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Nutritional Policies and Anemia Among Reproductive-Aged Women in Selected South Asian Countries: 1950-2016

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Abstract: The study provides a comparative understanding between the nutrition policies and anemia of reproductive-aged women in South Asian countries focusing on Bangladesh, India, Nepal, and Pakistan. This study used data from Global Health Observatory Data Repository, Demographic Health Survey, reviews some of the critical interventions on nutrition within each selected country, and draws out several issues that bear on these policies' future evolution. Despite the ongoing policies and programs, the findings show that anemia problem among reproductive-aged women continue to pose an immense challenge to national development. Around 51.4 percent in India, 39.9 percent in Bangladesh, 35.1 percent in Nepal and 52.1 percent in Pakistan anaemic women were found in 2016. There are 31 percent, 15 percent, 4 percent and 2 percent points reduction took place in 26 years between 1990 and 2016 in Nepal, Bangladesh. India and Pakistan respectively. The low prevalence was observed in Bangladesh and Nepal despite fewer policies and programs than in India and Pakistan which manifests quality of policy is more important rather than quantity of policy. This study finds nutritional programs have a positive impact on the prevalence of anemia. This study suggests that National Nutrition Program requires inter-sectoral coordination between major Ministries to get easy and quick success.

Keywords: Anemia, Nutritional Policies, Reproductive-aged women, South Asia.

Introduction

Globally, Anemia is one of the public health concerns, which affects 32.4 million (38.2 percent) pregnant women around the world. Particularly, common in South East Asia (48.7 percent). Recent World Health Organization (WHO) estimation shows that globally, an estimated 295000 women died from complications of pregnancy and childbirth in 2017. Approximately 20 percent of maternal death is caused by anemia; with majority of deaths occurred in developing countries (Berhe, 2019). South Asia accounts for the largest number of anemia cases. To address the high anemia burden, the World Health Assembly set a target of achieving a 50 percent reduction of anemia in women of reproductive age by 2025 relative to 2010 levels (World Health Organization, 2020). Still, no South Asian country is on track to meet this target. Although, India, Pakistan, Bangladesh and Nepal have a long history of policy commitment and programs to combat anemia in children and women, they have not seen much improvement (Nguyen, Scott, Avula, & Menon, 2018). The selected countries are carrying the most considerable burden of anemia, and the progress in reducing anaemia has been slow despite substantial economic growth and programmatic efforts. Identifying the factors contributing to anaemia reductions is

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needed to accelerate progress (Nguyen, Scott, Avula, & Menon, 2018). The success or failure of a food and nutritional policy depends mainly upon the policy designs and policy formulation processes. Food and nutritional policy formulation involve the process of identifying and crafting a set of policy alternatives to address a nutritional problem and narrow down the alternatives to arrive at a final policy decision.

The right to food support has been enshrined in the constitution of south Asian countries. It is within this framework that policy makers are obliged to consider the nutritional implications of public policy. In spite of such effort, anemia inequity is still visible in every sphere especially among women. In countries with son preference such as South East Asian countries women continue to be treated as second-class citizens even within the realm of the home (Sen et al., 2007). At the level of nutritional policy formulation, many strategic and practical status needs are yet to be addressed. However, there seems to be a ray of hope with the recognition of the importance of nutritional concerns in recent years in the arena of policy making (Poornima & Uma, 2017).

The study suggests there are different ways and methods to study the impact of policies and review, economist and political scientist contributed by using different ways (Jr William, 2007). These studies are program-specific or country-specific, in this paper, we are presenting a comparative understanding of the impact of nutritional policies and programs in India, Bangladesh, Nepal, and Pakistan. This study aims to examine the relative changes over time in nutritional programs and the prevalence of anemia among reproductive-aged women in India, Nepal, Bangladesh, and Pakistan. The study collects country-level data and reviews articles from 1950 to 2016.The study tries to build a tactical relationship between the prevalence of anaemia among women and the implementation of nutritional programs in selected South Asian countries which is very important to achieve Sustainable development goals especially goal 3 which is directly associated with healthy lives and promote well-being for all at all ages.

A large body of literature in four selected South Asian Countries have examined the trend, pattern, prevalence and the factors for the anemia and nutrition in a broader context (Sunuwar et al., 2020; Gautam et al., 2019; Harding et al., 2018; Nguyen et al., 2018; Khan et al., 2016; Chowdhury et al., 2015; Stevens et al., 2013; Black et al., 2013; Balarajan et al., 2013; Balarajan et al., 2011). However, as observed globally, there is a lack of study for a comparative understanding between the nutrition policies and anemia status of reproductive-aged women in South Asian countries. That’s where this study is apart from the existing literature. This study provides an overview of nutrition policies and actions taken to improve women's anemia status in the South Asian context, focusing on Bangladesh, India, Nepal, and Pakistan.

Materials and Methods

This study has taken data from the World Health Organization- Global Health Observatory Data Repository/World Health Statistics to show the prevalence of anemia among women aged 15-49 years. This study also used the latest round of Demographic Health Survey (DHS) data from four South Asian countries: India 2015-16 (NFHS-4), Nepal 2016 (NDHS-5), Pakistan 2012-13 (PDHS-3), and Bangladesh 2014 (BDHS-7) to show the percentage distribution of reproductive aged women according to background characteristics. To depict the overall picture in terms of the percentage distribution of reproductive aged women by background characteristics, this study pooled four stated South Asian countries demographic data.

DHS is considered a nationally representative sample as it covers models from across the country with a well-specified sampling procedure. All the DHS uses multi-stage stratified sampling for sample selection. Out of the four selected countries, India had the largest sample size, and Nepal had the smallest sample size. All the countries collected information on reproductive and child health, family planning, fertility, water and sanitation, nutrition, lifestyle, violence, and other topics using the prescribed format of the DHS's questionnaire with some country-specific modifications. BMI cut-off points in the study is based on or WHO standard (WHO).

Independent variables

The selected socio-economic and demographic factors for the distribution reproductive aged women are: Age of mothers (15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49), Place of residence (Rural, Urban),Educational attainment women (No education, Primary, Secondary and Higher), Sex of the Household head (Male and Female),Source of drinking water (Piped water, Tubewell/borewell, Protected well, Unprotected well, River/dam/springs and Others), Type of fuel used for cooking (Clean, Wood, Crop residual, Animal dung and Others), Type of toilet Facilities (Flush toilet, Pit laterine, Open and Other), Current marital status (Never in union, Currently married and Others), BMI (Underweight, Normal, Over weight and Obese), Wealth quintile (Poorest, Poorer, Middle, Richer and Richest).

Results

Table 1 shows the percentage distribution of study population according to background characteristics in selected south Asian countries. Regarding BMI, pooled data shows that 57 percent, 21 percent, and 16 percent of women are normal, underweight, and overweight respectively. The country-specific analysis shows that in Bangladesh, 58 percent, 18 percent, and 19 percent of women are normal, underweight, and overweight respectively. The other countries are also following a similar pattern. According to age group, the highest percentage (17.4) women is observed in the 20-24 age group, whereas the lowest percentage is found in the 45-49 age group. Country comparative analysis shows the

descending trend after 20 years except for Pakistan offers a descending trend after 25 years. In the 15 -19-year age group among the country, Nepal shows the highest 20.2 percent followed by India (17.37 percent) whereas, Pakistan shows the lowest percentage (4.85). Most of the respondent falls in the 20 to 40-year age in all country. Combined data shows that more than half of the respondent belong to the urban area and most of the country followed the same pattern except Nepal.

When it comes to the women's educational attainment, the combined data shows that the highest percentage (43.59 percent) found in the secondary education category followed by the No education category (29.39 percent). The country's comparative analysis shows that the highest percentage (49.18 percent) is observed in Pakistan in the no education category. The combined data shows that more than 86.56 percent of household heads are male. The selected country also shows that more than 80 percent of household heads are male except Nepal (69 percent). The source of drinking water shows that piped (39 percent) and Tubewell/borewell (45 percent) water utilization is high in pooled data. A similar story followed by the country comparative analysis. The piped water utilization is high in India and Nepal, whereas Tubewell/borewell water utilization is high in Bangladesh and Pakistan.

The type of fuel utilization for cooking shows 40 percent each clean and wood in combined data. The country comparison shows that the highest use of clean fuel found in India (42 percent) and Pakistan (48 percent) whereas the highest use of wood found in Bangladesh (47 percent) and Nepal (57 percent). More than half of the respondents use flush toilets followed by the open place in pooled data. Among the country, 52 percent, 72 percent, and 80 percent responded using flush toilets in India, Nepal, and Pakistan respectively. In India, 36 percent of women use the open toilet, which is high among the selected country. When it comes to the wealth quintile, the percentage distribution of women by wealth quintile shows that ascending trend in grouped data and country-specific data, the lowest percentage is observed in the poorest category and the highest percentage observed in the richest category.

Table: 1: Percentage distribution of reproductive aged women according to background characteristics in selected south Asian countries

Characteristics	Pooled	Bangladesh	India	Nepal	Pakistan
BMI					
Under weight	21.38	18.18	22.45	16.81	7.96
Normal	56.70	58.3	57.14	61.21	40.80
Over weight	16.38	19.19	15.39	16.94	30.21
Obese	5.54	4.33	5.02	5.03	21.03
Age of mothers					
15-19	15.62	11.36	17.37	20.20	4.85
20-24	17.40	18.05	17.57	17.50	15.28
25-29	17.10	18.98	16.44	16.60	20.61
30-34	14.70	17.06	13.83	14.04	19.52
35-39	13.40	12.96	12.99	12.22	17.49
40-44	11.24	11.71	11.14	10.79	11.62
45-49	10.53	9.89	10.65	8.65	10.64
Place of residence					
Urban	34.71	28.26	34.63	62.76	36.8
Rural	65.29	71.74	65.37	37.24	63.2
Educational attainment women					
No education	29.39	24.94	27.46	33.28	49.18
Primary	14.62	29.16	12.46	16.72	16.47
Secondary	43.59	37.39	47.31	35.11	21.21
Higher	12.41	8.51	12.76	14.89	13.14
Sex of household H					
Male	86.56	88.75	86.51	68.93	88.01
Female	13.44	11.25	13.49	31.07	11.99
Source of drinking water					
Piped water	38.69	9.79	43.43	47.75	28.66
Tubewell/borewell	44.81	80.96	39.29	37.75	53.16
Protected well	2.78	0.19	3.24	1.35	2.05
Unprotected well	3.31	0.55	4.00	0.89	1.05
River/dam/springs	1.69	1.25	1.38	4.03	4.27
Others	8.71	7.25	8.66	8.23	10.82
Type of fuel used for cooking					
Clean	39.77	16.55	42.01	31.65	47.6
Wood	40.26	46.79	38.88	56.55	41.47
Crop residual	6.82	23.05	5.36	1.84	2.58
Animal dung	7.11	6.57	7.70	4.81	3.27
Others	6.03	7.04	6.04	5.14	5.07
Type of toilet Facilities					
Flush toilet	51.58	17.80	52.02	72.36	79.95
Pit laterine	13.10	69.80	6.90	7.54	4.87
Open	30.39	3.25	36.62	13.40	11.25
Other	4.93	9.16	4.46	6.69	3.93
Current marital status					
Never in union	18.22		22.73	20.75	
Currently married	77.47	94.37	73.09	76.72	95.69
Others	4.31	5.63	4.19	2.53	4.31
Wealth quintile					
Poorest	17.87	18.81	17.72	16.92	18.26
Poorer	19.52	19.08	19.56	19.63	19.65
Middle	20.46	19.93	20.56	20.17	20.25
Richer	21.13	21.04	21.16	21.50	20.98
Richest	21.02	21.15	21.00	21.78	20.86
Total	**100**	**100**	**100**	**100**	**100**

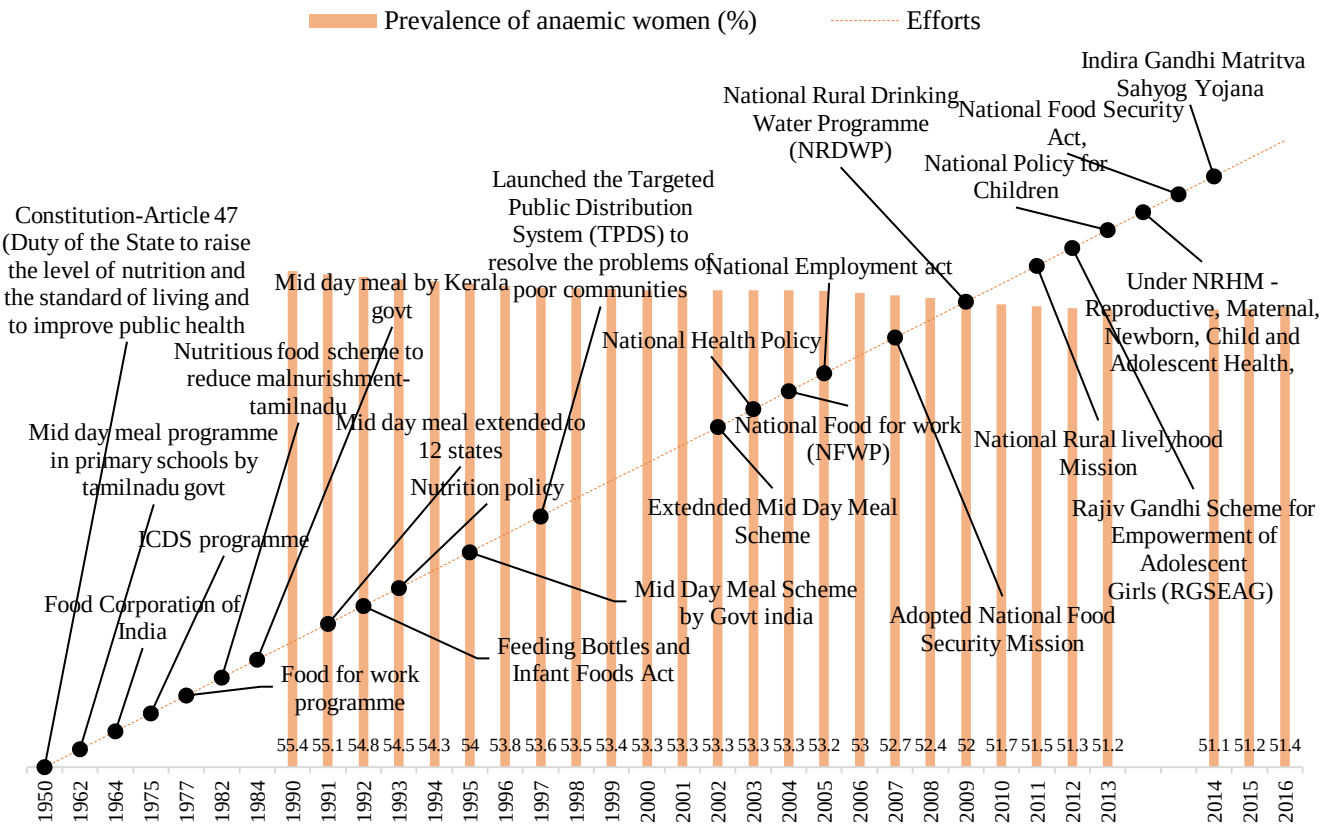
Source: Demographic and Health Survey: Bangladesh- 2014, India-2015-16, Pakistan-2017-18, Nepal-2016

Evolution of nutritional policies and prevalence of anemia in south Asia

The implementation of nutrition policies has been quite slow but has a positive impact on the prevalence of anemia among women. In Asia, nutrition policies and the program have gained importance since 1970. The study focuses predominantly on treating anemia and preventive actions taken by governments (Black, et al., 2013). The evolution of action taken and the trend of anaemia among the women in the four South Asian countries with anemia (Bangladesh, India, Nepal, and Pakistan) is discussed in the subsequent paragraphs.

Figure 1 shows the prevalence of anemia among reproductive-aged women and the chronology of various efforts to improve India's nutritional status. It shows a 55 percent prevalence of anemia among women aged 15-49 years in 1990. It also shows that 53 percent, 52 percent and 51 percent prevalence of anemia among women in 2000, 2010 and 2016 respectively. There is only 4 percentage points reduction took place in 26 years between 1990 and 2016 in India.

Figure 1: Prevalence of anaemia among women aged 15-49 years and the chronology of various efforts taken to improve their nutritional status, India: 1950-2016

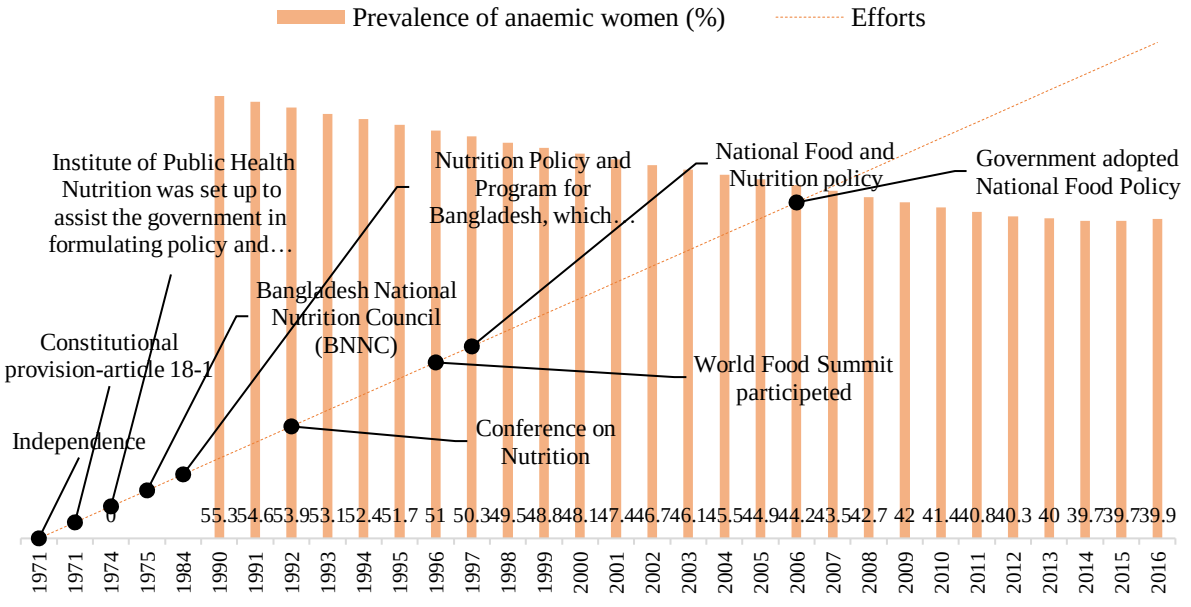


Source: World Health Organization, Global Health Observatory Data Repository/World Health Statistics (apps.who.int/gho/data/node.main.1?lang=en). (27/09/2020, 11.am)

The high levels of maternal undernutrition in India have persisted, despite strong constitutional - Article 47- says, its duty of the State to raise the level of nutrition and the standard of living. Based on constitutional provision government started programs such as Integrated Child Development Scheme (ICDS) in 1975 and Mid-Day Meal in 1984; further nutrition policy launched in 1993, then National Food Security Act 2013 comes to mandating food and nutrition entitlements for children, pregnant and breastfeeding mothers with maternity support and the Infant Milk Substitutes. Further development takes in this field in the form of Feeding Bottles and Infant Foods Act 1992 and Amendment Act 2003 provide a robust policy framework for protecting, supporting, and promoting nutrition interventions, especially during periods of greatest vulnerability for women. Looking at the present situation of nutritional status of women, National Nutrition Policy 1993, complemented by other policies such as the National Health Policy 2002, the National Policy for Children 2013, provides a strong foundation for addressing the immediate and the underlying determinants of undernutrition through direct and indirect interventions(Rajan & Mishra, 1997).With the increase in implementation of the nutritional program, the prevalence of anemia decreased as noted in the study. The recent 51.4 percent prevalence of anemia among reproductive-aged women was observed in 2016.

Figure 2 shows the prevalence of anemia among reproductive-aged women and the chronology of various efforts to improve nutritional status by Bangladesh. It shows a 55 percent prevalence of anemia among women aged 15-49 years in 1990. It also shows that 48 percent, 41 percent and 40 percent prevalence of anemia among women in 2000, 2010 and 2016 respectively. There is 15 percentage points reduction took place in 26 years between 1990 and 2016 in Bangladesh.

Figure 2: Prevalence of anaemia among women aged 15-49 years and the chronology of various efforts to improve their nutritional status, Bangladesh: 1971-2016

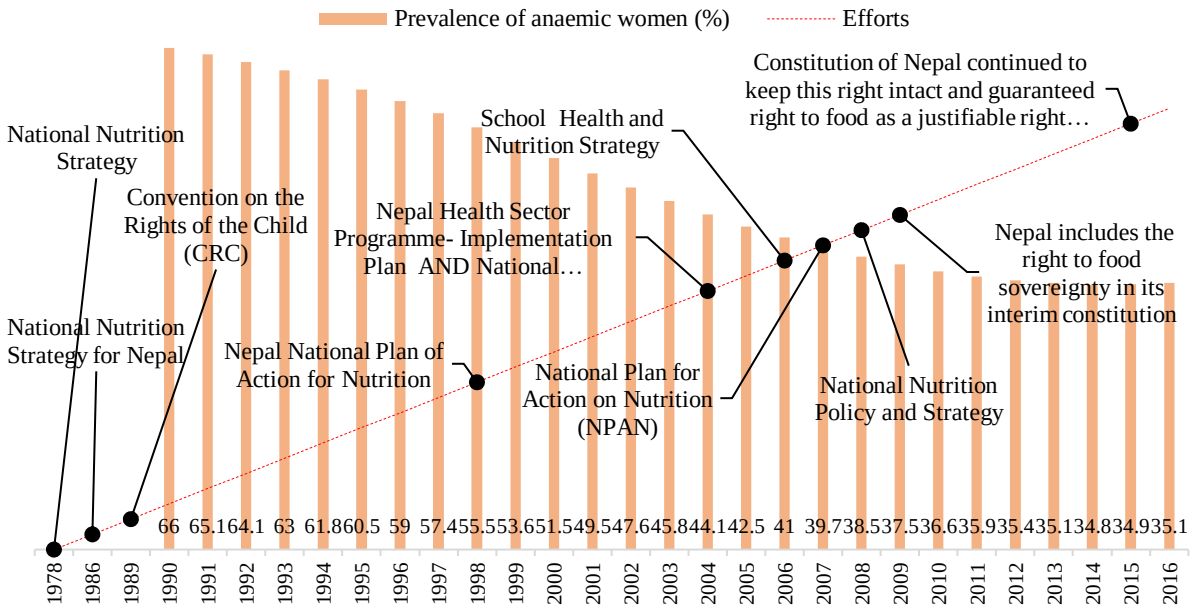


Source: World Health Organization, Global Health Observatory Data Repository/World Health Statistics (apps.who.int/gho/data/node.main.1?lang=en). (27/09/2020, 11.am)

The high level of maternal undernutrition in Bangladesh has persisted, despite strong constitutional provisions, in the 1972 constitution that declared the improvement of citizens' nutritional status as a primary responsibility of the state. Bangladesh constitution article 18-1 says that “the State shall regard raising the level of nutrition and improvement of public health as among its primary duties” (Shahan & Jahan, 2017). From this perspective, the 1972 constitution of Bangladesh was the first step towards a nutrition-focused policy. Consequently, efforts were made to devise policies that would help the state perform its responsibilities. In 1974, the Institute of Public Health Nutrition was set up to help the government formulate policy and strategy for nutrition-related activities and programs. This was followed by the establishment of the Bangladesh National Nutrition Council (BNNC) in 1975 (Shahan & Jahan, 2017)(Mannan, 2003). National food and nutrition policy in 1997, national food policy in 2006.

Figure 3 shows the prevalence of anemia among reproductive-aged women and the chronology of various efforts to improve nutritional status by Nepal. It shows a 66 percent prevalence of anemia among women aged 15-49 years in 1990. It also shows that 52 percent, 37 percent and 35 percent prevalence of anemia among women in 2000, 2010 and 2016 respectively. There is 31 percentage points reduction took place in 26 years between 1990 and 2016 in Nepal.

Figure 3: Prevalence of anaemia among women aged 15-49 years and the chronology of various efforts to improve their nutritional status, Nepal: 1978-2016



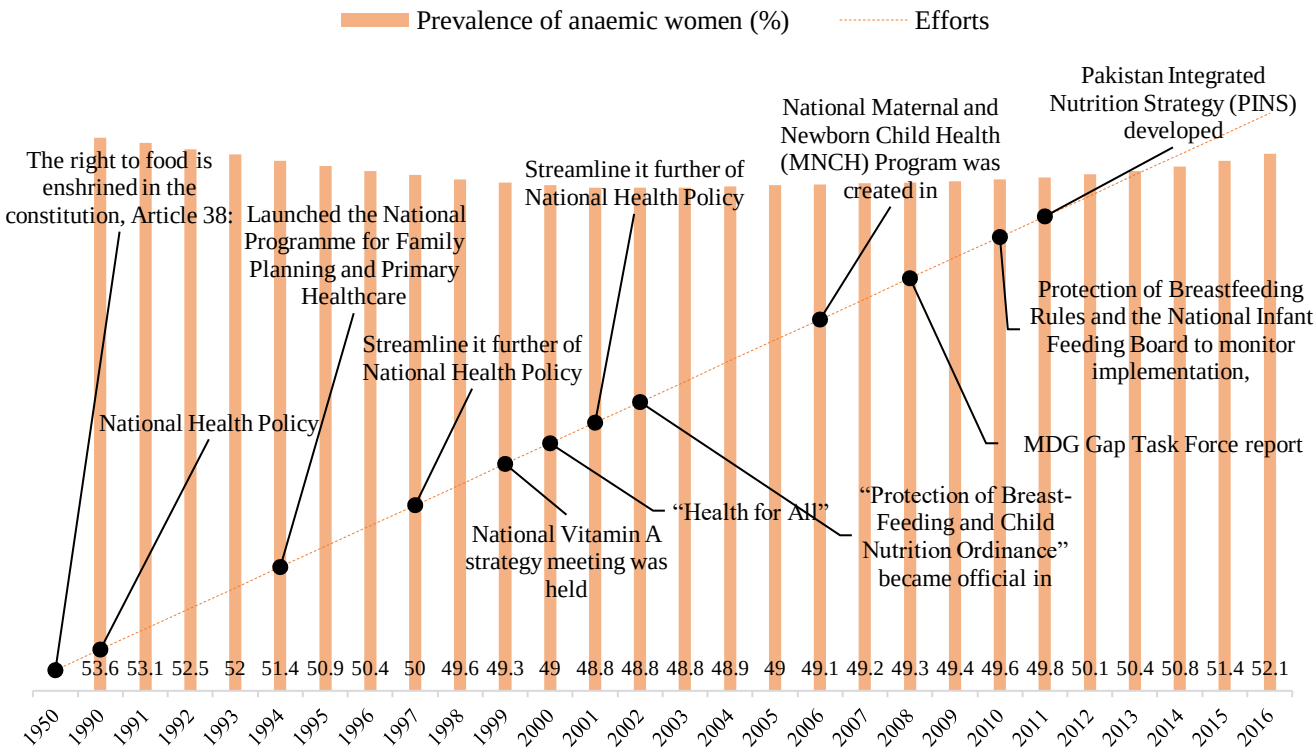
Source: World Health Organization, Global Health Observatory Data Repository/World Health Statistics (apps.who.int/gho/data/node.main.1?lang=en). (27/09/2020, 11.am).

Among the selected countries, Nepal has been found to have less prevalence of anemia. Nepal attempted various measures to combat nutritional problems in the country over the period. It is a fundamental human right enshrined, through good nutrition, in the convention on the Rights of the Child

(CRC) 1989 (Pahari, 2011). To eradicate anemia, the government has taken efforts such as the National Nutrition Strategy in 1978, Nepal National Plan of Action for Nutrition 1998, Nepal Health Sector Programme- Implementation Plan 2004-2009, National Nutrition Policy and Strategy 2004, National Plan for Action on Nutrition (NPAN) 2007, National Nutrition Policy and Strategy 2008 and current national Nutrition Program (Pahari, 2011). The government has also implemented the School Health and Nutrition Strategy 2006 to implement better quality programs for the school health and nutrition program.

Historically, nutrition has been a low-priority area in Pakistan, with low political leadership visibility. However, Pakistan renewed its pledge to improve the population's health outcomes when it signed the World Health Organization's Alma-Ata Declaration in 1978, which laid the foundations for "Health for All" by the year 2000 (Turab, Tahir, & Zaidi, 2018). Figure 4 shows the prevalence of anemia among reproductive-aged women and the chronology of various efforts to improve their nutritional status by Pakistan. The prevalence graph shows the decrease of prevalence from 54 percent in 2019 to 49 percent in 2000, prevalence increases from 49 percent in 2010 to 52 percent in 2016.

Figure 4: Prevalence of anaemia among women aged 15-49 years and the chronology of various efforts to improve their nutritional status, Pakistan: 1950-2016



Source: World Health Organization, Global Health Observatory Data Repository/World Health Statistics (apps.who.int/gho/data/node.main.1?lang=en). (27/09/2020, 11.am)

To improve women's nutritional status, the right to food is enshrined in the constitution, Article 38. Further, the National Program for Family Planning and Primary Health Care comes into the picture, commonly known as the Lady Health Worker Program, which was initiated under the construct of family planning within the National Health Policy of 1990. After reviewing the effect of the National Health Policy of 1990, the government made successive attempts to streamline it further in 1997 and 2001. The National Health Policy of 1997 emphasized the need for health promotion and health education initiatives. Despite these efforts, the 2008 MDG Gap Task Force report revealed that Pakistan still lagged in several MDG indicators, with at least 24 hands-off tracks (UN, 2008). These revelations forced policymakers to draft the National Health Policy of 2009 to address domestic issues and to strive to achieve the MDGs (GoP, 2009), (Turab, Tahir, & Zaidi, 2018).

Discussion

The single biggest scourge of the developing world is poverty resulting in numerous problems. Undernutrition is an outcome of taking inadequate nutritious food resulting in repeated insult from nutrition related diseases and infections. This under nutrition affects baby growth in the womb resulting in small baby size. On top of that undernutrition further reduces productivity of the mother resulting in low earning capacity which again lead them into the dark state of poverty (figure 5; Source: Government of India. (1993).

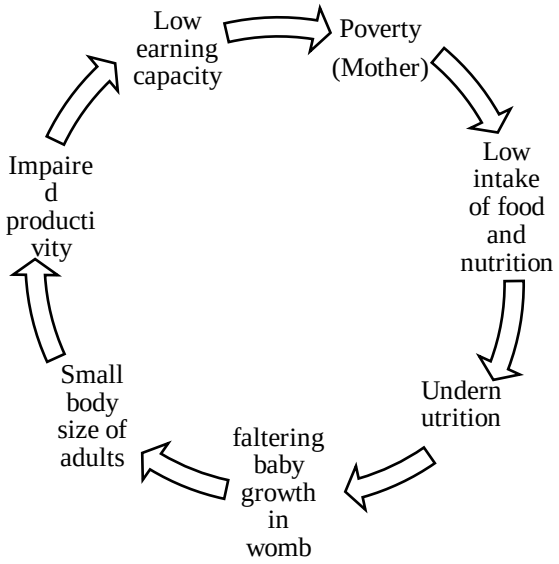


Figure 5: The vicious circle of poverty

Since Article 47 of Indian constitution assigned a duty on the state to improve nutrition, standard of living and improve public health in 1950, the Indian government started several programs like Mid-day meal programme in primary schools by Tamil Nadu govt. in 1962, ICDS programme in 1975, Food for work programme in 1977, Nutritious food scheme to reduce malnourishment- Tamil Nadu in 1982, Mid-day meal by Kerala govt. in 1984. After having constitutional right and several national and state level nutrition programs in 40 years between 1950 to 1990, 55 percent of Indian women aged 15-49 years were anaemic. This plight situation might be the outcome of three major reasons. Firstly, India's engagement in several wars (Kashmir War 1947-48; India-China war of 1962, India-Pakistan war of 1965); closed economy and lastly India got independence in 1947 only. After ten years, India got only two percent points reduction in anaemia from 1990 (55%) to 2000 (53%). In this duration, Indian govt. made several programs like Mid-day meal extended to 12 states in 1991, Feeding Bottles and Infant Foods Act in 1992, Nutrition policy in 1993 and launched the Targeted Public Distribution System (TPDS) to resolve the

problems of poor communities in 1997 etc. From 2000 (53%) to 2010 (52%), India achieved only around one percent reduction in anemia of women that might be with the help of several policies like extended Mid-Day Meal Scheme in 2002, National Health Policy in 2003, National Food for work (NFWP) in 2004, Adopted National Food Security Mission in 2007, National Rural Drinking Water Programme (NRDWP) in 2009 etc. India keeps its low reduction rate even after 2010, after making several policies like National Rural livelihood Mission in 2011, National Policy for Children in 2013, National Food Security Act in 2013, Indira Gandhi Matritva Sahyog Yojana in 2014 etc. Therefore, from 2010 (52%) to 2016 (51%), India achieved again only one percent reduction. The reason behind the low reduction might be the problem in connection with implementation of the programs.

Bangladesh became as an independent country from Pakistan in 1971 unlike India. Bangladesh also gives food right to its citizen by constitutional provision-article 18-1. Under this provision, Bangladesh had set up several institutions like institute of Public Health Nutrition to assist the government in formulating policy and strategy for nutrition related activities and programmes in 1975, Bangladesh National Nutrition Council (BNNC) in 1975.

About 55 percent of Bangladesh womenaged 15-49 years were anaemic in 1990 after 20 years of independence with constitutional food right and several efforts. After ten years, Bangladesh reduced seven percent in anaemia from 1990 (55%) to 2000 (48%) by several efforts like nutrition Policy and Program for Bangladesh, which was approved by the BNNC and published, Conference on Nutrition in 1992, participated in World Food Summit in 1996, National Food and Nutrition policy in 1997 etc. From 2000 (48%) to 2010 (41%), Bangladesh again achieved 7 percent reduction in anaemia of women that might be with the help of effective policies like National Food Policy in 2006 and previous policies as well. Bangladesh could not keep the reduction rate after 2010 resulted in only one percent reduction of anemia between 2010 (41%) and 2016 (40%) in six years.

Nepal attempted multiple measures to address nutritional problems in the country. It is a fundamental human right enshrined in the 'Convention on the Rights of the Child (CRC) 1989. After the National Nutrition Strategy in 1978. Further, Nepal National Plan of Action for Nutrition 1998, Nepal Health Sector Programme- Implementation Plan 2004-2009, National Nutrition Policy and Strategy 2004, National Plan for Action on Nutrition (NPAN) 2007, National Nutrition Policy and Strategy 2008 and current National Nutrition Program (Pahari, 2011) were implemented. The government has also implemented the School Health and Nutrition Strategy 2006 to improve school-aged children's health and nutrition status. By these efforts, Nepal has reduced the anemia of women aged 15-49 years by 31 percentage from 66 percent in 1990 to 35 percent in 2016, which is unprecedented reduction as compared to other South Asian countries.

Article 38 of the Pakistan constitution gives the right to food. After having constitutional right in 40 years between 1950 to 1990, 54 percent women of Pakistan aged 15-49years were anaemic. This

plight situation might be the outcome of two major reasons. Firstly, Pakistan's engagement in big wars with India (Kashmir War 1947-48; India-Pakistan war of 1965); and Secondly Pakistan got independence in 1947 only. After ten years, Pakistan got only five percent reduction in anaemia from 1990 (54%) to 2000 (49%). In this duration, Pakistan govt. made several programs like National Health Policy in 1990, Launched the National Programme for Family Planning and Primary Healthcare in 1994, Streamline it further of National Health Policy in 1997, National Vitamin A strategy meeting was held in 1999 and these policies might have played an important role to get five percent anemia reduction among women. From 2000 (49%) to 2010 (50%), Pakistan increased around one percent of anemia among women instead of reduction. Pakistan's priority changes from women health have been crystal clear when its anaemia prevalence again increased by two percent from 2010 (50%) to 2016 (52%). The prevalence 52 percent of anemia among women in 2016 is a major concern. The country needs to give attention to the implantation of a nutritional program to control anemia.

In selected countries have a constitutional base to provide nutritional support to their citizens; thus, India, Pakistan, Bangladesh, and Nepal have implemented nutritional programs. The prevalence of anemia among women in 2016 shows that selected countries' efforts need to develop a comprehensive nutritional plan to deal with anemia. India and Pakistan have a 70-year history, whereas Nepal and Bangladesh have around 50-year history of implementation, but anemia prevalence is still among all the countries. These findings suggest that there is scope for strategy improvement. Figure 1 to 4 reveals that all the countries had high anemia among women in 1990. The prevalence of anemia started declining in South Asian countries. Despite progress in the last decade for anemia reduction in women, anemia continues to be a major public health concern in South Asia. Our findings have revealed to accelerate anemia reduction, a holistic approach targeting the known underlying determinants of anemia is needed.

The study finds nutritional programs have a positive impact on the prevalence of anemia. The high prevalence was observed in 1990 and started to decline over time. A similar declining trend was observed in all the selected countries except Pakistan. The two percent increase of anemia after 2010 in Pakistan, which shows a lack of interest in implementing the nutritional policy. On the other hand, the low prevalence was observed in Bangladesh and Nepal despite fewer policies and programs than in India and Pakistan which manifests quality of policy is more important rather than quantity of policy. The study suggests, to eradicate anemia among the women, India and Pakistan need to take a lesson from the neighboring countries.

The study finds that all four countries have made constitutional provisions for the nutritional support for their citizen. The countries have started various nutritional program policies in different time periods, but rapid development occurred after 1990. Despite progress in the last few decades for anaemia reduction among women, anaemia continues to be a major public health concern in selected south Asian countries. The findings have revealed to accelerate anaemia reduction, a holistic approach targeting the

known underlying determinants of anaemia is needed. The results show that India, Bangladesh, Nepal, and Pakistan have high anaemia among reproductive-aged women in 1990; over the time period, program and policy have a positive impact; thus, the prevalence of anaemia started declining in south Asian countries.

The paper finds the multiple policies and programs implemented by the south Asian countries. However, the prevalence of anemia among the women is still high, which shows either that many eligible women did not receive benefits from the programs or the program or policies did not have an impact on them. It shows that government needs to reframe the polices program or change the implementation strategy. One more reason behind high anemia among might be inflation and price rise of food items which prevented food intake among the poor leads to deteriorating their nutritional status (Rao, 2016). At first, further research is needed to confirm policies associated with the anemia among the reproductive aged women. The findings of this study have various policy implications. These results provide an understanding that anemia is a significant public health concern among reproductive aged women, and there is a need to tackle the issue comprehensively.

The study recommends a robust and effective implementation of nutrition programs as a measure to prevent anemia among reproductive aged women. Education, economic status, place of residence is an important factor, and ensuring food at all levels may be a useful step in reducing anemia among reproductive aged women. It is recommended that interventions shall focus towards reproductive aged women to address different nutritional problems simultaneously. It is important to formulate nutrition interventions keeping in mind the inclusion of poorer families, as prevalence of anemia is higher among reproductive aged women from these households.

Conclusions

To sum up, the National Nutrition Policies of Pakistan and India have not been seriously implemented, which has led to the problem of undernutrition in those countries. decrease of political motivation to carry out goals and programs. Government action is urgently needed in light of the worrisome state of the silent undernutrition issue in Pakistan and India, particularly as it relates to women, the backbone of society who make up about 50% of the population. The National Nutrition Policies need to be reviewed and updated, and they should tackle the issue comprehensively in light of the most recent demographic and epidemiological statistics. The political commitment to combat anemia through successful programs and adequate financial resources that address the structural and systemic causes of anemia is what all of the chosen countries desperately require. Targets that can be monitored, methods for ongoing review and monitoring, and accountability frameworks should all be present in policies. An effective national program to combat anemia (undernutrition) should be founded on the following principles:

a. All countries should cover the entire life cycle of women and children in order to break the inter-generational cycle of malnutrition within the shortest possible time.

b. To simultaneously address the majority of the direct and indirect causes of malnutrition, multi-sectoral interventions at the family and community levels should come together. Direct interventions can address adequate food and micronutrients, immunization, Vitamins A and IFA supplementation, which are really important to eradicate malnutrition on a long-term basis, in contrast to indirect interventions that can address issues of health, education, water, sanitation, and sociocultural factors, like female literacy and late marriage.

c. To reach the general people, especially at the grassroots level, a robust continuous general public awareness campaign about right dietary practices in the family and proper child and maternal anemia care should be launched.

Finally, although most countries have ministries that operate vertically (individually), it is important to realize that in order to create and administer the National Nutrition Programme, there will need to be inter-sectoral cooperation across the major Ministries. Without a doubt, a single ministry cannot manage this enormously multifaceted issue.

Limitations of the study

The study provides a comparative understanding between nutrition policies and anemia status of reproductive-aged women in four South Asian countries namely Bangladesh, India, Nepal, and Pakistan. Although, the reduction of anemia is the outcome of many efforts but this study assumed that the introduction of exclusive nutrition policies and programmes by stated four South Asian countries played an important role in anemia reduction among reproduction aged women since, exclusive nutrition policies are meant to improve anemia situation.

This study used data from four South Asian countries to execute the study but publishing years of data are not uniform for all the countries. India 2015-16 (NFHS-4) and Nepal 2016 (NDHS-5) data are comparatively new to the Pakistan 2012-13 (PDHS-3) and Bangladesh 2014 (BDHS-7) data. Therefore, there is a limitation to comparing BMI scenario among selected countries.

References

Balarajan, Y., Ramakrishnan, U., Özaltin, E., Shankar, A. H., & Subramanian, S. V. (2011). Anaemia in low-income and middle-income countries. The lancet, 378(9809), 2123-2135.

Balarajan, Y. S., Fawzi, W. W., & Subramanian, S. V. (2013). Changing patterns of social inequalities in anaemia among women in India: cross-sectional study using nationally representative data. BMJ open, 3(3), e002233.

Berhe, B. M. (2019). Prevalence of anemia and associated factors among pregnant women in Adigrat General Hospital,Tigrai, northern Ethiopia, 2018. *BMC Res Notes*, 12,310.

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., ... & Maternal and Child Nutrition Study Group. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. The lancet, 382(9890), 427-451.

Chowdhury, H. A., Ahmed, K. R., Jebunessa, F., Akter, J., Hossain, S., & Shahjahan, M. (2015). Factors associated with maternal anaemia among pregnant women in Dhaka city. BMC women's health, 15(1), 1-6.

Gautam, S., Min, H., Kim, H., &Jeong, H. S. (2019). Determining factors for the prevalence of anemia in women of reproductive age in Nepal: Evidence from recent national survey data. PloS one, 14(6), e0218288.

Government of India. (1993). National Nutritional Policy. Department of women and child development. Ministry of human resource development. Retrieved fromhttps://wcd.nic.in/sites/default/files/nnp_0.pdf

Gocernment of Pakistan (2009). *National Health Policy.* Islamabad: Ministry of Health.

Harding, K. L., Aguayo, V. M., Namirembe, G., & Webb, P. (2018). Determinants of anemia among women and children in Nepal and Pakistan: An analysis of recent national survey data. Maternal & child nutrition, 14, e12478.

Jr William, T. G. (2007). Public Policy Analysis: Ideas and Impacts. *Annu. Rev. Polit. Sci.*, 10.1146/annurev.polisci.10.071105.094536.

Khan, J. R., Awan, N., &Misu, F. (2016). Determinants of anemia among 6–59 months aged children in Bangladesh: evidence from nationally representative data. BMC pediatrics, 16(1), 1-12.

Mannan, M. A. (2003). An evaluation of the national food and nutrition policy of Bangladesh. *Food and Nutrition Bulletin*, 183-192.

Nguyen, P. H., Scott, S., Avula, R., Tran, L. M., & Menon, P. (2018). Trends and drivers of change in the prevalence of anaemia among 1 million women and children in India, 2006 to 2016. BMJ global health, 3(5), e001010.

Pahari, D. P. (2011). Chronological Summary of Nepal's Efforts in Nutrition. *Health Prospect*, 91-94.

Poornima, M., & Uma, G. (2017). *Unit-13 Policy formulation and Development.* Delhi: IGNOU, http://egyankosh.ac.in//handle/123456789/6982.

Rajan, S. I., & Mishra, U. S. (1997). Restructuring Welfare Programmes: Emerging Trends. *Economic and Political Weekly*, 261-263.

Rao, V. S. (2016). Under-nutrition in India–A Forgotten National Nutrition Policy without a National Programme. In Proc Indian Natl Sci Acad (Vol. 82, No. 5, pp. 1367-1379).

Sen, G., George, A., Ostlin, P., & Ramos, S. (2007). Unequal, Unfair, Ineffective and Inefficient Gender Inequity in Health: Why it exists and how we can change it.

Shahan, A. M., & Jahan, F. (2017). *Opening the policy space: the dynamics of nutrition policy making in Bangladesh.* Dhaka: Montpellier, France: Agropolis International, Global Support Facility for the National Information Platforms for Nutrition initiative.

Stevens, G. A., Finucane, M. M., De-Regil, L. M., Paciorek, C. J., Flaxman, S. R., Branca, F., ... & Nutrition Impact Model Study Group. (2013). Global, regional, and national trends in haemoglobin concentration and prevalence of total and severe anaemia in children and pregnant and non-pregnant women for 1995–2011: a systematic analysis of population-representative data. The Lancet Global Health, 1(1), e16-e25.

Sunuwar, D. R., Singh, D. R., Chaudhary, N. K., Pradhan, P. M. S., Rai, P., & Tiwari, K. (2020). Prevalence and factors associated with anemia among women of reproductive age in seven South and Southeast Asian countries: Evidence from nationally representative surveys. PloS one, 15(8), e0236449.

Turab, A., Tahir, S., & Zaidi, S. (2018). *Nutrition history in Pakistan.* Washington, DC : IFPRI : International Food Policy Research Institute.

World Health Organization. (2020). Global anaemia reduction efforts among women of reproductive age: impact, achievement of targets and the way forward for optimizing efforts.

World Health Organization. (2019). Maternal mortality. Retrieved fromhttps://www.who.int/news-room/fact-sheets/detail/maternal-mortality

World Health Organization. Retrieved from: https://apps.who.int/nutrition/landscape/help.aspx?menu=0&helpid=392&lang=EN