



## Demography India

A Journal of Indian Association of Study of Population

Journal Homepage: <https://demographyindia.iasp.ac.in/>



### The Relationship Between Activities of Daily Living (ADL) and Quality of Life (QOL) Among Elderly Individuals in Old Age Homes of Prayagraj City, Uttar Pradesh

Mamta Verma<sup>1</sup> and Ritu K. Sureka<sup>2\*</sup>

#### Abstract

**Background:** India's geriatric population is particularly vulnerable to low quality of life due to age-related physical changes which can significantly impact their overall health and well-being.

**Aim:** The aim of this study was to assess the relationship between activities of daily Living (ADL) and quality of life (QOL) among elderly individuals in old age homes of Prayagraj city, Uttar Pradesh

**Methods:** It used a cross-sectional descriptive design and purposive sampling technique utilizing the tools World Health Organization Quality of Life BREF-26 questionnaire and Katz index.

**Result:** It was seen that majority of the respondents were in the age group of 60-69, and were males (58.1%) and females (41.9%). Most of them lived in urban areas, were independent (94.6%) and had access to assistive devices and amenities.

**Conclusion:** The study highlighted a significant relationship between Activities of Daily Living (ADL) and various domains of Quality of Life (QoL) of the elderly, particularly in the physical, psychological and environmental areas. However, no significant association was found between ADL and the social domain, suggesting that social well-being may be influenced by factors beyond daily living capabilities. These findings indicate that while improving ADL can enhance certain aspects of QoL, additional strategies are required to address social engagement. Future research should further investigate these relationships to develop comprehensive interventions that support all domains of QoL.

#### Keywords

Activities of Daily Living, Exercise, Old Age, Physical Health, Quality of Life

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#### \*Corresponding Author

<sup>1</sup> Research Scholar, Department of Family and Community Science (Home Science), Faculty of Science, University of Allahabad, Prayagraj. Email: [mv001997@gmail.com](mailto:mv001997@gmail.com)

<sup>2</sup> Assistant Professor, Department of Family and Community Science (Home Science), Faculty of Science, University of Allahabad, Prayagraj. Email: [agarwalritu1982@gmail.com](mailto:agarwalritu1982@gmail.com)

## Introduction

The global phenomenon of population ageing affects both the developed nations, particularly those in North America and Europe and the developing nations, including those in South America and Southeast Asia but the rate and pace of population ageing varies worldwide. The rate of ageing is significantly higher in developing nations than the developed ones (Subaiya & Bansod, 2014). Globally, the percentage of elderly population is increasing more quickly than that of any other age group (World Health Organisation, 2022). United Nations (2022) projected that the population of older people (those 65 and above) is likely to increase from 10 per cent in 2022 to 16 per cent in 2050. Even though only 57.6 million elderly people resided in Asia in 1950, they made up to 4.1 per cent of the continent's overall population. It is also expected that by the middle of this century, the number of elderly people in Asia will reach 922.7 million, making up 17.5 per cent of the region's overall population (Roy et al., 2024). India being the most populous nation in the world has shown a notable decrease in fertility rate and an upsurge in life expectancy in the recent decades. The percentage of adults 60 and older has grown from 5.4 per cent in 1950 to 7 per cent in 2009 and it is predicted that by 2050 it will reach 20 per cent (Subaiya & Bansod, 2014).

Hence due to increased life expectancy the older population is now enjoying a high-quality of life contributing to an important component of their wellness which encompasses not only avoiding illness but also includes leading a purposeful life, preserving connections, feeling well despite having a

disease and being physically fit and independent. Low levels of physical conditioning and ageing lead to declining functional capacity over time, increased body fat and progressive muscle loss, as well as a deterioration in functional autonomy and quality of life (QOL) (Papadopoulou et al., 2023).

The word "quality of life" used in diverse fields, has different meanings and connotations ranging from the usefulness of health conditions to life satisfaction and from having socially desirable traits to pleasant effect (Dijkers, M. 1999; Ozcan et al., 2005). According to World Health Organization (WHO) "Quality of Life is as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns." A person's quality of life is a measure of how they are living and implicitly of their level of physical, mental, social and environmental health.

Geriatric population is the most susceptible to low quality of life. Geriatric population in India is defined as those who are 60 years of age or older. As people age, their activities of daily living decrease due to physical changes in their body. ADLs, or activities of daily living, is the word used to describe the self-care routine that people do indoors or outside, or both. According to medical specialists, one key indicator of a person's functional status is their ability or inability to execute ADLs (Sekhon & Minhas, 2014; Kharat et al., 2017). Long-term physical illnesses have a tremendous strain on the elderly. As a

consequence, they frequently become less capable of carrying out daily tasks. Their self-esteem and mental health decline when they become physically dependent on others to complete their everyday tasks. They may feel neglected and become socially isolated as a result of such situation. Therefore, quality of life is ultimately impacted (Datta et al., 2013).

The relationship between Activities of Daily Living (ADL) and Quality of Life (QOL) among elderly individuals is a critical area of research, particularly in the context of old age homes. Existing studies predominantly focus on Western populations, revealing a consistent negative impact of impaired ADL on QOL. However, there is a notable gap in the literature regarding localized research that examines this relationship within the Indian context, specifically in Prayagraj. Cultural factors, social structures, and caregiving practices in India may significantly influence how ADL affects QOL, yet these nuances remain underexplored. Most studies have not accounted for the unique socio-cultural dynamics that shape the experiences of elderly individuals in Indian old age homes.

Thus, the primary objective of this study was to examine the relationship between Activities of Daily Living (ADL) and the Quality of Life (QoL) among elderly individuals residing in old age homes. Specifically, the study aimed to:

1. Assess the level of independence in ADL using the Katz Index.
2. Evaluate the Quality of Life across physical, psychological, social, and environmental domains using the WHOQOL-BREF scale.

3. Determine the extent to which functional independence in ADL influences different domains of QoL.
4. Identify areas requiring targeted interventions to enhance the overall well-being of elderly residents, particularly in the social domain.

## Methodology

### Hypothesis

**Null-**There is no relationship between the quality of life and activities of daily living of the elderly population.

**Alternative-** There is a relationship between the quality of life and activities of daily living of the elderly population.

**Inclusion criteria-** The study comprised elderly participants who were 60 years of age or older.

**Exclusion criteria-** Those participants who were less than 60 years of age, suffering from any comorbid conditions or not willing to participate in the study were excluded.

**Study area-** This study was conducted in Adharshila old age home of Prayagraj city in Uttar Pradesh.

**Sampling design-** A cross-sectional descriptive study design was used.

**Sample selection-** Purposive sampling technique was used to select the sample.

**Sample size-** The sample size was calculated using the formula for a finite population:

$$n = \frac{N \cdot Z^2 \cdot p \cdot (1 - p)}{Z^2 \cdot p \cdot (1 - p) + (N - 1) \cdot e^2}$$

Where:

- N = population size (91)
- Z = Z-score for 95% confidence (1.96)
- p = estimated proportion (0.5)
- e = margin of error (0.05)

Substituting values, the calculated sample size was:

$$n = \frac{91 \cdot 3.8416 \cdot 0.25}{3.8416 \cdot 0.25 + (91 - 1) \cdot 0.0025} \approx 74$$

This sample size ensured a 95% confidence level and 5% margin of error, providing sufficient precision for the study. Although the calculated sample size was 73 participants, a sample size of 75 was chosen to account for potential dropouts or non-responses, ensuring the validity and reliability of the study findings.

**Tools-** The present study was conducted by using tools WHOQOL-26 to measure the quality of life and ADL self - designed questionnaire.

World Health Organization Quality of Life BREF-26 (WHOQOL-26)- Quality of Life BREF-26 questionnaire developed by World Health Organization (WHO) 1996 was used to determine the quality of life of the respondents. This tool comprises of four domains i.e. Physical, Psychological, Social Relationship and Environmental Domain. The 26 items in the WHOQOLBREF are a subset of the WHOQOL-100. A 5-point Likert scale was used to rate each of these domains. Every WHOQOL-BREF item has a score ranging from 1 to 5. In accordance with WHO recommendations, 25 raw scores were determined for each domain by adding the values of individual questions. These scores were then converted to a range of 0 to 100, where 0 represents the lowest value and 100 the maximum (Majumdar & Pavithra, 2014;

Shrestha et al., 2019). Validity and reliability of WHOQOL BREF The WHOQOL-BREF is a validated and reliable tool for assessing quality of life across diverse populations. It effectively captures physical, psychological, social, and environmental aspects of quality of life (Skevington et al., 2004).

Katz index of independence in Activities of Daily Living (ADL) (Katz et al., 1970) The elderly's capacity to do the six basic life skills i.e. bathing, dressing, using the restroom, transferring, maintaining continence, and feeding themselves was assessed using this scale. Elderly people were questioned about their ability to carry out the six tasks for this aim. The responses "Yes" (Independent) and "No" (Dependent) were given the values "0" and "1," respectively. The elderly were classified into one of three groups based on their total score: a. Functionally able - 5 to 6 b. Moderately ADL dependent - 3 to 4 c. Severely ADL dependent - 1 to 2 (Wallace & Shelkey, 2007).

Validity and reliability of Katz index of independence in Activities of Daily Living (ADL)

The Katz Index of Independence in Activities of Daily Living is a reliable tool for assessing functional independence in older adults. Its dichotomous scoring system simplifies the assessment process, demonstrates strong construct validity, and has excellent internal consistency, making it valuable for clinical practice and research (Wallace & Shelkey, 2007).

Rationale for Choosing WHOQOL-BREF and the Katz Index

It is brief, easy to administer, culturally adaptable and suitable for elderly populations, making it ideal for use in old age homes. It is a globally recognized, validated tool developed by the World Health Organization to assess Quality of Life (QoL) across four key domains: physical health, psychological well-being, social relationships, and environmental factors. The Katz Index of Independence in Activities of Daily Living was chosen because it is a well-established tool for evaluating an individual's ability to perform basic self-care tasks such as bathing, dressing, toileting, transferring, continence and feeding. It provides a clear, objective measure of functional status and independence which is directly linked to the physical and psychological aspects of QoL. Together, these tools allow for a comprehensive assessment of how functional ability (Katz Index) relates to overall well-being (WHOQOL-BREF) in elderly individuals living in institutional settings.

**Statistical Analysis-**This study was analysed by the SPSS version 21. The mean, standard deviation, percentage, frequency and Pearson Correlation were among the descriptive statistics used in the data analysis.

## Results and Discussion

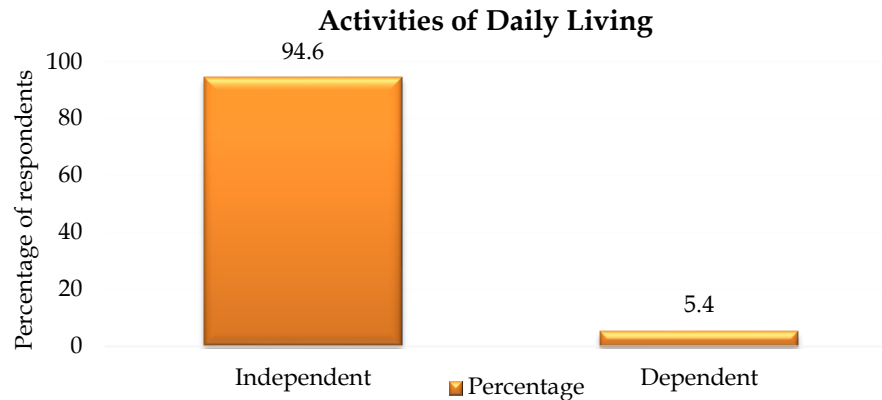
**Table 1** shows that approximately half (44.6 %) of the respondents were between 60-69 years of age and only 39.2 % were between 70-79 years of age. Mean age and Standard deviation of all the respondents was 71.41 and 7.88 respectively.

44.6% of the respondents were illiterate and very few of the respondents (4.1%) had received education above the graduation level. Majority of the respondents (58.1%) were males and 41.9% were females. A large percentage of the respondents (73.0%) were widowed with very less percentage of divorced respondents (4.1%). Most of the respondents (62.2%) belonged to nuclear families and resided in urban areas (75%). Only (1.4 %) of the respondents were living with their spouse. Majority of the respondents (25.7%) were housewives and only 2.7% of the respondents had been self-employed before coming to the old age homes. Majority of the respondents (64.9%) were not suffering from any kind of disease or comorbid conditions.

**Figure 1** depicts that 70 (94.6%) respondents were independent and only 4 (5.4%) of them were dependent on others for their daily living activities. Majority of the respondents performed their daily chores independently without any help or support. Majority of the respondents were independent in their daily activities. This aligns with research finding indicating that many older adults can maintain a high level of functional independence, especially when they are in supportive environments. Home modifications and supportive environments can enhance the functional abilities of older adults, promoting greater independence in daily activities (Gitlin *et al.*, 2006).

**Table 1** Socio-demographic Characteristics of the Respondents

Socio-demographic Characteristics	Frequency	Percentage
Age Mean (71.41) Sd (7.88)		
60-69	33	44.6
70-79	29	39.2
80 and above	12	16.2
Min.-max. (60.0 -92.0)		
Education		
Illiterate	33	44.6
Primary	13	17.6
Secondary	1	1.4
High School	13	17.6
Intermediate	4	5.4
Graduation	7	9.5
Above	3	4.1
Sex		
Male	43	58.1
Female	31	41.9
Marital status		
Married	11	14.9
Unmarried	6	8.1
Divorced	3	4.1
Widowed	54	73.0
Family		
Joint Family	6	8.1
Nuclear Family	46	62.2
living with spouse	1	1.4
Living alone	21	28.4
Residence		
Rural	18	24.3
Urban	56	75.7
Occupation		
Unemployed	8	10.8
Housewife	19	25.7
Self employed	2	2.7
Govt. Job	7	9.5
Private Job	10	13.5
Agriculture	4	5.4
Other	24	32.4
Comorbidities		
Yes	26	35.1
No	48	64.9
Total	74	100



**Figure 1** Percentage Status of the Respondents on the basis of their Activities of Daily Living

**Table 2** Pearson Correlations between Activities of Daily Living of the Elderly and their QOL domains

	1	2	3	4	5
ADL	1				
Physical Domain	.292*	1			
Psychological Domain	.094	.749**	1		
Social Domain	-.237*	.410**	.648**	1	
Environmental Domain	.119	.723**	.878**	.670**	1

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Table 2** demonstrates the relationship between activities of daily living of the elderly and different domains of their quality of life. A positive correlation was seen between ADL and physical, psychological and environmental domain of the elderly while a negative correlation was found between ADL and social domain of the elderly. The increase in independence of elderly in their daily living activities enhances their quality of life.

Positive correlation between ADL and physical domain emphasized that the physical health of the elderly improves by following a proper routine, performing daily exercises as well as maintaining good personal hygiene. Consistent practice of activities of daily living can prevent elderly from physical disabilities and suffering from degenerative disease like

cardiovascular, cancer, diabetes etc. The ability to perform ADLs without assistance or with less assistance improves physical functioning, reduces stress, enhances brain health and improves a person's overall well-being (Warburton et al., 2006).

Activities of daily living (ADL) and overall quality of life, particularly for the elderly, can be positively correlated with sleep, pain, medication, work and energy. Since sleep has a direct impact on energy levels and the capacity to carry out daily chores efficiently, it is essential for preserving both physical and mental well-being. People are more likely to feel energised and able to perform ADLs when they get a good night's sleep. Meaningful job or activities encourage physical activity which improves general health and energy levels in addition to fostering a sense of purpose.

Collectively, these interrelated elements indicate how a healthy relationship can promote self-reliance and increase quality of life resulting in better performance in day-to-day activities.

The psychological health of a person is boosted due to independently carrying out activities of daily living. It can improve sense of belonging, self-efficacy and confidence, individuality, body image and increased self-esteem, reduce feelings of dependency and improve an individual's mental well-being. Day to day regular activities enhance constancy and emotional resilience, promoting overall psychological well-being and overall emotional resilience. A study found that independence in ADL positively impacts both physical and psychological health among older adults. The ability to perform daily activities without assistance contributes to a greater sense of autonomy and self-efficacy, which are vital for mental well-being (Gaugler *et al.*, 2007).

The quality of life in the social domain can also be enhanced by establishing available, safe

and supporting living environments which improves overall living conditions by fostering stability, wellbeing and increased personal comfort (Trajković *et al.*, 2023). The social domain of quality of life was found to be negatively correlated to the ADL of the elderly. The independence of the elderly in their day- to- day work activities might cause a detachment from the society and social isolation from the support network which may limit an individuals' potential for growth and expression, as they would lack direct interaction with others who share experiences. Highly self-reliant individuals may withdraw from social interactions, prioritize personal routines over social engagements and miss out on meaningful social activities and relationships, opportunities for personal expression, emotional and practical support. This independence can also create barriers to emotional support and companionship (Moreno-Tamayo *et al.*, 2020). Another study found that while independence in daily activities is beneficial, but sometimes it can also lead to social isolation if it is not accompanied by social engagement opportunities (Cattan *et al.*, 2005).

**Table 3** Regression Analysis Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.996	1.764		11.336	.000
	ADL	-1.339	1.183	-.143	-1.131	.262
	Age	-.666	.344	-.229	-1.936	.057
	Sex	-1.319	.565	-.308	-2.333	.023
	Education	.074	.134	.068	.553	.582
	Marital status	.271	.235	.145	1.150	.254
	Family	.102	.270	.048	.377	.708
	Place	-.842	.617	-.171	-1.365	.177
	Occupation	.046	.123	.050	.377	.708
	Diseases	-.531	.571	-.120	-.930	.356

## a. Dependent Variable: QOL

Table 3 explored the impact of various demographic and social factors on the quality of life (QOL) of the participants. The regression model included predictors such as activities of daily living (ADL), age, sex, education, marital status, family support, place of residence, occupation, and presence of disease. The results indicated that sex was a significant predictor of QOL ( $B = -1.319$ ,  $p = .023$ ), suggesting that males reported lower QOL scores compared to females. Age approached significance ( $B = -0.666$ ,  $p = .057$ ), indicating a potential negative relationship with QOL, although it did not reach conventional levels of statistical significance.

Other variables, including ADL ( $B = -1.339$ ,  $p = .262$ ), education ( $B = 0.074$ ,  $p = .582$ ), marital status ( $B = 0.271$ ,  $p = .254$ ), family support ( $B = 0.102$ ,  $p = .708$ ), place of residence ( $B = -0.842$ ,  $p = .177$ ), occupation ( $B = 0.046$ ,  $p = .708$ ), and diseases ( $B = -0.531$ ,  $p = .356$ ), did not demonstrate significant relationships with QOL. The model's constant was 19.996, indicating the expected QOL score when all predictors are held at zero. Overall, these findings underscore the significance of sex in influencing QOL, while other factors, including age, warrant further investigation due to their near-significant association.

**Table 4** Pearson Correlations between Socio-demographic status of the elderly and their QoL and ADL

	1	2	3	4	5	6	7	8	9
1. Age	1								
2. Sex	-.008	1							
3. Education	-.001	-.121	1						
4. Marital status	.236*	.245*	-.014	1					
5. Family	-.009	.042	-.131	.157	1				
6. Residence	-.135	-.157	.292*	-.047	.191	1			
7. Occupation	.077	-.348**	.113	.162	.222	.157	1		
8. Comorbidities	-.054	.166	-.041	-.097	-.257*	-.087	-.235*	1	
9. QOL	-.161	-.258*	.034	.068	.069	-.071	.188	-.138	1

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

**Table 4.** shows that there was a significant negative relationship between the QoL of the elderly and their age, sex, residence and comorbidities whereas a significant positive relationship was found between the QoL of the elderly and their educational level, marital status, type of family and occupation.

Here negative relationship indicates that if socio-demographic variables like older

age, sex, living in rural area and presence of comorbidities will increase then the QoL of elderly will decrease. Conversely positive correlation indicates that if the socio-economic status of the elderly such as educational level, being married, supportive family structure and engaging in meaningful occupation or activities will increase then the QoL of elderly will also increase.

Age, sex, place of residence and comorbid conditions can negatively correlate with quality of life due to declining physical and cognitive abilities, increased risk of chronic diseases, reduced muscles mass, mobility and strength and all of these can diminish their quality of life (Shilpa *et al.*, 2018). A study highlights how aging can lead to a decrease in various dimensions of QoL, including physical and psychological well-being (Bowling, 2005).

Similarly, certain sex-related factors, such as gender-specific health conditions or societal roles, can influence overall well-being and access to care. Disease aetiology, diagnosis, progression, prevention and treatment are all greatly impacted by sex and gender. Women bear a disproportionate burden of sickness due to poverty and social marginalisation (Gender Differentials in Health, 2006). The impact of residence on QoL, where living in urban or rural settings can influence access to resources and social support, is well-documented. A study found that older adults living in urban areas often have better access to healthcare and social services, which can enhance their QoL compared to those in rural settings (Zunzunegui *et al.*, 2003).

Comorbidities, such as diabetes, high blood pressure, chronic lung diseases, obesity and cardiovascular mortality, can exacerbate health issues, complicate treatment and reduce overall functionality, leading to a diminished quality of life (Adriaanse *et al.*, 2016). It is frequently associated with lower QoL among older adults. A study found that chronic health conditions significantly impact the QoL of elderly individuals, leading to increased disability and decreased life satisfaction (Moussavi *et al.*, 2007).

Educational level, marital status, type of family and occupation are positively correlated with quality of life due to their significant influence on access to resources, social support and personal well-being. Education enhances self-awareness, productivity, creativity, entrepreneurship and technological advancements, leading to improved lives and social benefits. It involves gathering knowledge and promoting personal growth, fostering a strong mind and spirit and nurturing societal development (Javed *et al.*, 2016).

Marital status is also positively related to quality of life. Married individuals report greater happiness and less loneliness which often impacts quality of life positively because being in a supportive relationship can provide emotional stability, companionship and shared responsibilities, which collectively improve well-being whereas divorced and widowed people experience negative emotions like helplessness, loneliness, grief, and anxiety which are strongly associated with depression (Gutiérrez-Vega *et al.*, 2018). The finding that marital status positively influences QoL is consistent with research showing that married individuals often report higher levels of well-being and life satisfaction. A study by Carr and Springer (2010) discusses how marriage provides emotional support and companionship, which can enhance QoL.

The type of family an individual resides in is also positively related to quality of life because as needs of caregiving increase then family relationships become even more important. With an aging population and age-related diseases, understanding factors contributing

to health and well-being among older adults is crucial. Through psychosocial, behavioural, and physiological pathways, the quality of family relationships—including social support (love, advice, and care) and strain (arguments, criticism, and excessive demands)—can have a significant impact on an individual's well-being throughout their life (Thomas *et al.*, 2017). Furthermore, occupation also influences quality of life by affecting financial security and personal fulfilment. Good skill in occupation offers higher job satisfaction and long discussions with friends contributes to overall happiness. Collectively, these factors contribute to a more stable, fulfilling and enjoyable quality of life (Mojoyinola, 2008). One such study conducted by (Eid *et al.*, 2024) on 327 older adults to assess activities of daily living and its effect on their quality of life indicated significant positive relationships between total quality of life and age, place of residence, income and marital status. However, no significant relationship was found between occupation and gender and total QoL.

### Conclusion

The study reveals a significant relationship between daily living activities (ADL) and quality of life (QoL) in elderly individuals in old age homes. The findings reveal a significant relationship between ADL and various domains of QoL, particularly in the physical, psychological and environmental domains. Specifically, the ability to perform daily living activities was found to have a direct and positive impact on the well-being of residents, including their mobility, self-care and general health. In the psychological domain individuals who were able to maintain independent ADL reported reduced

incidence of depression, improved mental health and increased life satisfaction. Similarly in the environmental domain, the ability to manage daily tasks contributed to greater comfort and autonomy within the living environment improving the residents' perception of their surroundings. However, the social domain was not significantly associated with ADL. Therefore, some recommendations should be followed to enhance social quality of life such as-

- Organize group Activities like games, music sessions, storytelling, or hobby clubs to encourage social interaction.
- Encourage Family and Community Visits to reduce feelings of isolation.
- Create Peer Support Groups to share experiences, provide emotional support, and build friendships.
- Celebrate Festivals and Birthdays to foster a sense of belonging and joy.
- Provide Communication Tools like phones, internet, and digital literacy training to stay connected with the outside world.
- Appoint Social Coordinators to focus on organizing and maintaining social well-being initiatives.

### Ethical approval

Not applicable

### Declaration of conflicts of interest

There are no conflicts of interest.

### Acknowledgements

The authors would like to express their profound gratitude to each and every participant for their participation and significant contribution throughout the execution of this survey-based research.

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