical Officer of Health (CMOH) office for health-related indicators and from the Sarva Siksha Mission and DISE reports for educational infrastructure. Primary data were collected through field surveys using structured questionnaires. From each selected block, 20% of inhabited villages were sampled using systematic sampling. The analysis covered ten purposively selected blocks from Rarh and Barendri regions. Dimension index, Z-score analysis and satisfaction index-based evaluation were used to understand disparities across the regions.

Findings: The study revealed stark regional differences in infrastructure availability and service delivery. Blocks like Samserganj, Suti-I, and Suti-II in the Rarh region experience high population growth due to low female literacy, early marriages, and poor family planning, leading to high dependency ratios and out-migration. These blocks, despite having higher health infrastructure indices, face high doctor-population ratios, long patient wait times, and overburdened facilities with bed occupancy rates exceeding 80%. Conversely, Barendri region blocks like Jalangi, Raninagar-II, and Bhagawangola-I & II have lower health indices but benefit from proximity to district headquarters for tertiary healthcare. In education, blocks such as Farakka, Samserganj, Suti-I, and Suti-II show relatively better infrastructure but suffer from high pupil-teacher ratios, inadequate classroom management, under-equipped labs, and sanitation problems, and strain on midday meal schemes. Barendri blocks, although more agriculturally prosperous and well-connected via rail, lag in core educational infrastructure.

Conclusion/ Policy Implications: The findings underscore the core-periphery pattern of infrastructure development, with Berhampore as the core influencing nearby blocks more positively. Government interventions should prioritize remote and border areas through initiatives like telemedicine, mobile health units, promotion of female literacy, vocational training for women, and strengthened family planning through NGO collaboration. Policy should also consider deploying retired professionals to enhance human capital in health and education sectors. Reducing political instability and fostering inclusive governance are key to bridging regional disparities.

Persistent in High-Risk Fertility Behaviour Among Women in West Bengal Between 2003 and 2019

Mouli Maity

Background: Women's High-Risk Fertility Behaviour (HRFB) is a significant concern in the present decades since many women in developing countries have experienced HRFB. In West Bengal, due to high early age at marriage, understanding HRFB among women is vital for both maternal and child health. Therefore, this study aims to explore how income, education, and healthcare access contribute to disparities in HRFB.

Data and Methods: Data for West Bengal was taken from the National Family Health Survey (NFHS) conducted between NFHS-3 (2005-2006) and NFHS-5 (2019-21) in India. We began by analyzing descriptive statistics and conducting a chi-square test. We then used binary logistic regression to investigate the factors influencing HRFB. Additionally, we used the concentration index to measure the level of socioeconomic disparities in HRFB between NFHS-3 (1992-1993) and NFHS-5 (2019-21). The concentration index was further decomposed using Wagstaff decomposition to quantify the contribution of selected characteristics to the inequality in the HRFB of currently married women in West Bengal.

Results: Over the years, the proportion of women engaged in high-risk fertility behaviour has decreased, though disparities persist between rural (54.9% to 47.4%) and urban areas (44.4% to 41.8%). Education and religion emerged as significant factors associated with HRFB in both survey rounds. Muslim women exhibited higher odds of being in the high-risk fertility category than women from other religions, with odds ratios of 2.6 in 2005-05 and 1.9 in 2019-21. Interestingly, women who gave birth in institutional facilities had lower odds of being in the high-risk category, even after considering other sociodemographic variables.

Conclusion: In conclusion, this study highlights the critical issue of socioeconomic disparities in women's HRFB in West Bengal. Interventions addressing educational disparities, cultural practices, and healthcare accessibility are crucial to mitigating HRFB and improving maternal and child health outcomes in West Bengal. These findings raises the need for equity-focused policies to ensure that progress in fertility behaviour benefits all sections of society uniformly.

Analyzing Spatial Transformation in North Bengal's Urban and Peri-Urban Areas: Implications for Urban Rural Transition

Najib Ansari

The UN's "World Urbanization Prospect 2014" report forecasts global urban population growth from 30% in the 1950s to 66% by 2050. This rapid urban expansion, especially in peri-urban areas, demands an analysis of Land Use and Land Cover (LULC) patterns. This study examines urban and peri-urban growth in North Bengal's largest urban agglomeration and its impact on agricultural land. Using multi-temporal Landsat images processed with TerrSet, ERDAS Imagine 2015, and ArcGIS 10.8.1, the research tracks these spatio-temporal changes, providing insights into the effects of urbanization on agricultural areas. The Cellular Automata-Markov Chain (CA-Markov) model was used to predict future urban and peri-urban growth, highlighting the challenges of urban land use planning and its impact on agricultural land. By establishing a 16-direction zone, the study identified specific sites of agricultural and vegetation contraction alongside urban expansion. Land use forecasting for the years 2031 to 2100 was conducted using the CA-Markov chain approach and direction analysis over eleven decades, achieving over 90% accuracy. Since 1991, the built-up area in Siliguri UA has increased dramatically, rising from 12.98% to 43.19%, while agricultural land decreased from 34.76% to 17.26%, and vegetation land significantly reduced from 22.49% to 16.17% over 110 years. Agricultural land and vegetation in Siliguri, particularly in the census towns of Binnaguri and Chakiabhita in the Jalpaiguri district, have been increasingly replaced by built-up areas. Over the past three decades, the annual built-up area expansion has averaged 10.06 km². This study compares Land Use and Land Cover (LULC) changes in the peri-urban and urban areas of Siliguri Urban Agglomeration (SUA) from 1991 to 2051. Both zones have experienced significant urban growth, with built-up areas increasing from 1.30% to 20.71% in the peri-urban area and from 12.98% to 36.92% in the urban area. Agricultural land has sharply declined, with the peri-urban area seeing a faster reduction (from 39.98% to 10.75%) compared to the urban area (from 34.76% to 22.78%). In addition, vegetation in the peri-urban area decreased from 26.77% to 20.35%, while tea gardens expanded from 7.98% to 18.77%. The findings highlight the need for sustainable land management strategies to balance urban development with environmental conservation in both areas. Given that urban areas especially have vegetation that has vulnerable phases that need proper attention, this research will provide policymakers with guidance and a framework for coordinating city expansion so they can strike a balance between growing the city and protecting its natural resources.

Keyword: Urban vs Peri-urban expansion, CA-Markov chain model, Shrinking farmland

Patterns of Commuting among Dual-Worker Couples in India: A Mixed Method Study

Nivedita Paul

Background and Objectives: In the Indian context, mobility is not restricted to long-term or permanent migration but also includes short-distance movement. Commuting, as a form of short-term migration, plays a significant role in shaping livelihoods. In commuter marriage dual-career spouses live in geographically separate residences for at least three or four days a week due to jobs or careers (Gerstel and Gross, 1982). Therefore, commuting, here is the act of leaving primary residence(home) for the secondary residence (near the workplace) for work.

Objectives: This paper focusses on the commuting patterns of dual-worker commuter couples in Dhanbad, Jharkhand, an emerging urban center with a mixed industrial and service economy, rising employment opportunities but limited transport infrastructure. The study aims to: 1. Analyze commuting distances, modes of transport, and time-use among dual-worker couples. 2. Explore gender differences in commuting behavior and constraints.

Data and Methods: Based on a primary survey and drawing on a mixed-method approach, the research combines individual surveys with in-depth interviews to capture data from 73 dual-worker commuter couples who live in different locations during the work week to meet at the weekends. The study focusses on the double burden of commuting in the weekends/fortnights as well as daily travel to work. An individual survey was conducted among dual-worker couples in Dhanbad, collecting data on commuting distances, travel time, mode of transport, occupational status, and household responsibilities. This quantitative data was complemented with in-depth interviews of selected couples, enabling an exploration of personal narratives, coping strategies, and perceptions of commuting stress.

Findings: Findings reveal that about 67 percent of the commuters in the study are intrastate, and the rest commute to the neighboring states of West Bengal and Bihar. Majority of the commuters travel for more than 100 km. Commuting patterns among dual-worker couples is marked by clear gender differences as male partners are the active commuters (around 64 percent) in most of cases. They typically travel more frequently and for longer distances and rely on motorbikes or public transport, while female partners are more likely to work nearer home, constrained by safety concerns and household and responsibilities. For couples with children, commuting adds an additional layer of stress, as coordination between work, children s school, and domestic duties becomes more difficult. The pressures of commuting are intensified when the destination region is remote and lacks direct interconnectivity thereby putting more stress by increasing travel time, intercepts and reducing family interaction. This reinforces unequal gender roles, and expose gaps in urban transport systems.

Conclusion and Policy Implications: The study highlights commuting as an underexplored form of mobility within urban and migration studies. It underscores the need to integrate family and gender perspectives into research on migration and development as well as urban challenges, and calls for policies that address daily mobility challenges by improving accessibility, safety, and infrastructure in medium-sized urban centers.

Healthcare Access, Inequality, and Under-Five Mortality: A Regional Analysis

Nur Alam

Abstract: Under-five mortality refers to the rate at which children under the age of five die within a population. It is a key demographic indicator that reflects a country's overall health and development conditions and influences changes in population size over time

This study investigates the accessibility of healthcare services and their influence on under-five mortality (U5MR) across five districts of the Gangetic Plain, an area characterized by high population density, socio-economic disparities, and historically elevated child mortality rates. Data were sourced from the National Family Health Survey (NFHS-5), encompassing 16 socio-economic and healthcare-related variables.

Principal Component Analysis (PCA) was employed to reduce these variables into two composite indices: the Socio-Economic and Living Conditions Index (CI-1) and the Healthcare Access and Maternal Services Index (CI-2). These indices were subsequently analysed against U5MR using multiple linear regression.

The study's methodological framework, combining PCA, regression analysis, and geospatial techniques, offers a replicable approach for identifying priority areas for policy intervention. It highlights the critical role of socio-economic development and equitable access to healthcare in achieving Sustainable Development Goal 3 (SDG-3) targets related to child health and survival.

Findings reveal a negative association between both CI-1 (coefficient: -0.01) and CI-2 (coefficient: -0.05) with U5MR. The regression model is statistically significant ($p = 0.015$) with an R-squared value of 0.985, indicating that improved household socio-economic conditions and better access to maternal and child healthcare services are strongly associated with reductions in child mortality.

These insights provide evidence-based guidance for policymakers aiming to further reduce U5MR in the Gangetic Plain and comparable regions. Notably, government initiatives such as the establishment of Sick Newborn Care Units (SNCUs) and Neonatal Intensive Care Units (NICUs) in Uttar Pradesh, maternal education programs and targeted health interventions in Bihar, and inclusive child health policies in West Bengal have all contributed to observed reductions in child mortality across these high-risk areas.

Keywords: Under-Five Mortality Rate, Principal Component Analysis, Socio-Economic Index, Healthcare Access, Gangetic Plain

Wetland Ecology Deterioration, Livelihood Issues and Diversification as a Coping Strategy: A Study from Ramsar Wetland, Loktak, India

Ongtham Kipjen Singh

Loktak wetland, with an area of 287 km², is a Ramsar site of international importance located in the northeast Indian state, Manipur. Because of its importance in economy, culture and history to the people of Manipur, the lake is also called the Lifeline of Manipur. However, the ecology of the wetland has deteriorated, which jeopardizes the livelihoods of the fishers and farmers. The present study assesses livelihood risks in fishing and farming posed by ecological changes, investigates the level of livelihood diversification, and predicts its determinants. It is based on the field survey of 600 households from 12 census villages out of 55 settlements in islands and lake-shore villages based on Stratified and systematic sampling technique. Using W.G. Cochran's sample size calculating formula, a total of 600 sample households practicing fishing or farming or both were selected with margin of error of 0.004, an approximate population variance of 0.5 and 95% confidence level. Participatory risk mapping (PRM) is employed to assess subjective risks in livelihoods. Simpson Diversity Index (SDI) examines the extent of livelihood diversification. Finally, an ordinal logistic regression (OLR) model is designed to identify the determinants of livelihood diversification. PRM portrays that phumdi proliferation, water pollution, and decline in fish species and production are the predominant causes of concern in fishing due to ecological changes of the wetland. In farming, the vagaries of monsoons, submergence or flooding of agro-land are severe perceived risks. SDI estimates that around 27% of households do not diversify their livelihoods, whereas low, medium, and high levels of diversification are 12%, 50%, and 10%, respectively. Diversification are primarily concentrated in the household industry, construction works, and sales. The OLR model investigates the predictors, such as household size, land holding, migration status, standard livestock unit index, and risk perception index, significantly explaining livelihood diversification. Adding a member in a household increases the odds of moving to a higher level of job diversification by 59%. Households with migration experience are 36.2% less likely to attain a higher level of job diversification at the local level. One unit increase in land holding is associated with lower odds of being in a higher level of diversification category. Similarly, an increase in livestock ownership is linked to a 26% reduction in the likelihood of a higher level of livelihood diversification. The Risk Perception Index emerges as a strong predictor of livelihood diversification as households with higher RPI scores are 1.275 times more likely to pursue a higher level of diversification than those with lower scores. The study draws the attention of policymakers for ecological conservation and restoration, keeping sustainable livelihood in view. Alongside the conservation of ecology, the sustainable use of natural resources also needs to be prioritized, and a mass-conscious drive needs to be initiated in this direction.

Geographical Inequality and Associated Factors of Dropout from Continuum of Maternity Care Among Adolescent Mothers in India

Pooja Tripathi

Background and Objectives: To achieve Sustainable Development Goal 3.1 reducing global maternal mortality to less than 70 per 100,000 live births the maternal health continuum of care (CoC) must ensure comprehensive care during the perinatal period. However, dropout from this CoC among adolescent mothers in India remains a significant barrier. This study examines the dropout levels of maternity CoC among adolescent mothers across Indian states and districts, and identifies factors associated to this dropout.

Methods: Data were sourced from 15,816 adolescent mothers (aged 15-19) from the National Family Health Survey-5. Multivariable logistic regression was employed to determine the factors associated with dropout.

Results: Findings reveal a 54.0% prevalence of CoC dropout among adolescent mothers in India, with notable regional disparities. Among states, Nagaland had the highest dropout rate at 92%, followed by Meghalaya at 81.6%, whereas Tamil Nadu had the lowest at 12.5%, with Kerala closely behind at 18.46%. District-level analysis showed even starker contrasts: Tuensang district in Nagaland recorded a 97.29% dropout rate, while Theni (2.8%), Dindigul (3.6%), Namakkal (5.9%), and Vellore (6.3%) in Tamil Nadu reported the lowest rates. Several factors were significantly associated with dropout. Undesired pregnancy had over twice the odds of dropout (AOR: 2.14; 95% CI: 1.24-3.70). Lack of formal education increased dropout odds by 50% (AOR: 1.50; 95% CI: 1.16-1.96). Adolescents from the poorest wealth quintile were 74% more likely to drop out compared to their wealthier counterparts (AOR: 1.74; 95% CI: 1.35-2.23). Absence of mass media exposure (AOR: 1.52; 95% CI: 1.36-1.70) and residing in rural areas (AOR: 1.18; 95% CI: 1.02-1.37) were also significant risk factors.

Conclusion: The study concludes adolescent mothers face high maternity CoC dropout; policy interventions can improve outcomes by addressing mass media, family planning and targeting education and economic disparities.

Keywords: Perinatal care; Pregnancy in adolescence; Continuum of care.

Background and Objectives: Despite the rising demand for infertility treatments in less developed countries, empirical evidence on current scenario of infertility treatment seeking and utilization of these medical services is scarce. Moreover, experiences of treatment-seeking women bring to light the stigmatization attached to childlessness. There is a lack of evidence on infertility treatment seeking and stigma from Northeast India. Therefore, this paper aims to firstly explore the various types of infertility treatment sought in the Northeast India, transition in between the pre-treatment and examine the transition among different types of infertility treatments. Secondly, it also explores the concept of infertility stigma and examines its association with the socioeconomic characteristics.

Data and Methods: Cross-sectional primary data have been collected from 200 women currently undergoing Medically Assisted Reproduction (MAR). Institutional ethical approvals and informed consents were taken prior to data collection. Bivariate analysis was used to explore the study sample's profile. Continuous multi state Markov models was used to investigate the transitions among the treatment types. Further, subscales of Infertility Stigma Instrument-Female (ISI-F) were computed to determine the overall infertility stigma score. Principal Component Analysis (PCA) has been used to identify latent constructs from the stigma scale. Cronbach's α assessed the subscales' reliability and interval consistency.

Findings: The preliminary findings show that the different types of treatment sought ranges from traditional methods (3%), AYUSH (11%) and allopathy (84%) before transitioning to advanced MAR treatments. Time to infertility perception is higher among treatment seekers with less education, higher marital years and no occupation. The treatment seekers sought one or the other treatments for on an average of 14.44 months and 24.56 months average waiting time in between treatments. Transition probabilities to IVF from IUI (0.68) and allopathy (0.46) show that latter treatments are common intermediary steps, while traditional practices (0.07) and AYUSH (0.48) methods often lead to switching to other non-MAR method like allopathy and have low retention. The overall infertility stigma score is 59.4 ± 10.9 . The Cronbach alpha for the scale was found to be 0.74. Three latent constructs for infertility stigma emerged viz. Social Stigma and External Pressure, Secrecy & Concealment and Avoidance & Social Withdrawal. Further, women with higher number of months to pregnancy planning and infertility perception had lower infertility stigma.

Conclusions/ Policy Implications: Such evidence firstly, can lay a foundation to fertility registries to track infertility treatment behaviour, identifying gaps in timely diagnosis and utilisation of proper treatment consequently, emphasising integration of fertility management policies into existing reproductive packages. Moreover, sensitization on community awareness on fertility, workplace orientation can reduce stigma and encourage timely treatment seeking behaviour.

Intra-Household Power Dynamics: Analysing Women's Autonomy in Decision Making and Mobility across Regional Contexts in India

Priyotosh Laha

Empowering women entails providing women authority, and freedom to choose their paths in life. Power is an important concept in empowerment. Gender inequality in the distribution of power within households leads to women being disadvantaged, in terms of access to resources and pursuing opportunities. This study examines how spousal characteristics and husbands controlling behaviors shape women's household and mobility autonomy, while also highlighting regional disparities across the Indian context.

The analysis uses data from the fifth round of the National Family Health Survey (2019–21), covering 57,693 couples. Two dimensions of autonomy are studied: household autonomy (women's ability to make decisions regarding their own healthcare, major household purchases, and visits to relatives) and mobility autonomy (whether women are allowed to visit markets, health facilities, or places outside their community alone). Two explanatory indices were developed: a power index measuring spousal differences in education, age, and employment status, and a controlling index capturing husbands' restrictive attitudes such as jealousy, accusations of infidelity, and limiting social contacts. Binary logistic regression models estimate the adjusted influence of intra-household dynamics, socio-economic characteristics, and regional factors on women's autonomy.

Findings reveal striking disparities. Nationally, 70% of women reported high household autonomy, while only 43% reported high mobility autonomy. Regional differences were pronounced: northeastern and eastern states displayed relatively high household autonomy, whereas southern states, despite higher levels of development, ranked lowest in both domains. Western India recorded the highest levels of mobility autonomy, while central and southern regions showed the strongest constraints. These patterns demonstrate that socio-economic advancement alone does not guarantee women's empowerment when patriarchal norms remain entrenched.

Intra-household power relations strongly influence outcomes. Women with equal or greater power than their husbands are 15% more likely to enjoy household autonomy and 31% more likely to exercise mobility autonomy. Conversely, controlling behaviors by husbands significantly erode women's agency. Women reporting no controlling behaviors are more than twice as likely to hold household decision-making power and 44% more likely to have mobility autonomy than those with highly controlling partners.

Other socio-demographic factors also play a role. Women in longer marriages and those with children report greater autonomy, suggesting that marital stability and motherhood increase their standing within households. Urban residence enhances autonomy compared to rural areas, likely due to more flexible gender norms and supportive infrastructure. Economic resources also matter: women from the wealthiest households report substantially higher decision-making and mobility autonomy.

Overall, the study underscores the complexity and multidimensionality of women's empowerment in India. Autonomy is shaped by the intersection of household power relations, socio-economic characteristics, and cultural context. While spousal equality and absence of controlling behaviors significantly enhance women's decision-making and mobility, persistent patriarchal norms, regional inequalities, and socio-religious divides continue to restrict agency. These findings call for region-specific policies that reduce spousal disparities, address coercive household behaviors, and challenge restrictive gender norms, thereby advancing women's empowerment and sustainable development in India.

Habitation Transformation and Urban Heat Island (UHI) Intensification: A Study of Burdwan Development Authority (BDA) Area

Rakhibul Mondal

Issues like urbanization and urban habitation transformation have become one of the most concerning challenges in the 21st century, specifically in India's fast-growing cities. Such transformations are occurring worldwide at an alarming rate at the expense of natural landscape (Arable land, Blue-Green Infrastructure), which depicts the continuous degradation of ecological balance, urban livability, and local urban microclimate. One of the inevitable consequences of such transformation is the destruction of the nature-based cooling system (Blue-Green Infrastructure), which escalates the intensity of the Urban Heat Island (UHI) effect, where urban areas tend to have higher surface temperature compared to Blue-Green Infrastructure (BGI) prevalent areas. Although larger cities and metropolitan areas are much studied in this context, relatively smaller Indian urban centres, such as the Burdwan Development Authority (BDA) area, should not be overlooked. The study area, Burdwan Development Authority (BDA), comprising eight administrative sub-units, also bears witness to such transformation. Here, over the last two decades, rapid urban growth lead habitat transformation has worsened the urban heat island (UHI) effect and blue-green infrastructure status; it has also reshaped urban livability and local urban microclimate and reduced human comfort, increased energy consumption to adopt artificial cooling measures (AC) which suggests an urgent need for preservation of natural cooling components. The study makes an endeavour to investigate the unit-level disparity of habitation transformation and its impact on urban heat island (UHI) effect with landscape dynamics using Geospatial Technology.

The study used multi-temporal satellite imagery (Landsat 5, 7, 8) for the years 2002, 2011, and 2021. LULC classifications, NDWI, and NDVI were generated to quantify the built-up expansion and examine landscape dynamics. The LST (Land Surface Temperature) was calculated from thermal bands to identify the thermal pattern. The UHI-profiling, statistical correlation, and regression model were also performed to mark the unit-level variability of UHI intensity and its association with landscape dynamics.

The outcome of the study confirmed that built-up area (Habitation area) nearly doubled (20.99 37.59 sq.km), agricultural lands have reduced from 99.35 sq. km to 81.59 sq. km, while Waterbodies declined from 5.22 km to 4.21 sq.km, and vegetation cover reduced in 2011 and rose to 22.26 sq. km in 2021. The study found an increase in maximum land surface temperature from 39.5 $^{\circ}$ C to 41.26 $^{\circ}$ C in some built-up dominated units, and cooler areas are associated with vegetation and agriculture. Correlation and regression analysis revealed a strong negative correlation between LST and NDVI ($R = -0.62$ in 2021) and NDWI ($R = -0.31$), with a positive relationship with NDBI ($R = +0.68$). This indicates that areas with greater BGI were 5-7 $^{\circ}$ C cooler than densely built-up areas. A cross-sectional UHI profile on the LST raster layer manifests a 3-5 $^{\circ}$ C temperature gradient between dense built-up areas and BGI-dominated zones.

The study suggests enhancing and protecting BGI and controlling habitat transformation at the expense of natural landscape, which is vital for controlling UHI and its mitigation, reducing urban heat-related health risks, and sustainable urban growth.

Keywords: Habitation Transformation, Blue-Green Infrastructure (BGI), Urban Heat Island (UHI), Land Surface Temperature (LST), Burdwan Development Authority (BDA), Normalized Difference Water Index (NDWI), Normalized Difference Vegetation Index (NDVI).

International Border and Regional Disparities: A Spatial Analysis Through Sustainable Livelihood Perspective

Rakib Sarkar

Background and Objectives: The life of the border dwellers became more grievous when India decided to fence its border with barbed wire. Almost 90000 populations from 149 different Indian villages which were situated on the marginal edge became imprisoned within their homeland by the fencing of barbed wire, and the citizens were divided into mainland and fenced Indians. The Indo-Bangladesh fencing becomes a structural barrier that has changed the daily life and the way of livelihood of the border dwellers. Just because of geographical location the border dwellers become deprived of enjoying the property rights.

Objectives: This study aims to explore the role of Indo-Bangladesh international border on the regional disparities in Dakshin Dinajpur, the only district in West Bengal, of which three sides are surrounded by the Indo-Bangladesh border.

Methods: To achieve the main objectives of the study, assessing the regional disparities between border adjacent zone and border distant zone the Sustainable Livelihood Framework (DFID, 1999) has been adopted with required modification. This study has collected the livelihood information using 55 distinguished variables related to livelihood capital by direct primary field investigation using a well-structured questionnaire following the DFID framework. The researchers surveyed 644 household from 14 sampled villages applying Cochran's (1977) formula. To explore the livelihood of the above mentioned two zones of each villages the researchers apply the Sustainable Livelihood Index (SLI), which is prepared by modifying the formula developed by IPCC, i.e., LVI-IPCC in 2007. Finally, to compare the mean score of sustainable livelihood index score Paired Sample T-test has been executed.

Findings: Through the Paired Sample T-test it is established that there are statistically significant differences in the score of SLI between the two mentioned zones. People lived in the border distant zone are more sustainable than the people lived in border adjacent zone.

Discussions: Therefore, it is an established fact that the Indo-Bangladesh border plays an institutional barrier which compels border adjacent zone to record lesser development than the distantly located zones. Through KIIs, it is also revealed that in the border adjacent zone, the farmers having fenced-out land face difficulties to utilize their fenced-out land. As a result, the livelihood of the border dwellers lived in border adjacent zone is significantly less developed than the border distant zone.

Keywords: Regional Disparities; Indo-Bangladesh Border, spatial inequality, Buffer zone, Sustainable Livelihood Perspective.

Role of Information and Social Support Mechanisms in Tuberculosis Care: Evidences from Nadia District, West Bengal

Rakib Shaikh

Background and Objectives: Tuberculosis (TB) has been a significant public health challenge in India for many years. This disease is one of the dominant causes of death in India. As per the World Health Organization (WHO), in 2021 Southeast Asia remains the most severely impacted region, accounting for 44% of cases, followed by Africa 25% and the Western Pacific 18%.

Objective: This study aimed to examine the role of information and social support mechanisms including family, health workers and community in the care of tuberculosis (TB) patients in Nadia district, West Bengal.

Data & Methods: This is a cross-sectional study where the data were collected over a 3-month period from June 2023 to August 2023. The study included 120 TB patients registered under the Revised National Tuberculosis Control Programme (RNTCP) in Nadia district. Descriptive statistics were used to explore the levels of information and social support from family, health workers, and neighbours. Internal consistency of the support scales was measured using Cronbach's alpha. Logistic regression (both unadjusted and adjusted) was performed to identify socio-demographic predictors associated with higher or lower levels of support.

Findings: Among 120 respondents, 88.36% had prior knowledge of tuberculosis, 59.81% knew it spreads through coughing or sneezing and 78.55% were aware that it is curable. The internal consistency of the support scales was found to be high, with Cronbach's alpha values ranging from 0.75 to 0.86. The overall mean support score was 68.47 (SD = 13.91), with family support scoring highest (71.33), followed by health worker support (67.85) and neighbour support (64.95). Logistic regression revealed that higher education including Secondary, UG & PG (Adjusted OR = 2.29 to 2.98), larger family size (Adjusted OR = 2.09, 95% CI: 1.04–4.19) and living in a pucca house (Adjusted OR = 1.88, 95% CI: 1.02–3.47) were significantly associated with better social support. Variables such as sex, religion, marital status and nature of occupation were not significantly associated after adjustment.

Conclusion: This study highlights the critical role of family and health system support in the TB care pathway. Strengthening these social support mechanisms, particularly for underprivileged and less-educated groups, is essential for ensuring treatment adherence and better health outcomes.

Keywords: Support Mechanism, Tuberculosis, Family Support, Health Workers Support, Neighbour Support Nadia.

Exploring Female Employment Pattern in India: A Study on Different Sectors, Earnings and Geographical Variations

Ranjan Singha

Background and Objectives: Globally, female labor force participation has been a critical driver of economic growth and gender equality. In India, men dominate the labor market, where female labor force participation is notably low, with significant challenges. Women's employment is concentrated in informal, low-paying sectors with considerable variations across regions and urban-rural areas. Addressing these issues is essential for fostering gender equity and economic progress. Thus, the study aims to assess and quantify the pattern of female employment based on various factors. Along with examining the distribution of female employment across various sectors, their earnings, and regional variations in India.

Data and Methods: Data were obtained from the National Family Health Survey-5 (2019-2021). Individual recode file has been used in this study, where information on 724115 population was collected from the entire India, where 108785 females' information was collected for the state module, which is considered in this study. For this study, the outcome variable was the employment status of females. The outcome variable was categorized as a binary outcome variable, which was not employed (0) and employed (1). The study considered some socioeconomic and demographic characteristics and husband and child characteristics to explain the prevalence and likelihood of female employment. Bivariate analysis and a logistic regression model were employed. The outcome was presented as an odds ratio with a confidence interval of 95%.

Findings: Findings indicate factors related to the individual, household, and characteristics of husbands or partners. Employment rates among women decline as their education level increases and vary by religious affiliation, marital status, wealth quintile, and social group. The number of children and the age of the youngest child also influence employment. Employment was more common when the partner was employed. Majority of employed women (75.91%) are engaged in unpaid family-based work, while 12.67% work for others, and 11.42% are self-employed. Sectorally, nearly half of employed women (48.31%) are concentrated in primary activities, with 21.52% in secondary sectors and 30.17% in tertiary sectors. Earnings from these activities show disparities, with 75.90% of women working for cash payments, 7.4% receiving both cash and in-kind compensation, and 2.25% working solely for in-kind payments, while 14.45% remain unpaid despite their contributions. 59.92% of women are employed year-round, 35.64% work seasonally. The likelihood of being employed was higher for >12 years of education, other religions, marital disruptions, Schedule tribe, partner or husband employed. The probability of females being employed was lower if the husband or partner stayed elsewhere, if the husband was educated, and if the family size was higher. The prevalence of female employment differs throughout the country.

Conclusion:

Female employment patterns in India are characterized by a dominance of informal and unpaid family-based work, sectoral concentration in primary activities, and disparities in earnings and employment duration. Number and age of children showing impact on female employment. Geographically, female employment prevalence varies, with lower rates in northern plains and selected states like Kerala and Assam, while southern and northeastern regions exhibit higher rates.

Health Vulnerability Among Older Adults in India: Socio-Economic, Gender, and Regional Perspectives

Ravi D. Prasad

Introduction: India's rapidly ageing population is increasingly exposed to health-related vulnerabilities, particularly in the context of socio-economic disparities, chronic disease burden, and limited access to healthcare. Health vulnerability among older adults manifested through chronic illnesses, mental health issues, functional limitations, and poor self-rated health is a critical component of old-age vulnerability.

Objectives: This study aims to assess the extent and determinants of health vulnerability among older adults in India, with a focus on socio-economic inequality, gender disparity, and regional variation.

Data and Methodology: Using nationally representative data from the Longitudinal Ageing Study in India (LASI) Wave 1, the analysis focuses on individuals aged 60 and above (N=30,658). A composite index of health vulnerability was constructed based on self-rated health, chronic conditions, depression/stress, ADL (Activities of Daily Living) and IADL (Instrumental Activities of Daily Living) limitations. Ordered logistic regression was employed to identify the factors associated with health vulnerability, while concentration indices were used to assess inequality.

Results: The results reveal that approximately 45% of older adults suffer from at least one chronic condition, 28% report depression or stress, 18% rate their health as poor, and over one-third face functional limitations in IADL. Older adults aged 80+ years show the highest levels of health vulnerability (71%), followed by widowed/divorced individuals (61%) and those with no formal education (55%). Gender disparities are stark, with 58% of older women experiencing high levels of health vulnerability compared to 43% of older men. Ordered logistic regression results show that females have significantly higher odds of health vulnerability (OR=1.44), as do individuals aged 80+ (OR=2.39). Higher education is a protective factor; those with secondary (OR=0.67) and higher education (OR=0.59) are significantly less likely to be deprived. Interestingly, currently working older adults are less vulnerable (OR=0.69), while the richest wealth quintile shows a higher likelihood of health vulnerability (OR=1.39) than the poorest, suggesting greater diagnosis among wealthier groups due to better healthcare access. Geographically, southern states such as Tamil Nadu (70%), Karnataka (66%), and Kerala (59%) report higher levels of health vulnerability, possibly due to better awareness and reporting, whereas lower levels are observed in North-Eastern states such as Nagaland (13%) and Arunachal Pradesh (22%). The rural population has marginally higher odds of health vulnerability (OR=1.07) compared to urban residents. A modest but positive correlation ($r=0.132$) exists between socio-economic vulnerability and health vulnerability, and concentration index analysis confirms that older women, particularly among the poor, face greater health inequalities (CI = -0.013).

Conclusion: The study concludes that the health aspects of old-age vulnerability in India are shaped by complex intersections of age, gender, education, region, and work status. The findings underscore the urgent need for targeted, gender-sensitive, and regionally adaptive public health interventions to address the growing burden of ageing-related health vulnerability in India.

Polygamy marriage and child health in India

Satish Kumar Chauhan

The evaluation of the effect of polygamy on child nutritional health has been hindered by the complexity of the relationship. This study examines the impact of polygyny on child malnutrition using data from the fifth round of the National Family Health Survey. Both bivariate and multivariate analyses were employed to meet the study's objectives. The findings reveal that polygamy significantly affects child nutritional health. Specifically, polygamy increases the likelihood of stunting (AOR: 1.27; $p < 0.001$) and anemia (AOR: 1.22; $p > 0.1$) among children under five, even after adjusting for socio-economic and demographic factors. While the crude model showed a significant increase in the risk of underweight, the adjusted model did not. Overall, the study highlights a negative association between polygamous marital status and child nutritional health. Government intervention is essential to alleviate the health burden on children in polygamous families, particularly in deprived and economically disadvantaged areas. Collaboration with non-governmental organizations is also crucial to closing the gap between children in polygamous and non-polygamous families. Additionally, ensuring equal opportunities for women in both marital structures is vital for the holistic development of their children and for advancing the Sustainable Development Goals.

Keywords: Stunting, Underweight, Anaemia, Polygamy Marriage, India

A Study on Survival Analysis of Drug-Susceptible Tuberculosis in Pediatric Patients: Comparing Cox Regression and Parametric Models.

Shalini Kumari

Tuberculosis (TB) is a global epidemic that poses a major public health challenge and affects individuals of all ages and genders. In India, pediatric tuberculosis (PTB) refers to TB occurring in individuals aged 0–18 years, including both children and adolescents. The objective of this study was to identify factors influencing the survival of PTB patients who initiated TB treatment. This retrospective study was conducted using data obtained from the Department of TB and Respiratory Diseases at Sir Sunder Lal Hospital, Banaras Hindu University, Varanasi, Uttar Pradesh, India. The dataset comprised 413 drug-susceptible PTB patients aged 0–18 years, diagnosed with TB and enrolled for treatment between January 2017 and December 2023. Kaplan Meier plots and the log-rank test were applied to assess survival patterns, while the Cox proportional hazards model was used for multivariable analysis. Additionally, the performance of Accelerated Failure Time (AFT) models including Weibull, log-logistic, and log-normal was compared with the Cox model in analyzing TB survival data. Out of 417 registered PTB patients, 92 (22.06%) died during the study period and 325 (77.93%) were censored. Kaplan Meier survival curves and the log-rank test indicated statistically significant differences in survival with respect to age and HIV status. Multivariable Cox regression analysis revealed that age, HIV status, and microbiological confirmation were significant risk factors associated with mortality among PTB patients. Model comparison showed that the Weibull AFT model outperformed the others, with the highest log-likelihood (−552.2), the lowest AIC (1130.39), and the lowest BIC (1182.82). The superior performance of the Weibull model suggests it better captures survival time variability in pediatric TB patients. Therefore, strengthening follow-up of pediatric TB patients from treatment initiation to completion is essential to achieve the TB elimination goal.

Primary Health Care Delivery through Rural Health and Wellness Centres: Insights from a District-Level Study in Kanpur, Uttar Pradesh

Shraddha Bhatia

Primary health care has become central in global health policy discussions. In 2018, the Government of India launched the Ayushman Bharat – Comprehensive Primary Health Care (AB-CPHC) initiative, which focused on transforming existing primary health facilities into Health and Wellness Centres (HWCs). This study examined the preparedness and performance of HWCs in delivering comprehensive primary health care in Kanpur District, Uttar Pradesh. A cross-sectional assessment was carried out across 30 rural HWCs using a facility survey tool. Data were collected on essential inputs such as human resources, infrastructure, and supplies, as well as service delivery outputs. To gauge health service performance, the volume of care provided at HWCs was compared against the estimated population-level need, derived from secondary data sources. The results showed the availability of services but the health need catered by these centres was still low. This demands more robust policy implementation and ground level solutions.

Factors explaining the regional variation in intimate partner violence in India: Evidence from NFHS-5

Shubham Kumar

Intimate Partner Violence (IPV) remains one of the most pervasive forms of gender-based violence, with serious consequences for women's physical and mental health. In India, despite the enactment of the Protection of Women from Domestic Violence Act, 2005, NFHS-5 (2019–21) shows that nearly one in three ever-married women have experienced IPV. This persistence highlights a paradox of legal protection coexisting with high prevalence, alongside striking regional disparities. Most existing studies focus either on national-level prevalence or socio-economic determinants, but rarely analyse how and why IPV varies across regions. This study fills this gap by examining the prevalence of IPV across six Indian regions and the socio-economic, demographic, and partner-related factors contributing to these disparities, using a decomposition framework.

The study uses data from NFHS-5, restricting the sample to 63,851 ever-married women who responded to the domestic violence module. The outcome variable is whether a woman has ever faced physical, sexual, or emotional IPV. Logistic regression was performed to examine the effects of socio-economic and demographic characteristics, while multivariate decomposition analysis was used to assess the contribution of these factors to regional differentials in IPV.

Marked regional variation in intimate partner violence (IPV) prevalence is observed across India, ranging from 20% in the northern to 37% in the southern region. Socioeconomic and demographic disparities, such as women's education, wealth quintile, and mass media exposure, show clear gradients across regions, with poorer educational attainment and higher rural concentration in central and eastern India. The adjusted logistic regression results highlight that partner's controlling behavior (AOR: 3.80, CI: 3.51–4.12), husband's alcohol consumption (AOR: 2.46, CI: 2.24–2.69), and witnessing parental violence (AOR: 3.19, CI: 2.92–3.50) remain the strongest predictors of IPV, while higher decision-making autonomy of women significantly reduces risk (AOR: 0.64, CI: 0.58–0.71).

Multivariate Decomposition results reveal that both endowment (compositional) and coefficient (structural) effects jointly contribute to regional disparities. For example, compositional differences explain 57.5% of the IPV gap between the north and south, while coefficient effects dominate in the north-central (88.2%) and north-east (59.9%) contrasts. Education, partner's controlling behavior, and exposure to parental violence are consistent drivers of these gaps. In particular, partner controlling behavior contributes as high as 55–60% of the explained differences, underscoring its pivotal role in regional inequalities.

In conclusion, the study demonstrates that beyond socioeconomic disadvantages, entrenched behavioral norms such as male dominance and alcohol consumption account for a substantial proportion of IPV variation across India. Policy implications highlight the need for region-specific strategies: strengthening women's agency and decision-making in the north and central regions, addressing alcohol misuse in the northeast and south, and tackling intergenerational transmission of violence across all regions. Integrating IPV prevention into broader gender policies is imperative for reducing disparities and ensuring women's safety nationwide.

Keywords: Regional Variation, Intimate Partner Violence, NFHS-5, Multivariate Decomposition

Trends, patterns, and predictors of high-risk fertility behaviour and its association with child nutrition levels in India: A multivariate decomposition analysis

Shubham Pathak

Background: In low-income nations, high-risk fertility behaviour which includes women's age at birth below 18 or above 34, birth order above 4, and birth interval less than 24 months, is a prevalent public health concern and is associated with adverse maternal and child health outcomes such as undernutrition, anemia, and child mortality. The aim of this study is to identify trends and determinants of factors influencing high-risk fertility behaviour (HRFB) and its impact on child nutrition levels (stunting and underweight) and identify the contributing factors using a multivariate decomposition approach.

Method: The study utilized data from the three rounds of the National Family Health Survey (NFHS) conducted in the years 2005-06 (NFHS-3), 2015-16 (NFHS-4), & 2019-21 (NFHS-5). The outcome variable was child nutrition levels (stunting and underweight) of the children aged 0-59 months, and the key explanatory variable was HRFB. Descriptive statistics, Pearson's chi-square test, and logistic regression model were used to identify the determinants of high-risk fertility behaviour and its association with child nutrition levels. Further logit-based multivariate decomposition analysis was used to identify the contributing factors for the change in stunting and underweight from NFHS-3 to NFHS-5.

Results: The finding revealed that the prevalence of child stunting substantially decreased from 43.67% to 33.95%, underweight modestly declined from 18.14% to 17.54%, and high risk fertility behaviour dropped from 41.92% to 29.66% from NFHS-3 to NFHS-5 with notably higher rates in several states (e.g., 52.84% in Meghalaya and 44.97% in Bihar).

Also, the associations between various high-risk birth conditions and child nutrition, specifically stunting and underweight. Children born to mothers whose age was less than 18 had 38% higher odds of stunting (AOR 1.38, 95% CI:1.29-1.47) and 40% higher odds of being underweight (AOR 1.40, 95% CI:1.31-1.50) while women having shorter birth intervals had 42% (AOR 1.42, 95% CI:1.38-1.46) higher odds of stunting and 32% higher odds (AOR 1.32, 95% CI:1.28-1.36) of underweight compared to women having birth intervals greater than 24 months. Also, women having multiple HRFB, including shorter birth intervals and younger age, have 82% (AOR 1.82, 95% CI:1.46-2.26) higher odds of stunting and 73% (AOR 1.73, 95% CI:1.39-2.15) higher odds of being underweight compared to women having no HRFB. Also, women having shorter birth intervals and higher parity have 99% (AOR 1.99, 95% CI:1.89-2.09) higher odds of stunting and 75% higher odds of being underweight compared to women having no multiple HRFB.

Also, children born to mothers with a single high risk fertility behavior had 14% higher odds of stunting (AOR 1.14, 95% CI:1.11-1.18) and 10% higher odds of being underweight (AOR 1.10, 95% CI:1.11-1.18); those born to mothers with multiple high risk fertility behaviour had 29% higher odds of stunting (AOR 1.29, 95% CI:1.21-1.38) and 25% higher odds of being underweight (AOR 1.25, 95% CI:1.17-1.34), compared to children of mothers with no high risk fertility behaviour.

Further, wealth index, educational level, religion, mass media exposure, caste, and birth order of women are significant predictors of high-risk fertility behaviour in India.

Multivariable decomposition reveals that the total change in stunting was 25% due to compositional (endowment) change and about 75% due to behavioral (coefficient) change. In compositional change, high-risk category (single and multiple), mother education (secondary & higher), mass media exposure, women residing in rural areas, birth order (3rd and 4th), and duration of breastfeeding (still breastfeeding) are the significant contributors to change, while in coefficient change, few subgroup variables rural place of residence, mass media exposure, birth order, and wealth index have significant contributions to change.

Also, a 34% change in underweight was due to composition, and about a 66% change was due to behavioral change, and underweight is explained by the same covariate that explains stunting, but the percentage contribution of this covariate differs from that of stunting.

Conclusion: Over the period, stunting and underweight decline, and important factors leading to the decline in stunting and underweight are secondary and higher education of the mother, exposure to mass media, 4th order birth, still breastfeeding of the mother, and single and multiple high-risk categories. Customized strategies, acknowledging regional differences, are vital to tackle stunting and underweight rates across states. Also, the prevalence of HRFB is still high in some specific regions and demographic subgroups; therefore, the present study recommends interventions with particular emphasis on states with HRFB prevalence and women from socioeconomically disadvantaged backgrounds.

Assessing the Role of Women's Decision-Making Autonomy on Maternal Healthcare Service Utilization in India using NFHS-5.

Shweta Patel

Background and Objectives: Maternal mortality is a major worldwide concern, and poor maternal and child health outcomes continue to be a serious burden in low- and middle-income countries. The worldwide maternal mortality ratio (MMR) is to be reduced to less than 70 per 100,000 live births by 2030, according to Sustainable Development Goal (SDG) Target 3.1 of the United Nations. Approximately 19,000 maternal fatalities, or 7.2% of all maternal deaths worldwide, occurred in India. Studies show that the use of antenatal care (ANC), skilled birth attendance (SBA), and postnatal care (PNC) is strongly linked to better maternal health outcomes and lower mortality. According to earlier studies, women who have more autonomy are more likely to seek timely care, such as skilled delivery, PNC, and ANC. In India, despite several government programs, the use of maternal health services is still inadequate, particularly for rural and adolescent women. To reduce maternal mortality, it is imperative to investigate the relationship between women's decision-making autonomy and their use of maternal health services. This study explores the connection between women's decision-making autonomy and usage of crucial maternal healthcare treatments, particularly ANC and PNC.

Data and Methods: This study utilizes data derived from the National Family Health Survey (NFHS-5, 2019-2021). The NFHS is a comprehensive cross-sectional survey administered under the auspices of the MOHFW, GOI, and conducted by the IIPS, Mumbai. The analysis employed the Household and Kids Recode (KR) files and concentrated on recent births over the five years prior to the survey. PNC within two months of birth and sufficient ANC (≥4 visits) were dependent variables. The main independent variable, women's decision-making autonomy, was assessed in four areas: control over spending husband's income, healthcare decisions, major household purchases, and visits to family or relatives. The scores were further classified into three categories: low, medium, and high autonomy. Various socio-demographic variables such as age, housing, religion, caste, education level, husband's occupation, wealth quintile, place of residence, media exposure, working status, and region were used for further analysis. Stata 17.0 was used to apply binary logistic regression models, multinomial logistic regression models, and chi-square tests.

Result: The use of maternal health services is positively correlated with greater decision-making autonomy. In comparison to women with low autonomy, those with medium to high autonomy are more likely to ensure PNC for their neonates and complete the recommended number of ANC visits. There exists a significant association between the ANC/PNC service utilization and women's decision-making autonomy. Utilization patterns are also influenced by socio-economic differentials.

Conclusion: The findings of this study highlight the critical role of women's decision-making autonomy in enhancing maternal healthcare utilization in India. Along with existing maternal health programs, the strengthening of women's decision-making power is essential in reducing preventable maternal and newborn deaths. Therefore, there is a need for policy interventions that address structural inequalities and promote women's autonomy, thereby advancing progress toward SDG 3.1.

Work Participation and Gender Inequalities in North 24 Parganas: Insights from Census 2001 and 2011

Somnath Mukherjee

Background and Objectives: In rural India, where patriarchal attitudes and socioeconomic hurdles continue to limit women's economic involvement, gender imbalance in labour force participation is still a chronic concern. The 2001 and 2011 Censuses provide a notable illustration of these inequalities in West Bengal's North 24 Parganas district. Block-level differences in male and female labour participation rates (WPR) in rural areas are examined in this study with an emphasis on determining enduring gender inequalities, structural obstacles, and long-term trends. The main goal is to determine whether there has been a discernible increase in female labour participation over the past ten years, how it stacks up against male participation, and what socioeconomic factors account for these trends.

Data and Methods: Secondary data from the 2001 and 2011 Indian Censuses served as the basis for the analysis. To find regional differences, temporal shifts, and gender disparities, block-wise data on male and female major workers, marginal workers, and non-workers were gathered. A descriptive comparative approach emphasizes how rural-urban contexts, reliance on agriculture, and marginal employment influence women's labour market involvement, highlighting both general trends and variations at the block level.

Findings: The analysis shows that during both census years; there was a significant gender discrepancy in work participation. Women's participation was frequently restricted to marginal, seasonal, and insecure employment, while men continued to be concentrated in more permanent and lucrative forms of work. Female engagement was comparatively higher in the deltaic Sundarbans blocks of Hingalganj and Sandeshkhali, especially in fishing and agriculture. On the other hand, the lowest levels of female engagement were found in urbanizing districts like Rajarhat and Barrackpur, where women's roles were frequently limited to unpaid domestic work. While some blocks, like Haroa and Rajarhat, saw further drops in women's involvement, others, like Swarupnagar, Gaighata, and Barasat-I, showed only slight improvements. Overall, the gender gap did not significantly close during the decade, despite modest improvements.

Conclusion: The continued existence of gender inequality in rural North 24 Parganas draws attention to ingrained sociocultural and structural obstacles that prevent women from obtaining stable employment. Despite some slight improvements between 2001 and 2011, women are still overrepresented in insecure types of labour and disproportionately excluded from permanent employment. Expanding MGNREGA, bolstering self-help groups (SHGs), encouraging vocational training for non-farm jobs, and explicitly acknowledging unpaid household labour in economic assessments are some of the specific initiatives needed to address this imbalance. In the absence of such policies, gender gaps in the rural labour market are likely to persist rather than be eliminated.

Beyond Biology: The Role of Son Preference in Reversing Infant Survival Advantage Among Girls in India

Soumen Barik

Background and Objectives: Son preference in India remains a deeply entrenched social norm, contributing to persistent gender disparities in child survival. Despite overall declines in child mortality, evidence suggests that girls, particularly after infancy, face higher risks due to discriminatory care practices including delayed healthcare, unequal nutrition, and lower immunization rates driven by cultural preference for sons. While previous studies have documented excess female child mortality, there is limited recent evidence on how these inequalities have evolved across age groups and regions. This study examines the role of son preference in shaping gender gaps in child mortality in India, using the latest nationally representative data.

Data and Methods: We analyzed data from the National Family Health Survey (NFHS-5, 2019 21), covering 259,627 children under five. Survival analysis, Nelson-Aalen cumulative hazard functions, and multivariate Cox proportional hazards models were employed to estimate gender differences in infant mortality (IMR) and under-five mortality (U5MR), adjusting for maternal education, wealth index, place of residence, antenatal care, and institutional delivery. Bootstrapped standard errors accounted for complex survey design.

Results: Nationally, boys had slightly higher neonatal and infant mortality (IMR: 29 vs. 27 per 1,000), consistent with biological vulnerability. However, girls exhibited a 14% higher risk of dying between ages 1–4 (Child Mortality Rate: 18.3 vs. 16.0, $p < 0.05$). This reversal was more pronounced in socioeconomically disadvantaged states like Uttar Pradesh and Bihar, where girls' post-infancy mortality exceeded boys' by up to 22%. The risk intensified with birth order: third- or later-born girls faced a 31% higher U5MR than first-born girls (aHR=1.31, 95% CI: 1.18–1.45), while no such gradient existed for boys. Gender-biased fertility stopping—continuing childbearing until a son is born—was a key driver, with families having only daughters showing 1.6 times higher mortality for subsequent girls (OR=1.62, 95% CI: 1.41–1.86).

Conclusion: Son preference in India continues to negatively impact girls' survival beyond infancy, particularly in high-fertility, low-resource settings. Discriminatory care practices, delayed healthcare access, and gender-biased fertility behaviors such as continuing childbearing until a son is born contribute to higher mortality rates among later-born girls. Despite overall declines in child deaths, excess female mortality persists, revealing deep-rooted gender inequities. Addressing this requires transformative, gender-sensitive policies that extend beyond healthcare facilities into homes and communities. Strengthening maternal education, women empowerment ensuring equitable access to health services regardless of birth order or gender

Keywords: Son preference, Gender inequality, Child mortality, Birth order, NFHS, India, Survival analysis.

Prevalence and Determinants of Anaemia Among Reproductive-Aged Women in India: An Exploratory Study

Soumitra Mandal

Background and Objectives: Anaemia is a most common iron deficiency disease among reproductive-aged women in India. In spite of running different programmes for past several decades to combat anaemia, but it remains major health concern among reproductive-aged women.

Objectives: This study has been conducted to find out the prevalence of anaemia, and its spatial concentration, different socio-demographic, economic, dietary factors influencing it among reproductive-aged women (15–49 years) in India.

Data and Methods: The study utilizes the fifth (2019-21), and fourth (2015) round of the National Family Health Survey data. Besides descriptive statistics, Hot Spot Analysis has been applied to identify anaemic clusters of higher and lower concentration across India. Chi-square test and bivariate analysis have been used to predict the significant likelihood of anaemia based on socio-economic, demographic and dietary factors.

Findings: The study result has revealed that prevalence of anaemia is noticeably higher amongst middle aged (40-49 years) economically poorest women with primary level education. Spatially, prevalence of anaemia is strongly rooted among women of east and north-east India (i.e., state of Bihar, Jharkhand, Odisha, West Bengal, and Assam). Bivariate analysis explore that poorest women have a higher probability of facing anaemia (OR = 5.11 at $p < 0.01$) compared to richest women. Moreover, women belong to scheduled caste, resides in rural area and engaged in agricultural sector faced higher rate anaemia compared to others. Besides this, pattern of consuming milk, pulses, fruits, fish weekly and monthly basis has a significant predictive role of anaemia prevalence among women of reproductive age group.

Conclusion: To mitigate the risk of anaemia, a comprehensive, women centric multi-sectoral approach should be adopted in India; especially focusing on poor women in rural area who are unable to meet daily nutritional needs through their food habits.

Keywords: Anaemia, reproductive women, socio-economic predictors, dietary patterns, bivariate analysis

Reassessing the Nutrition Policy Landscape: Analysing Policy Mapping and Malnutrition in selected South Asian Countries

Sourav Bhattacharjee

Malnutrition is the persistent and multifaceted public health burden experienced by several countries of South Asia. It is affecting millions of lives and impeding the socio-economic progress of nations. Despite decades of policies, programs and interventions the region continues to suffer from high rates of undernutrition, micronutrient deficiencies, as well as maternal and child malnutrition. This paper examines the impact of malnutrition in South Asia through the public policy lens, with an emphasis on policy formulation and evaluation of implementation constraints. Drawing on national policy mappings and empirical analyses, it highlights the policy architecture across the region. The public policy cycle framework has been applied while incorporating Kingdon's Multiple Streams theory to analyse how certain issues impact upon the policy agenda, how decisions are made, and how implementation is carried out. Findings show that while early childhood and pregnancy receives significant policy attention but adolescence and the preconception period are almost totally ignored, limiting the effectiveness of maternal and child health interventions. The paper argues for an urgent pivoting towards preconception-centered, equity-driven interventions that align national commitments with global nutrition targets such as the SDGs and WHO's Global Nutrition Targets 2025.

Keywords: Preconception Nutrition; Lifecycle Approach; Public Policy; South Asia; Malnutrition.

Exploring The Factor Affecting Contraception Use of Eligible Couple in Ri Bhoi, Meghalaya

Sreya Bhattacharya

Working with The Hans Foundation on their project in rural Meghalaya was an eye-opening experience. I was part of a team exploring why contraceptive use is so low in a state where women traditionally hold a high social status. It's a paradox that puzzled me - despite Meghalaya being a matrilineal society, the fertility rate is high and contraceptive use is low.

Our project, "Exploring the Factors Affecting Contraceptive Use of Eligible Couples in Ri Bhoi District, Meghalaya," took us to the Amjong Sub-centre in Ri Bhoi district. We spoke to 75 people, including married women and men, as well as health workers. I helped design questionnaires, collect data, and analyze it using Excel. I also got to draft the final report and present our findings.

The fieldwork was challenging but rewarding. We had to climb hills and navigate villages with limited connectivity. But it was worth it - we got to engage with local communities and understand their perspectives.

Our study revealed some important insights. People knew about contraceptives, but didn't use them consistently. Men weren't very involved in family planning, and cultural and religious beliefs played a big role in shaping their decisions. We also found that service delivery issues, like irregular supplies and heavy workloads, hindered contraceptive use.

This internship was a game-changer for me. I learned research skills, like designing questionnaires and analyzing data. But more importantly, I gained a deeper understanding of the complexities of health behavior in rural tribal communities.

I realized that implementing family planning programs isn't just about providing services - it's about understanding the social and cultural context. This experience has stayed with me, and I'm grateful for the opportunity to apply my knowledge in a real-world setting.

Emerging Rural Urban Continuums: Land Use Change and Livelihood Transformation in Rajarhat CD Block, North 24 Parganas

Srijita Saha

The rural urban divide usually means a clear difference between villages and cities. Rural areas depend on farming, have scattered settlements, and limited facilities, while urban areas are marked by dense populations, buildings, and diverse jobs. But in many regions today, this sharp divide is fading. Instead, a rural urban continuum is forming, where features of both rural and urban life exist together.

This paper looks at the Rajarhat CD Block of North 24 Parganas, West Bengal, as an example of such a rural urban continuum. Rajarhat was once mainly agricultural, but now farmland is rapidly being converted into housing complexes, commercial spaces, and service activities. Villages like Ghuni, Sulangari, Patharghata, Nawabad, and Vedic still fall under rural panchayats, yet people there enjoy many urban facilities. This shift has also changed livelihoods: fewer people depend on farming, and more are engaged in non-farm jobs, services, or sometimes remain unemployed.

The study uses household surveys (2024) and satellite-based analysis of NDVI, NDBI, and land use/land cover maps from 1993–2023 to show how land use changes affect people's livelihoods. Findings reveal that the rural urban continuum has been important in supporting this transition by helping people shift occupations, improving infrastructure, and promoting sustainable practices like the Panchayati raj systems.

At the same time, poverty in rural areas continues to be a concern. The new rural urban continuum highlights the need for better governance. Currently, the 73rd Amendment focuses on rural administration and the 74th on urban administration. But areas like Rajarhat do not fit neatly into either category. To meet the challenges and opportunities of such spaces, a new type of administrative unit is needed—one that combines the strengths of both rural and urban systems, similar to the Panchayati Raj model but adapted to peri-urban realities.

This study shows that livelihood security, development, and governance at the edges of cities are deeply connected to land transformation, and that new approaches are needed for balanced growth.

Mapping Anaemia Vulnerability: Determinants and Prevalence Shifts among Adolescent Girls in Aspirational Districts

Subhojit Let

Background and Objectives: The World Health Organization identifies adolescent girls as particularly prone to anaemia due to reproductive changes, with challenges being more pronounced in India's Aspirational Districts (ADs), which suffer from poor education and health. The study examines the prevalence of anaemia among adolescent girls in ADs and identifies associated determinants from 2015 to 2021.

Data and Methods: Data from the National Family Health Survey (NFHS)-4 and NFHS-5, covering 21,637 and 19,879 adolescent girls aged 15-19 in ADs, were analyzed. Multivariable logistic regression was used to identify the determinants of anaemia among adolescents.

Findings: The prevalence of anaemia among adolescent girls aged 15–19 years increased nationally from 54.1% in NFHS-4 to 59.1% in NFHS-5. The rise was sharper in Aspirational Districts (ADs), where prevalence grew from 58.3% to 62.4%, compared to a smaller increase in non-ADs from 53.5% to 58.6%. This indicates that ADs not only had higher baseline levels but also experienced a steeper deterioration. Within ADs, more than 65% (75 of 112) reported an increase in anaemia between 2015 and 2021. Assam recorded the highest rise of 29.4 percentage points, with Barpeta alone increasing by 45.1%, while Uttarakhand showed the greatest decline at 15.3 percentage points, led by Haridwar with a reduction of 25.8%. State-level patterns reveal widespread increases across ADs in Assam, Mizoram, Gujarat, Chhattisgarh, Manipur, Rajasthan, Maharashtra, Tripura, Jammu & Kashmir, Nagaland, Tamil Nadu, Bihar, Odisha, Telangana, Madhya Pradesh, Punjab, and Haryana, with districts such as Barpeta, Narmada, Korba, and Dhalai reporting substantial surges. In contrast, some ADs experienced improvements, including Namsai in Arunachal Pradesh, Dumka and Latehar in Jharkhand, Fatehpur and Balrampur in Uttar Pradesh, Chamba in Himachal Pradesh, Ribhoi in Meghalaya, Y.S.R. Kadapa in Andhra Pradesh, Wayanad in Kerala, West Sikkim, and several districts of Uttarakhand such as Udham Singh Nagar and Uttarkashi. These exceptions highlight the uneven trajectory of anaemia reduction across regions. Additionally, anaemia prevalence was found higher among girls with higher parity, Muslim girls, and those from poorer households. Pooled regression revealed that adolescent girls with a higher number of children (AOR: 1.29), formerly married (AOR: 1.57), Scheduled Tribe girls (AOR: 1.44), and girls with amenorrhea (AOR: 1.57) were highly associated with anaemia.

Conclusion: There is a strong need for health and nutrition programs made specially for adolescent girls in ADs, much like the focused care already given to pregnant women. Some groups of girls are more vulnerable than others—for example, formerly married girls, those from Scheduled Tribes, and those with amenorrhea. These girls often face greater barriers in getting health services and proper nutrition. Programs designed for their specific needs can help provide better access to healthcare, improve their diet, and encourage regular health check-ups. This would not only lower anaemia rates but also support their overall growth, reproductive health, and long-term well-being. By addressing the needs of these high-risk groups, such efforts can also help break the cycle of poor health and undernutrition that affects many communities in disadvantaged areas.

Women Empowerment and Divorce in India: A Mixed-method Study

Sunandita Das

This study used a mixed-method approach to examine the association between divorce and women's empowerment in India: (a) quantitative analysis using the National Family Health Survey (2019-21); (b) qualitative analysis of 10 key informants interviews (i.e., Judges, Advocates, and Psychologists). Findings revealed that women working for wages and those with greater freedom of movement had a higher likelihood of divorce. Thematic analysis identified four major themes: role conflicts, women's financial independence, changing family attitudes, and increased legal awareness. Rather than advocating a return to traditional gender roles, this study underscores the need for a more gender-egalitarian social framework.

Keywords: Women, Empowerment, Divorce, India

Female literacy and gender gap in Puri district: a block-wise analysis

Swoyam Prangya Jena

Education plays a vital part in empowering women and enhancing their overall well-being. Women's knowledge is a critical determinant of a society's profitable, social, and political advancement. It not only contributes to individual authorisation but also facilitates broader societal development. This paper examines the spatio-temporal distribution in female literacy and the gender gap in the Puri district in the 2001 and 2011 censuses. The present paper is completely based on secondary data sources and analysed with simple percentage growth. Choropleth maps have been used to show the spatial variations with the help of ArcGIS software. The analysis shows those blocks that are situated in the north-eastern part of Puri district, likely influenced by their proximity to Bhubaneswar, show higher female literacy rates and lower gender gaps, whereas the southern and interior regions emphasise the need for focused educational efforts in southern and interior regions.

Keywords: Female literacy, Gender gap, Puri district.

Examining the Association Between Ambient Air Pollution and Adverse Birth Outcomes in India: Findings from National Family Health Survey-5 (2019-2021)

Tapas Bera

Background: The substantial morbidity and mortality rates associated with low birth weight (LBW) and preterm birth (PTB) impose a significant burden on health, education, and social services, as well as families. To achieve the 2030 Agenda for Sustainable Development Goal (SDG) #3, which is looking towards improving the health and well-being of individuals across all age groups, it is vital to tackle worldwide issues concerning low birth weight (LBW) and preterm birth (PTB).

Data: The data evaluated in this study has been derived from the most recent (5th) round of the National Family Health Survey (NFHS) conducted between 2019 and 2021 under the Ministry of Health and Family Welfare (MOHFW). The NFHS-5 is a nationally representative survey that has collected data from 636,699 households. This sample consists of 724,115 women aged 15-49, and 232,920 children. We excluded observations for children with missing birth weight data ($n=23,654$) from the sample. Hence, the overall sample size comprises 209,266 children. Furthermore, we have excluded observations with missing values for the average total pregnancies PM2.5 exposure value (1,135), leading to a final sample size of 2,08,181 children.

Outcome Variable: The study considers LBW and PTB as outcome variables. According to WHO preterm new-borns as those born before 37 weeks of gestation, while LBW infants are those who weigh less than 2500 grams at birth.

Expected Findings: Out of 208,181 children under the age of five, 51.69% were males and 48.31% were females. Around 79% of the total sample lived in rural areas whereas 21% resided in urban areas. In addition, 93.64% of children resided in households with access to improved drinking water sources, and 7% of children lived in households that relied on unimproved sources of drinking water. It was observed that approximately a quarter of children resided in families lacking improved sanitation facilities (24.98%). Further, 19.62% mothers had no education, while only 12.4% had completed primary education. Moreover, around 18.56% of mothers had a body weight below normal BMI, while over 5% were teenage mothers, and based on birth records, 39.79% were experiencing their first childbirth.

Based on our analysis, we estimated the level of exposure in-utero from September 2013 to April 2021. The mean birth weight of the study sample is 2812.50 grams. The prevalence of low birth weight is 17.24% (36,249 cases), and preterm birth is 12.42% (25,846 cases). The mean exposure to PM2.5 during pregnancy is $56.01 \mu\text{g}/\text{m}^3$, the mean exposure with LBW is $58.94 \mu\text{g}/\text{m}^3$, and the mean exposure with PTB is $59.06 \mu\text{g}/\text{m}^3$, all of which are twelve times higher than the WHO recommended level of $5 \mu\text{g}/\text{m}^3$. The exposure level is divided into octiles with corresponding child proportions, with each octile representing 12.5% of the sample as a whole. The reference group consists of children exposed to PM2.5 levels in the lowest octile, which is below $28.02 \mu\text{g}/\text{m}^3$. Multivariate logistic regression models I, reflects that exposure levels up to $42.13 \mu\text{g}/\text{m}^3$ have a less significant impact on the chance of LBW and PTB compared to the reference group. Where, after accounting for different factors in model II, the odds ratio for LBW increased from 1.00 (CI: 0.96-1.06) with a concentration of $42.13-49.92 \mu\text{g}/\text{m}^3$ to 1.05 (CI: 1.00-1.11) with a concentration of $49.92-59.92 \mu\text{g}/\text{m}^3$ in the fifth octile, and

further increased to 1.10 (CI: 1.04-1.15) with a concentration of 93.84 $\mu\text{g}/\text{m}^3$ in the last octile. However, the findings indicated a lack of consistency, on the dimension of LBW. On the other hand, there was a consistent association between exposure to PM_{2.5} at a level of 42.13 $\mu\text{g}/\text{m}^3$ and an increased risk of PTB. The risk of PTB increases steadily from the first to the fifth octile, with a risk ratio of 1.42 (95% CI: 1.34-1.51). The highest risk of PTB is observed in the last octile, with a risk ratio of 1.58 (95% CI: 1.48-1.67).

Conclusion: Findings of our study reveal that children aged under-5 had a significantly higher likelihood of experiencing LBW and PTB when exposed to higher levels of fine particulate matter (PM_{2.5}) during pregnancy. These findings demonstrate the crucial significance of prenatal and early-life exposure to air pollution for a child's overall growth and health.

Regional Variation in Multidimensional Well-Being Index of Older Persons in India

Vandita Ranjan

Background and Objectives: India is witnessing a steady rise in its elderly population, with projections showing that by 2050, one in five Indians will be aged 60 years or above. This demographic transition brings challenges related not only to health but also to economic security, social connectedness, and emotional well-being. Well-being in old age is multidimensional and highly dependent on social, cultural, and regional contexts. Despite this, most studies in India have focused only on single aspects such as health or income, overlooking the multidimensional nature of ageing. The present study aims to assess the regional variation in multidimensional well-being among older persons in India by combining four key domains: physical, economic, social, and emotional. The central objective is to identify which regions of the country perform better or worse and to highlight areas requiring policy interventions.

Data and Methods: The study uses data from the Longitudinal Ageing Study in India (LASI) Wave 1, 2017–18, which provides nationally representative information on adults aged 45 and above, including older persons (60+). The analysis is restricted to older persons (60+). Physical well-being was measured using Activities of Daily Living (ADL) and self-rated health (SRH). Economic well-being was assessed using Monthly Per Capita Consumption Expenditure (MPCE) quintiles. Social well-being was evaluated through friendship networks and frequency of visiting relatives or friends. Emotional well-being included depression (CES-D scale) and life satisfaction. Each dimension was classified as well-off or not well-off. A Multidimensional Well-Being Index (MWBI) was constructed by aggregating all four domains. Descriptive statistics and cross-tabulations were employed to show national-level distributions and regional disparities across six zones: North, Central, East, North East, West, and South. Analyses were carried out using STATA 17.

Findings: The results show notable differences across domains. Nationally, 63.7% of older persons were physically well-off, 58.8% were economically well-off, 17.2% were socially well-off, and 37.3% were emotionally well-off. Social and emotional well-being emerged as the weakest dimensions, with large proportions of older persons lacking close friends, rarely visiting relatives, or reporting depression and dissatisfaction with life. When aggregated, 60.9% of older adults were multidimensionally well-off, while 39.1% were not well-off.

The South region performed best overall, accounting for the largest share of multidimensionally well-off older adults (24.6%). The East (27.9%) and Central (22.6%) regions carried the heaviest burden of multidimensionally deprived older persons. The West performed strongly in social well-being (34.8% well-off), while the North East showed balanced outcomes across most domains despite its smaller population size. The East displayed mixed outcomes, with relatively high shares of both well-off and not well-off individuals, reflecting internal inequality.

Conclusion / Policy Implications: The study concludes that multidimensional well-being among older persons in India is highly uneven across regions. The South demonstrates stronger outcomes, while the East and Central regions face significant disadvantages across multiple dimensions. These findings underline the need for region-specific policy approaches. Efforts should focus on expanding healthcare access and economic support in the East and Central regions, promoting social inclusion to address isolation, and strengthening mental health and emotional well-being programs nationwide. Policymakers must adopt an integrated approach that addresses not only health and income but also social and psychological needs to ensure dignified and equitable ageing in India.

Keywords: Older Persons, multidimensional well-being, regional disparities, LASI, India, ageing, STATA 17.

Perception and Awareness of HIV/AIDS among College and University Students: A Public Health Perspective

Vikash Kumar

Background: HIV/AIDS remains a major public health challenge in India, particularly affecting young people who represent a large share of the population. Awareness and perception among college and university students play a vital role in prevention and stigma reduction. However, misconceptions about transmission and treatment persist.

Objective: To assess the awareness levels, perceptions, and attitudes regarding HIV/AIDS among higher education students and identify socio-demographic factors influencing them.

Data and Methods: The study adopts a cross-sectional design among undergraduate and postgraduate students from selected colleges/universities. A stratified random sampling technique will be used to ensure representation across gender, academic streams, and urban rural backgrounds. Data will be collected through a pre-tested structured questionnaire focusing on socio-demographic characteristics, knowledge of HIV transmission and prevention, perception of risk, and stigma-related attitudes. Both descriptive statistics and chi-square tests/regression models will be applied for analysis.

Findings: Preliminary insights and review of existing studies suggest that while students are generally aware of HIV/AIDS, knowledge gaps remain regarding mother-to-child transmission, preventive methods, and availability of treatment. Misconceptions and stigma towards people living with HIV/AIDS are also common. It is expected that the study will reveal variations in awareness and perception across gender, field of study, and residential background. The findings are anticipated to show a positive correlation between exposure to health information campaigns and higher awareness levels.

Conclusion/Policy Implications:

The study will provide evidence to guide youth-centered HIV/AIDS education and communication programs. Strengthening awareness campaigns within academic institutions, incorporating HIV/AIDS modules in curricula, and leveraging peer-led interventions may help reduce stigma and promote safer practices among students. The outcomes will contribute to achieving national HIV/AIDS prevention and control goals.

Keywords: HIV/AIDS, awareness, perception, students, stigma, India

Wage theft among Indian return migrants from the Gulf: Survey evidence from Bihar

Vikram

Wage theft has emerged as a widespread issue of labour exploitation among temporary migrant workers from South Asia working in the Gulf Cooperation Council (GCC) region. Despite making significant contributions to both the economies of host regions and their home countries through remittances, Indian migrants especially those from states like Bihar remain vulnerable to systematic abuses, including unpaid wages, unauthorized salary deductions, and lack of grievance redress. This study, based on primary data collected from 385 returnee migrants in Siwan district, Bihar, examines the extent and factors of wage theft using descriptive analysis and binary logistic regression. Findings reveal that approximately 30% of the migrants surveyed had experienced wage theft, and exploitative practices by employers along with salary cuts considerably reduced the odds of dues recovery. While lodging complaints was associated to a greater odds of wage recovery, none of the claimants ultimately received their dues, underscoring the inadequacy of existing grievance mechanism. The study emphasizes the need for stronger bilateral protections, reform of recruitment processes, and better legal aid for returnees. Consequently, this study contributes to a growing but under-researched area of migration research focused on post return justice and the migrant s reintegration.

The Two-Way Flow: Factors shaping Remittance Behaviour in Amritsar households

Vinod Kumar

In the migration story of Punjab, the flow of money has long been seen as a one-way street, from emigrants to their parents. While these funds are crucial to the local economy, there is an emerging trend of reverse remittances, i.e., funds sent from parents in India to their migrant children abroad, which is shaped by the economic pressures and opportunities in both origin and destination countries. This study investigates the bidirectional flow of remittances in Amritsar, Punjab, through the lens of left behind parents, based on a cross-sectional primary survey of 388 parents across rural and urban households in Amritsar district.

Examining this phenomenon through the lens of left-behind parents, the study revealed that 46% parents only received remittances, while 20% only sent them. A further 27% engaged in no financial exchange, and 6% participated in both sending and receiving funds. Inward remittances aligned with the long-term returns of migration, with the flows predominantly directed towards parents aged over 60, living in rural areas and in Below Poverty Line households. These families often had two or more children who had migrated for employment and had been abroad for over six years.

On the other hand, reverse remittances can be seen as an initial investment phase in the migration journey. Parents who sent money but did not receive any were typically younger, resided in urban areas, and belonged to Above Poverty Line households. This financial support was most common for parents who had a single emigrant child who had gone abroad for educational purposes within the last two years.

The results further demonstrate that as the duration of emigration increases, the likelihood of reverse remittances decreases, while the probability of receiving inward remittances rises. This suggests a lifecycle of migrant financial support: reverse remittances function as a critical initial investment to facilitate a child's education and settlement, while inward remittances represent a later-stage return that contributes to the long-term well-being and security of the left-behind parents. This bidirectional model challenges the traditional one-way view of remittance flows, revealing a dynamic and evolving financial relationship. These findings reposition left-behind families not merely as dependents, but as crucial investors and stakeholders, fundamentally challenging our understanding of who supports whom in the modern transnational family.

Migration is one of the most discussed and debated socio-economic issues in contemporary India, often shaped and reinforced by media narratives. Newspapers act as powerful opinion-makers, framing migration either as a crisis, a development opportunity, or a humanitarian concern. The objective of this paper is to examine how two leading Indian newspapers The Times of India and The Telegraph represented human migration in 2024, with specific attention to causes, impacts, and the tone of reporting. The study aims to understand whether these narratives align with theoretical perspectives on migration or reinforce selective discourses shaped by institutional, political, or cultural biases.

The study is based on a content analysis of migration-related news articles and reports published between January and December 2024 in The Times of India and The Telegraph. Each news article/report is treated as a unit of analysis. A total of 100 articles (50 from each newspaper) were selected using purposive sampling. Articles were coded using categories such as type of migration (intra-state, international, rural urban, urban rural, etc.), cause of migration (environmental, economic, anthropogenic, or policy-driven), and tone (positive, negative, or neutral). Quantitative analysis is used to identify frequency patterns of appearance, while qualitative interpretation helps in understanding narrative framing.

Preliminary results indicate significant differences between the two newspapers in the way the migration issues are reported and narrative is framed. The Times of India predominantly emphasized economic and policy-related aspects, portraying migration as a challenge to urban governance and national development. About 40% of its coverage highlighted economic drivers, often exhibiting a negative or neutral tone. In contrast, The Telegraph devoted more attention to environmental and humanitarian dimensions, with nearly 35% of its coverage linking migration to climate-induced displacement and livelihood vulnerability and challenges. While The Times of India frequently adopted a macro-structural perspective, The Telegraph employed a human-interest approach, foregrounding migrant voices and individual struggles. This divergence in framing reflects not only editorial priorities but also broader ideological differences in English-language journalism.

The comparative analysis reveals that media representation of migration is far from uniform, with significant implications for public perception and policymaking. By framing migration primarily as an economic burden or as an environmental-humanitarian issue, newspapers influence how stakeholders, policymakers, and the public engage with migration discourse. The study suggests the need for more balanced reporting that integrates structural, environmental, and human-centered perspectives. Policy frameworks addressing migration must recognize these mediated narratives, as they shape both the visibility of migrant issues and the urgency of interventions. The study finding will certainly supply inputs to the policy makers so as to formulate policy to tackle problems. The recent initiative of Govt of WB in the form of Shramashree Prakalpa is a case in question.

A Circular Data Analysis of Seasonal Variation in Conception

ABHISHEK SARASWAT

Seasonal variation in conception and birth is a well-observed phenomenon across every species, including human populations worldwide. Although births occur throughout the year, their distribution is not uniform according to months. The seasonality of conception is a multifactorial phenomenon, influenced by a complex interplay of environmental parameters such as temperature, photoperiod, precipitation and humidity, often mediated by geographical and sociocultural contexts. This study employs circular statistical techniques to analyse seasonal variation in conception for two distinct Indian states, Uttar Pradesh and Kerala, utilizing data from the National Family Health Survey (NFHS) from 1990 to 2018. Two distinct patterns are observed: an increased conception rate in Uttar Pradesh during November, which coincides with the onset of the cooler winter months and a peak in Kerala during August, marking the beginning of the monsoon season. Furthermore, the seasonality of conception across major socio-economic subgroups-defined by religion, caste, wealth, and residence (urban/rural) is examined using the same methodological framework.

Developing A Flexible Discrete Probability Model for Child Mortality

Abhiraj Bhattacharya

In the research area pertaining to probability theory and statistical modelling, introducing new probability distributions for a real-life phenomenon have always been significantly important. Over dispersed count data are common in demography, biostatistics, reliability, and clinical studies, where standard Poisson models don't work. The Negative Binomial (NB) distribution is only an alternative, but it has a one-component form that cannot capture rich data or varying levels of dispersion. To fill this void, we propose here a new model with further modeling flexibility for tail behavior and overdispersion. Maximum likelihood estimation (MLE) is employed to obtain parameter estimates of the model. Monte Carlo simulation is employed to determine bias, mean squared error (MSE), and empirical coverage probability (ECP) over various sample sizes and parameters. Simulation results indicate that, the estimators are consistent. Aside from simulations, the proposed model is validated on a real data set on child mortality of count responses with clear overdispersion. Model comparison criteria like log-likelihood values and information criteria are used to affirm the higher performance.

Bridging Inequalities in Antenatal Care: Contributions of ASHAs, ANMs, and Anganwadi Workers in India

Tamal Reja

The objective is to analyze how digital platforms, such as mobile health applications and telemedicine services, have influenced reproductive health awareness and service utilization among rural women. Special attention is given to the gender gap in mobile phone ownership and digital literacy, which significantly affects women's ability to access these services. The study also evaluates the socio-cultural and societal factors that shape women's health-seeking behavior, particularly in conservative rural settings where reproductive health remains a sensitive topic.

Key indicators include levels of digital awareness, frequency of mobile-based health consultations, and the effectiveness of schemes like Mukhyamantri Nishchay Swayam Sahayata Bhata Yojana and Janani Suraksha Yojana in promoting institutional deliveries and maternal care. While digital health initiatives show promise in bridging healthcare gaps, challenges such as poor internet connectivity, limited smartphone penetration, and lack of localized content in regional languages persist.

The findings suggest that although digital health programs have made notable progress, their full potential can only be realized through integrated efforts that combine technological innovation with community-based support, digital literacy training, and culturally sensitive outreach. Strengthening infrastructure and policy implementation will be essential to ensure equitable, timely, and high-quality reproductive healthcare for all women in Bihar's rural landscape.

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