

Indian Journal of GERONTOLOGY

(a quarterly journal devoted to research on ageing)

Vol. 39 No. 1, 2025

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Indian Journal of Gerontology

(A quarterly journal devoted to research on ageing)

PEER REVIEWED JOURNAL

ISSN : 0971-4189

Approved by UGC – (CARE List Group B – Science, 121)

SUBSCRIPTION RATES

Annual Subscription

US \$ 80.00 (Including Postage)

UK £ 50.00 (Including Postage)

₹ 1000.00 Libraries in India

Subscriptions are for Calendar year only

Claims for missing issues can be made within two months of publication of the issue.

Financial Assistance Received from :

ICSSR, New Delhi

Printed in India at :

Aalekh Publishers

M.I. Road, Jaipur

Typeset by :

Rajeev Kumawat

Jaipur

Declaration

1. Title of the Newspaper Indian Journal of Gerontology
2. Registration Number R.N. 17985/69; ISSN 0971-4189
3. Language English
4. Periodicity of its Publication Quarterly
5. Subscription Annual Subscription
US \$ 80.00 (postage extra)
UK £ 50.00 (postage extra)
₹ 1000.00 Libraries in India
Free for Members
6. Publisher's Name Indian Gerontological Association
C-207, Manu Marg, Tilak Nagar
Jaipur - 302004
Tel. & Fax: 0141-2621693
e-mail: gerontoindia@gmail.com
www.gerontologyindia.com
7. Printers Name Aalekh Publishers
M.I. Road, Jaipur, India
8. Editor's Name Dr. K.L. Sharma
Nationality: Indian
9. Place of Publication C-207, Manu Marg, Tilak Nagar
Jaipur - 302004

YOU ARE INVITED TO JOIN US

We are Working to Protect the Rights and Social Welfare of the Elderly

Indian Gerontological Association (Registration No 212/ 1968) is an independent grassroots non-profit organization based in Jaipur (Rajasthan). Our efforts **empower** and **support** the underprivileged elderly in rural and urban communities.

We strive to **ensure social justice and welfare for people over 60**, focusing on those elders who are the most disadvantaged such as elderly women. We protect the civil liberties of elderly citizens as a part of the **struggle for individual rights and social progress** in India.

Currently, the elderly community comprises approximately 10% of the total population of India. This number will increase to nearly 25% within the next twenty years. **Neglected and abandoned by society and sometimes their own families, elders are increasingly subject to conditions of disease and poverty.** They lack access to health care, and often face serious discrimination as well as physical and emotional abuse.

As a public interest group, **we work for and with the elderly to protect their rights and access to a better quality of life.** We seek to both empower and serve by working directly with rural communities. By facilitating the growth of citizen's groups, raising public awareness on aging, promoting public action and participation, and advocating public policy changes, Indian Gerontological Association hopes to alter the current trends in elder relations for the better.

Our work includes

- Community Centers for the Elderly that Offer Communal Support and Interaction
- Training on Legal Rights by Offering the Elderly Practical Knowledge on Their Rights
- Public Hotline for the Elderly that Offers Legal Referrals and Assistance
- Public Accessibility for the Elderly Advocating More Available Access to the Public Sphere
- Use of various forms of media to Raise Public Awareness on Elder Rights
- Counselling and Helping elderly to Relieve Psychological Stress and Depression
- Elder Women's Cooperatives that Provide Grants and Assistance to Elderly Women
- Public Awareness Raising to Promote Public Action for Helping Disadvantaged Elderly
- Field Study of Rural Areas to Analyze Challenges Faced by Aging Rural Population

Our plan of action includes

- Campaign for Elder Rights
- Campaign Against Elder Abuse especially toward Elderly Women
- Training of Social Workers and Caregivers
- Capacity Building of Civil Servants or organizations Working on Aging
- Research & Publication

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NEWS & VIEWS

ANNOUNCEMENT

We are happy to announce that Dr. Jitendra Mohan, professor Emeritus of Psychology at Panjab University, Chandigarh, has joined as consulting editor of Indian Journal of Gerontology. Professor Jitendra Mohan is also the president of the International Society of Mental Training for Excellence, among various other academic accomplishment.

SCOPE OF THE JOURNAL

Indian Journal of Gerontology (ISSN : 0971-4189) is a peer-reviewed and UGC Approved Journal, and is indexed by - the Indian Citation Index, Google Scholar, CNKI Scholar, EBSCO Discovery, and UGC Group 1. Started in the year 1969, is the first in India, and 18th in the world. It publishes papers related to the Biological aspects of Human ageing, animal ageing, and ageing of plants. It also publishes papers on geriatrics, geriatric nursing, and geriatric physiotherapy (Clinical aspects). The social aspects of ageing cover, Sociology, Social work, Anthropology, Psychology, Economics, Demography, and other Social Sciences.

REQUEST

Readers are invited to express their views about the content of the journal and other problems of senior citizens. Their views will be published in the Readers' Column. Senior citizens can send their problems to us through our web site: www.gerontologyindia.com Their identity will not be disclosed. We have well-qualified counsellors on our panel. Take the services of our counselling centre - RAHAT.

Indian Journal of Gerontology

2025, Vol. 39, No. 1, pp. 1-19

ISSN : 0971-4189, UGC No. – List B, Science –121

Nutritional Status, Clinical Frailty, and Functional Competence among institutionalized and non-institutionalized elderly women

Tinu, D., and R. Radha

Department of Food Service Management and Dietetics,
Avinashilingam Institute for Home Science and
Higher Education for Women, Coimbatore-641043

ABSTRACT

This study investigated the association between nutritional status, clinical frailty, and functional competence among institutionalized and non-institutionalized elderly women aged 60-75 in Coimbatore, Tamil Nadu. A total of 120 participants, 60 from old age homes and 60 from the community, were assessed using anthropometric measurements, Mini Nutritional Assessment (MNA), functional assessments (Hand Grip Strength, Short Physical Performance Battery, Timed Get Up and Go test-TUG), and the Clinical Frailty Scale. Results indicate that institutionalized elderly women have a higher prevalence of obesity, lower hand grip strength, and more severe functional limitations compared to their non-institutionalized counterparts. Additionally, a significant proportion of institutionalized women were

found to be moderately to severely frail, with a higher tendency towards sedentary lifestyles. In contrast, non-institutionalized women showed better nutritional status, physical performance, and lower frailty levels. The study underscores the need for targeted interventions to improve the nutritional status, physical performance, and overall well-being of institutionalized elderly women. However, the potential for improvement is significant, and addressing these factors can lead to a reduction in frailty and an enhancement of the quality of life among the elderly, ultimately contributing to successful ageing.

Keywords : Ageing, Malnutrition, Institutionalized, Non-institutionalized, Sedentary lifestyle

Malnutrition is widespread among the elderly (Evans, 2005). It is an imbalance between food intake and physiological needs that leads to altered metabolism, poor function, and weight loss (Norman *et al*, 2008). Poor nutritional status has been linked to negative clinical outcomes in elderly people, such as diminished physical functioning and higher mortality (Lim *et al*, 2012; Gentile *et al*, 2013).

Functional competence is essential to a practical geriatric evaluation, giving a complete and interdisciplinary approach to health status (Maringoni *et al.*, 2009). Older individuals may endure both malnutrition and functional impairment. Several studies have demonstrated a significant relationship between functional impairment and the risk of malnutrition in older people (Cereda *et al.*, 2008, Rudnicka *et al.*, 2020). Frailty is an age-related condition characterized as a state of diminished physiological reserve and increased vulnerability to undesirable consequences caused by the accumulation of biological ageing processes (Clegg *et al*, 2013; Fried *et al*, 2021). Frailty screening tools have been investigated to identify vulnerable individuals who might benefit from person-centered, geriatric-focused care solutions (Hogan *et al*, 2017., Theou *et al*, 2018., Lee *et al*, 2020).

Once the intrinsic ability of the elderly population is maintained at a high level, they can adapt effectively to their surroundings. It is also feasible to ensure that they can live independently without the care and aid of others and attain a state of good ageing (Zhai & Liu, 2019). Improving the health and well-being of the elderly is crucial for lowering societal costs and minimizing the negative impacts of ageing. Even though the aging influence is substantially similar for both men and women. Women live longer than men, and this longevity of life creates chances for more comorbidities and frailty (Crawley, 2008, Flicker *et al*, 2010). Hence, the present study was conducted among institutionalized and non-institutionalized elderly women to determine the association between nutritional status and clinical frailty on the functional competence of the elderly women and infer the health outcomes of the findings.

The present study was carried out with the following objectives: (a) to assess the nutritional status of the selected elderly women, (b) to determine the functional competence and rate of limitations of the selected elderly women, (c) to study the clinical frailty status of the selected elderly women and (d) to associate the nutritional, functional and frailty status of the selected elderly women.

Method

Sample

The study was conducted in Coimbatore, Tamil Nadu, among institutionalized (N=60) and non-institutionalized (N=60) elderly women aged 60 to 75. The participants were selected using convenience sampling following the inclusion and exclusion criteria. The inclusion criteria include the mobile female elderly population in the age group of 60-75 years without the presence of degenerative diseases and disorders such as cancer. Institutionalized elderly subjects were selected from old age homes in the Coimbatore region. The non-institutionalized elderly subjects were chosen from Veerapandi panchayat of Coimbatore district.

Tools Used

a. An interview schedule was developed, validated, and used for data collection. Socio-demographic details such as age, gender, marital status, family type, educational qualification, occupation, and socioeconomic status were recorded for baseline information.

b. Anthropometric Assessment of the Selected Elderly Subjects

The anthropometric parameters such as height, weight, Mid Upper Arm Circumference (MUAC), Mid-Calf Circumference (MCC), waist circumference, and hip circumference were measured. Height was measured using a Stadiometer in an erect position. A digital weighing scale measured weight to the nearest 0.1 kg with minimal clothing. A flexible fiber tape was used to measure the waist circumference, hip circumference, MUAC, and MCC. Waist-hip ratio (WHR) was calculated using the waist and hip measurements. Body Mass Index (BMI) was calculated using height and weight measurements, and the subjects were categorized as per the Asian cutoff for BMI in Indians (Girdhar *et al.*, 2016).

c. Mini Nutritional Assessment (MNA)

The Mini Nutritional Assessment is a validated rapid tool designed for screening and assessment of malnutrition status among the elderly population (Vellas *et al.*, 2006). Studies (Rodrigues *et al.*, 2017; Holvoet *et al.*, 2020) also state that it is a reliable tool for studying the nutritional status of older patients. Based on the Mini Nutritional Assessment, the subject's nutritional status was classified into three: normal nutritional status (score 12-14), at risk of malnutrition (score 8-11), and malnourished (score 0-7).

Functional Assessments were done to determine muscle strength and physical performance. Functional assessments such as Hand Grip Strength, Short Physical Performance Battery (SPPB), (balance test, gait speed, chair stand test) and Timed Get Up and Go (TGUG) were carried out, and the functional status of the subjects was determined.

a. Hand Grip Strength (HGS)

Hand grip strength (HGS) is a crucial measure of overall physical ability and muscle function, particularly in the aging population. The assessment was conducted while seated in a chair, measuring the grip strength of both hands. Results were classified as either normal or low based on the criteria established by the European Working Group on Sarcopenia in Older People (EWGSOP). These guidelines define low handgrip strength as less than 16 kg for women and less than 27 kg for men (Cruz-Jentoft *et al*, 2019).

b. The Short Physical Performance Battery (SPPB)

The Short Physical Performance Battery (SPPB) is emphasized as an efficient diagnostic criterion for geriatric disorders. Cesari *et al*, (2015) developed an operational definition of sarcopenia and physical frailty based on the SPPB, which may be used to identify impaired physical performance. The SPPB consists of three assessments of physical performance: balance, strength, and gait measurements.

The balance was assessed in feet together, tandem, and semi-tandem. Subjects were asked to stand in each position for 10 seconds, and scoring was done. The assessment was canceled once the subjects felt difficulty standing, and a score of 0 was given. The chair stand test assessed the lower limb strength and power by getting up and sitting on a chair. Subjects were asked to sit on the chair and rise 5 times. The time taken for the 5-times chair stand test was noted, and scoring was done. Subjects were asked to walk on a 3-meter flat surface to study gait speed. The walking speed at an average pace (gait speed) was assessed (Guralnik,*et al.*, 1994) and recorded.

c. Timed Get Up and Go (TGUG)

The TGUG (Timed Get Up and Go) test was developed in 1991 as a modified version of the Get up and Go test (Barry *et al*, 2014). The TGUG test is recommended by the National Institute of Clinical Evidence (NICE) recommendations for fall screening and fall prevention (NICE, 2013). The Timed Up and Go test evaluates

several functional elements, such as sitting to stand, walking, turning, stopping, and sitting down. The subjects were asked to rise from a standard chair, walk a distance of 3 meters, turn, walk back, and sit down in the chair. (Lusardi *et al*, 2003). The time taken to perform the task was noted, and the fall risk was identified.

III. Clinical Frailty Assessment

The Clinical Frailty Scale (CFS) is a 9-point scale that summarizes an older adult's overall fitness or frailty. The 9 points are very fit, well, managing well, vulnerable, mildly frail, moderately frail, severely frail, very severely frail, and terminally ill (Moorhouse, P. & Rockwood, K., 2012). Observations were made among the study subjects, and the frailty status was noted. The severely frail and very severely frail elderly women were excluded from the study as they had difficulty in mobility.

The study was approved by the Institutional Human Ethics Committee (IHEC) of Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore (AUW/IHEC/23-24/FSMD/XMT-045). The study was carried out in three phases.

Results and Discussion

Table - I

Age of the Institutionalized and Non-Institutionalized Female Elderly Subjects

Age Group	Institutionalized Elderly N = 60	Non-Institutionalized N = 60	Total (N=120)
60 – 69	24	42	66
70 – 75	36	18	54

The table presents the age distribution of institutionalized and non-institutionalized female elderly subjects. The data indicates that a higher number of institutionalized elderly subjects were in the 70-75 age group, whereas more non-institutionalized elderly subjects were in the 60-69 age group.

Table - II*Anthropometric Measurements of the Female Elderly Subjects*

Variable	Institutionalized (N = 60)			Non-Institutionalized (N = 60)		
	Mini	Max	Mean & SD	Mini	Max	Mean & SD
Age (Years)	60	75	69.4 ± 4.30	60	75	66.9 ± 4.34
Weight (Kg)	51	92	69.5 ± 10.5	45	90	62.3 ± 9.04
Height (cm)	150	181	166.3 ± 8.08	149	178	161.4 ± 7.21
BMI (Kg/m ²)	19.81	30.63	25.06 ± 2.90	18.59	34.96	23.92 ± 3.02
Waist Circumference (cm)	74	89	83.51 ± 3.96	74	89	83.18 ± 4.55
Hip Circumference (cm)	91	118	106.6 ± 6.53	88.9	118	106.07 ± 7.5
WHR	0.70	0.90	0.78 ± 0.04	0.7	0.91	0.78 ± 0.045
MUAC (cm)	23	32	28.75 ± 1.78	23	33	28.42 ± 1.99
MCC (cm)	19.8	35	31.05 ± 2.34	26	39	30.85 ± 2.18

*BMI - Body Mass Index, WHR - Waist-Hip Ratio, MUAC- Mid Upper Arm Circumference, MCC – Mid Calf Circumference

Table II projects the minimal, maximal, and mean anthropometric measurements of the institutionalized and non-institutionalized female elderly subjects. The mean age of institutionalized subjects (69.4 ± 4.30) is higher than that of non-institutionalized subjects (66.9 ± 4.34). The weight, height, BMI were also high among the institutionalized subjects.

Table - III*Body Mass Index (BMI) of the Institutionalized and Non-Institutionalized Elderly Subjects*

BMI Category	Institutionalized Elderly N = 60		Non-Institutionalized N = 60	
	N	%	N	%
Normal range (18.5 to 22.9 kg/m ²)	18	30	25	41.6

Overweight (23-24.9 kg/m ²)	13	21.6	19	31.6
Obese I (25- 29.9 kg/m ²)	23	38.3	13	21.6
Obese II (>30 kg/m ²)	6	10	3	5

The BMI distribution in Table III shows that a higher percentage of non-institutionalized elderly subjects fall within the normal BMI range (41.6%) compared to institutionalized subjects (30%). Conversely, a more significant proportion of institutionalized subjects are categorized as Obese I (38.3%) and Obese II (10%) compared to their non-institutionalized counterparts (21.6% and 5%, respectively). This indicates that institutionalized elderly subjects are more likely to have higher BMI, suggesting a potential difference in dietary habits, physical activity levels, or health management practices between the two groups. Further investigation is needed to understand the underlying causes and health implications of these differences.

Following the Body Mass Index (BMI), the Waist-Hip Ratio (WHR) was also calculated to identify the risk status. The waist-hop ratio of the institutionalized and non-institutionalized elderly subjects is presented in Table IV.

Table - IV

Waist-Hip Ratio of the Institutionalized and Non-Institutionalized Elderly Subjects (N=120)

WHR Risk Status	Institutionalized		Non-Institutionalized	
	N = 60	%	N = 60	%
No Risk	40	66.6	51	85
At Risk	20	33.3	9	15

The Waist-Hip Ratio (WHR) is an indicator of abdominal obesity. According to Table IV, the risk associated with WHR was lower among the subjects than among subjects with risk. Hence, abdominal obesity is less prevalent among the selected subjects.

C. Mini Nutritional Assessment

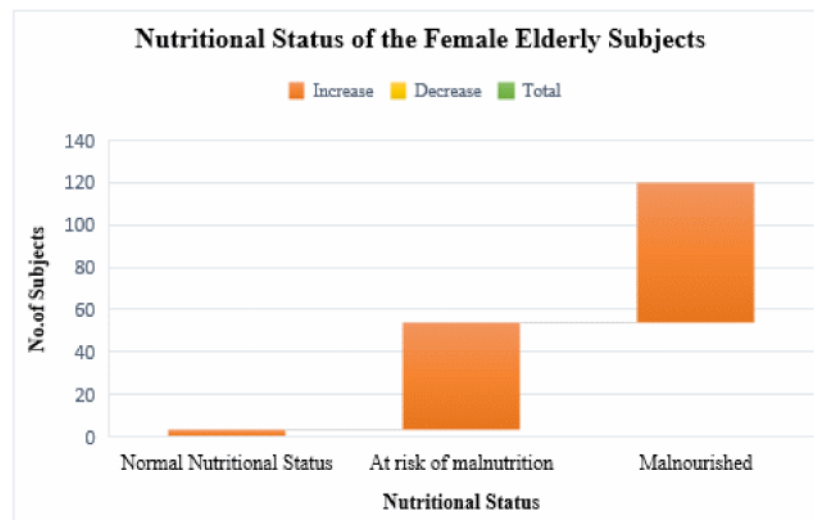


Figure 1 – Mini Nutritional Assessment of the female elderly subjects

Figure 1 shows the Mini Nutritional Assessment of the female elderly subjects, which indicates a significant prevalence and risk of malnutrition among them. The majority being malnourished is alarming, as malnutrition in elderly populations is associated with adverse health outcomes such as increased morbidity, decreased immune function, and higher mortality rates.

II. Functional Assessment of the Institutionalized and Non-Institutionalized Elderly Subjects

A. Upper Body Strength Assessment - Hand Grip Strength

Table V

Hand Grip Strength of the Institutionalized and Non-Institutionalized Elderly Subjects

Grip strength	Institutionalized (N = 60)	Non-Institutionalized (N = 60)
Right Hand	15.88 ± 4.59	18.42 ± 4.13
Left Hand	16.84 ± 4.40	18.66 ± 3.55

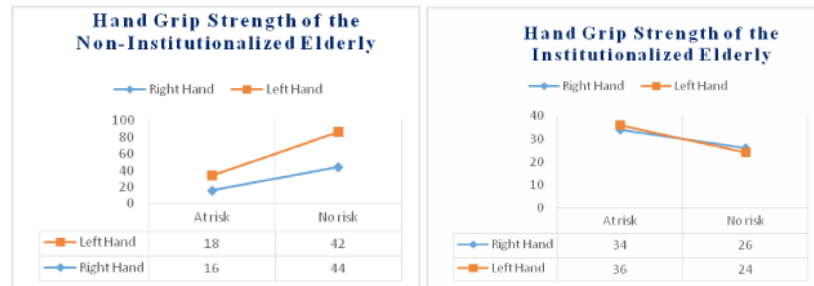


Figure 2 - Hand Grip Strength Risk Status of Selected Subjects

The European Working Group on Sarcopenia in Older People (EWGSOP) defines low handgrip strength as less than 16 kg for women and less than 27 kg for men (Cruz-Jentoft *et al*, 2019). The average grip strength of institutionalized elderly individuals is notably low and poses a risk, while the non-institutionalized elderly exhibit no comparable risk. The figure illustrates the detailed risk status of handgrip strength for both groups. Low handgrip strength is consistently associated with premature mortality, disability, and other health-related issues among middle-aged and older adults, according to a systematic review by Bohannon (2008).

Table VI

Pearson's Correlation Between Age and Grip Strength

Type of Subjects	Age	Hand Grip Strength	Correlation Value	P Value
Institutionalized	69.38 ± 4.27	15.88 ± 4.59	-.280	.030*
Non- Institutionalized	66.93 ± 4.34	18.42 ± 4.13	-.167	.201

A significant relation (p -value = 0.030) was observed between the institutional subjects' age and right-hand grip strength. The correlation between the institutional subjects' age and right-hand grip strength was 0.280. This negative correlation indicates that right-hand grip strength decreases as age increases. Pearson's correlation between the non-institutional subjects' age and right-hand grip strength was -.167. This negative value indicates a slight inverse relationship, suggesting that as age increases, right-hand grip strength tends to decrease for

the non-institutionalized group, but the relationship is weak. The correlation was not statistically significant since the p-value was greater than 0.05.

B. Lower body strength assessment

Table - IX

Functional Competence of the Female Elderly Subjects

Variable	Institutionalized (N = 60)			Non-Institutionalized (N = 60)		
	Mini	Max	Mean & SD	Mini	Max	Mean & SD
Balance Test	2	10	7.94 ± 2.54	3	10	8.56 ± 1.96
Side-by-side 						
Semi Tandem 	0	10	2.93 ± 2.82	0	10	4.33 ± 3.87
Full Tandem 	0	5	0.65 ± 1.03	0	10	2.08 ± 3.30
Chair Stand Test	19	71	57.5 ± 15.25	13	81	49.79 ± 20.7
Gait Speed	21	67	42.9 ± 13.14	23	99	44.97 ± 15.20
TGUG	13	75	51.86 ± 14.30	27	108	47.92 ± 15.0

*TGUG- Timed Get-Up and Go

Table- VIII on the functional competence of the selected subjects highlights the better performance of non-institutionalized elderly subjects with imbalance and mobility. The non-institutionalized elderly subjects have performed better in balance tests, gait speed, and Timed Get-Up and Go. This highlights the potential impact of living conditions on physical performance and health status. Interventions to improve balance, strength, and mobility could be particularly beneficial for institutionalized elderly to reduce fall risk and enhance their quality of life. Declines in balance are associated with decreased neuromotor reactions and muscle contraction resulting from aging (Morrison & Newell, 2012). The risk of falls was assessed according to Timed Get-Up and Go and projected in Figure 3.

Falls Risk Status of the Selected Subjects

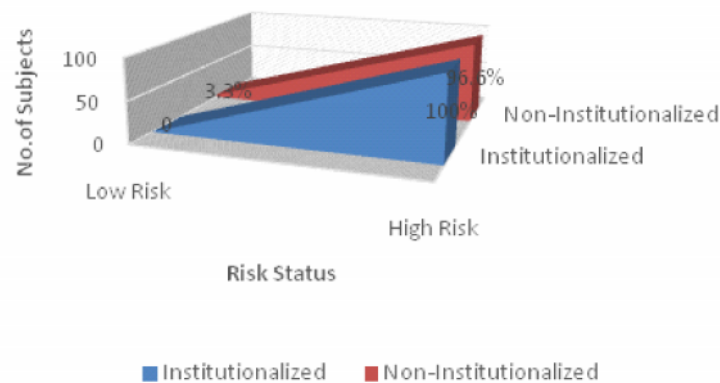


Figure 3 - Timed Get-Up and Go and Falls Risk of the Subjects

The Timed Get-Up and Go performance under 14 seconds is claimed as low fall risk, and above 14 seconds is claimed as increased fall risk. The prevalence of increased fall risk was high among both institutionalized and non-institutionalized elderly subjects.

Table - X

Pearson's Correlation between Age and Chair Stand Test

Type of Subjects	Age	Chair Stand Test	Correlation Value	P value
Institutionalized	69.38 ± 4.27	55.26 ± 14.65	.573	.000**
Non- Institutionalized	66.93 ± 4.34	48.09 ± 19.44	.597	.000**

The table projects how age impacts physical performance among the study population. A moderate to strong positive correlation was observed between age and the chair stand test among institutionalized and non-institutionalized subjects. The relationship was statistically significant at the 1 percent level. The results suggest that, as age increases, the time taken to perform the chair stand test also increases.

C. Short Physical Performance Battery of the Institutionalized and Non-Institutionalized Elderly Subjects

The Short Physical Performance Battery score is calculated using the balance, chair stand, and gait speed tests. Physical performance

is categorized into four categories: severe limitation, moderate limitation, mild limitation, and minimal limitation. Table IX projects the SPPB of the Institutionalized and Non-Institutionalized Elderly Subjects.

Table - IX

Short Physical Performance Battery of the Institutionalized and Non-Institutionalized Elderly Subjects

Variables	Institutionalized		Non-Institutionalized	
	N	%	N	%
Severe Limitation	56	93.3	44	73.33
Moderate Limitation	04	6.66	11	18.33
Mild Limitation	0	0	5	8.33
Minimal Limitation	0	0	0	0

In Table IX, a high percentage of institutionalized subjects had severe limitations (93.3%) compared to non-institutionalized individuals (73.33%). The very few had lesser limitations. The data projects the association between the severity of limitations and the likelihood of institutionalization. Factors such as age, gender, underlying medical conditions, and so on may influence limitations based on functionality.

Table – X

Mean difference between BMI and Short Physical performance Battery (SPPB)

Type of Subjects	BMI	SPPB	F	P value
Institutionalized	25.06 ± 2.90	1.8 ± 0.97	4.626	.036*
Non- Institutionalized	23.92 ± 3.02	2.68 ± 1.91	1.579	.215

One-way ANOVA was performed to determine the mean difference between Body Mass Index (BMI) and Short Physical Performance Battery (SPPB). A significance was observed between institutionalized subjects' Body Mass Index (BMI) and their Short Physical Performance Battery (SPPB) scores. Which in turn is termed as functional competence. There is no mean difference between the variables of institutionalized groups.

D. Clinical Frailty Assessment

Table – XI

Clinical Frailty Scale of the Institutionalized and Non-Institutionalized Elderly Subjects

Clinical Frailty Scale	Institutionalized		Non-Institutionalized	
	N	%	N	%
Very Fit	0	0	1	1.6
Well	0	0	5	8.3
Managing Well	4	6.6	5	8.3
Vulnerable	4	6.6	9	15
Mildly Frail	25	41.6	20	33.3
Moderately Frail	25	41.6	19	31.6
Severely Frail	NA	NA	NA	NA
Very Severely Frail	NA	NA	NA	NA
Terminally Ill	2	3.3	1	1.6

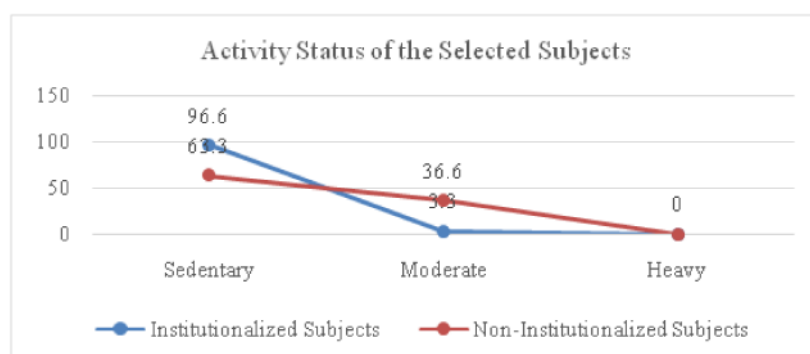
*NA-Not Applicable

Table – **XI** projects the clinical frailty scale of the Institutionalized and Non-Institutionalized Elderly Subjects. Most frail subjects (50%) were observed among the Institutionalized population. In contrast, the non-institutionalized group has a more varied distribution across frailty levels, with some individuals categorized as very fit, well, and managing well. Frailty is a condition characterized by increased vulnerability to impaired recovery of homeostasis after stress, leading to an increased risk of adverse outcomes such as falls, delirium, and disability (Fried *et al*, 2001., Eeles *et al*, 2012).

E. Activity Status

Activity Status of the Institutionalized and Non-Institutionalized Elderly Subjects

Figure 4 projects the Activity status of the Institutionalized and Non-Institutionalized Elderly Subjects. The majority (96%) of the institutionalized subjects were sedentary workers, whereas the majority (36.6%) of the non-institutionalized subjects were moderate workers. A sedentary lifestyle may increase the risk of several co-morbidities.



Conclusion

Good nutritional status is a critical factor in mitigating the effects of aging and slowing functional decline. The study projects the nutritional, functional, and frailty status of the elderly population aged 60-75 years. Adequate nutrition plays a crucial role in maintaining physical strength, reducing the risk of frailty, and enhancing functional competence. The findings highlight the importance of regular nutritional and functional assessments to address malnutrition and its impacts on frailty and functional abilities in elderly women. Promoting nutritional well-being can, therefore, be seen as a vital strategy for supporting healthy aging and improving the quality of life within this vulnerable population.

Acknowledgment : The first author acknowledges the Indian Council of Social Sciences Research (ICSSR) for the funding granted towards the conduct of research.

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Indian Journal of Gerontology

2025, Vol. 39, No. 1, pp. 20-34

ISSN : 0971-4189, UGC No. – List B, Science –121

Anthropometric Measurements of the Selected Institutionalized Elderly

Bharati Bhosale, and Rohini Devi*

Department of Food Science and Nutrition

Srimati Ratnaprabhadevi Mohite Patil College of Home science for
women, Akulj-413101 (M.S.)

Department of Foods and Nutrition

*College of Home Science, Vasantao Naik Marathwada Krishi
Vidyapeeth, Parbhani-431402 (M.S.)

ABSTRACT

Anthropometric measurements are more useful in assessing the nutritional status of elderly as they provide non invasive and easy information on nutritional status of elderly and quite inexpensive to operate. The present investigation was carried out to assess nutritional status of 500 institutionalized elderly (231 males and 269 females), ages varying from 60 to 70 years, residing in covering eight districts of Marathwada region, Maharashtra state of India. The anthropometric measurements of elderly subjects were recorded by using standard procedures. Statistical analysis of collected data was carried out after consolidation and computation to interpret the results. The findings of this study revealed that Sex wise comparison indicated that except for mid arm circumference the other entire circumferences and triceps skin fold exhibited significant difference between men and women. All anthropometric measurements

decreased with increase in age. The majority of studied elderly were found to have normal BMI which decreased with advancement of age.

Keywords : Anthropometric Measurements, Institutionalized, Elderly, BMI, Nutritional status

Geriatrics has become one of the important areas of research among the demographers and social scientists (Zachariah, K.C., 2001). Worldwide the number of people aged 65 years or older is projected to rise from 761 million in 2021 to 1.6 billion in 2050 (World Social Report, 2023). Presently, about two-thirds of the world's elderly persons live in developing countries (UN Report on World Population Ageing 2017). According to the Report of the Technical Group on Population Projections for India and States in 2021 there are nearly 138 million elderly persons in India (NSO, 2021).

“Regression of physiological function accompanied by advancement of age” is termed as aging. As the age advances senescence occurs. During the progress of aging with time significant structural and functional changes do take place in the human body (Potty, 1996).

Anthropometric measurements are more useful in assessing the nutritional status of elderly as they provide non invasive and easy information on nutritional status of elderly and quite inexpensive to operate. In India very little attention has been focused on the problems of elderly who come under the vulnerable group. Very few studies have been carried out on the nutritional and health status of elderly in India including Marathwada region of Maharashtra state. Hence, the present investigation was carried out to assess nutritional status of selected elderly of Marathwada region.

Methodology

The present investigation was carried out to assess the nutritional and health status of the institutionalized elderly belonging to different districts of Marathwada region of Maharashtra state (India).

Selection of sample

The samples of elderly for study were selected from different regions of Marathwada. Investigation comprised of 500 institutionalized elderly, covering eight districts of Marathwada region. The elderly subjects below 60 years were 86 while 149 elderly were above 70 years of age. Total 265 studied elderly belonged to the age group of 60-70 years. Out of total 500 samples 231 were males and 269 were females.

Collection of data

The data was collected by using methods of personal interview and anthropometric measurements of selected elderly.

Anthropometric measurements

The anthropometric measurements of all 500 elderly subjects were recorded by using standard procedures (Jelliffe, 1966). Measurements included weight, height, mid arm circumference, waist circumference, hip circumference and triceps skin fold.

Measurement of weight

Body weights of elderly were measured to the nearest 0.1 kg with the help of portable weighing machine. Elderly subject was asked to stand straight at the centre of weighing machine without touching any thing. Elderly subjects were weighed without shoes and with minimum clothing. The weighing balance was calibrated to zero before using it every time.

Measurement of height

Heights of elderly subjects were measured to the nearest 0.1 cm by non-stretchable measuring tape. The elderly subject was asked to stand straight as possible on a flat floor without shoes, with feet parallel and with buttocks, shoulders and back of the head touching the wall. The head was held comfortably erect and the arms were hanging in the side as in a natural manner. The head piece was used to press hair and made contact with the top of the head at mark and measurement of height was recorded.

Mid upper arm circumference

Mid upper arm circumference was measured to the nearest 0.1 cm using non stretchable measuring tape. The mid arm circumference was measured at midpoint of arm which was located in between lateral tip of the acromion at the shoulder and olecranon process of the elbow. The tape was placed around the arm and positioned perpendicular to the long axis of the arm at the marked midpoint and circumference was recorded.

Waist circumference

The elderly subject was asked to stand comfortably. The measurement was taken midway between the inferior margin of the last rib and the crest of the ileum in a horizontal plane. The circumference was measured to the nearest 0.1 cm with non stretchable tape.

Hip circumference

The elderly subject was asked to stand erect with arms at the sides and feet together. Tape measure was placed around the buttocks in a horizontal plane and measurement of circumference was recorded to the nearest 0.1 cm by using non stretchable tape.

Triceps skin fold

The triceps skin fold was measured in the midline of the posterior aspect of the arm, over the triceps muscle at a level midway between the lateral projection of the acromion process at shoulder and the olecranon process at the point of the elbow. The subject was standing with left arm hanging loosely by the side. Skin fold caliper was used to measure triceps skin fold. A vertical fold of skin and subcutaneous tissue was picked up gently with the left thumb and index finger and tips of the calipers were applied perpendicular to the skin fold at the marked level. Measurement was recorded to the nearest of 2 mm.

Body mass index

Body mass index was calculated from the recorded body weight and height of the elderly using the following formula

$$\text{Body mass index} = \frac{\text{Weight (kg)}}{\text{Height (m}^2\text{)}}$$

Statistical analysis

Statistical analysis of collected data was carried out after consolidation and computation to interpret the results and conclusions from the present study. The statistical significance between different parameters were determined by applying 'z' and 't' test (Panse and Sukhatme, 1957).

Results

Anthropometric measurements of selected institutionalized elderly are listed in Table 1. The average body weight of selected institutionalized elderly was 50.19 ± 10.41 kg with the range of 24 to 85.5 kg. Body height varied from 122 to 185 cm with an average value of 150.8 ± 9.91 cm. A wide range of 2 to 36 mm was observed in triceps skin fold of selected elderly with an average value of 12.58 ± 6.14 mm. The mean values of mid arm circumference, waist circumference and hip circumference were 23.76 ± 2.81 cm, 77.69 ± 10.13 cm and 89.35 ± 8.75 cm respectively.

Table 1.
Anthropometric measurements of the selected institutionalized elderly

Anthropometric measurements	The mean value of different anthropometric measurements of the selected elderly (n=500)	
	Range	Mean $\pm$ SD
Body weight (kg)	24 – 85.5	50.19 ± 10.41
Body height (cm)	122 – 185	150.8 ± 9.91
Mid arm circumference (cm)	14 – 37	23.76 ± 2.81
Waist circumference (cm)	53 – 114	77.69 ± 10.13
Triceps skin fold (mm)	2 – 36	12.58 ± 6.14
Hip circumference (cm)	69 – 131	89.35 ± 8.75

n = Number of studied elderly

Anthropometric measurements of selected institutionalized elderly men and women (Fig. 1) showed that the mean body weight and height of elderly men were 53.26 ± 9.64 kg and 158.13 ± 6.67 cm respectively. The corresponding values in the elderly women were 47.55 ± 10.33 kg and 144.41 ± 7.59 cm respectively. The difference between the body weight and height of elderly men and women was found to be highly significant ($P < 0.01$).

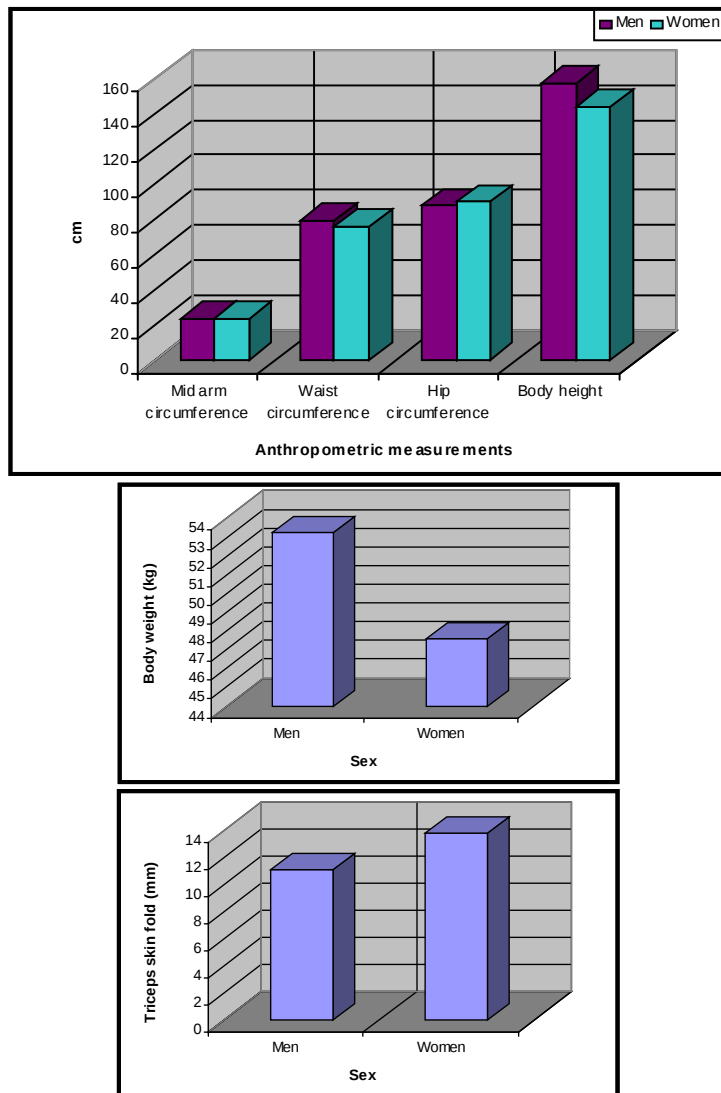


Fig 1. Anthropometric measurements of the selected institutionalized elderly in different sex groups

The average value of mid arm circumference in elderly men was 23.87 ± 2.54 cm while in women it was 23.67 ± 3.02 cm. The mean values of waist circumference, triceps skin fold and

hip circumference in elderly men were 78.98 ± 9.64 cm, 11.10 ± 4.56 mm and 88.06 ± 7.16 cm respectively while in elderly women respective values were 76.58 ± 10.43 cm, 13.84 ± 6.99 mm and 90.46 ± 9.79 cm. However, highly significant difference ($P < 0.01$) was observed in all studied anthropometric measurements except for mid arm circumference of elderly men and women.

Anthropometric measurements of the selected institutionalized elderly in different age groups are summarized in Table 2. The mean body weight of elderly ranged between 48.35 ± 11.35 to 51.33 ± 10.38 kg. The difference between body weight of elderly below 60 years and age groups of 60 to 70 years was non significant statistically. The similar trend was noticed in elderly below 60 years and above 70 years of age groups. However, highly significant difference ($P < 0.01$) in body weight of 60 to 70 years elderly and above 70 years age groups was noticed.

Table 2.

Anthropometric measurements of the selected institutionalized elderly in different age groups

Anthropometric measurements	The mean value of anthropometric measurements of selected elderly in different age groups			'Z' values		
	<60 (n=86) A	60-70 (n=265) B	>70 (n=149) C	A vs B	A vs C	B vs C
Body weight (kg)	49.88 ± 8.17	51.33 ± 10.38	48.35 ± 11.35	1.33 ^{NS}	1.19 ^{NS}	2.64**
Body height (cm)	146.84 ± 7.95	152.2 ± 9.87	150.43 ± 10.42	5.10**	2.96**	1.69 ^{NS}
Mid arm circumference (cm)	24.36 ± 2.55	23.96 ± 2.61	23.07 ± 3.15	1.25 ^{NS}	3.42**	2.93**
Waist circumference (cm)	76.83 ± 8.64	78.26 ± 10.30	77.18 ± 10.63	1.26 ^{NS}	0.27 ^{NS}	1.00 ^{NS}

Triceps skin fold (mm)	15.74 ± 6.30	12.51 ± 5.88	10.87 ± 5.83	4.20**	5.86**	2.74**
Hip circumference (cm)	89.81 ± 8.21	90.38 ± 8.80	87.27 ± 8.65	0.54 ^{NS}	2.24*	3.51**

** Significant at P<0.01

* Significant at P<0.05

NS Non significant

n Number of studied elderly in different age groups

The body height of elderly in different age groups varied from 146.84 ± 7.95 to 152.2 ± 9.87 cm. The elderly subjects below 60 years of age exhibited significantly (P<0.01) lower body height as compared to elderly of other studied age groups. However, no significant difference was observed in elderly of 60 to 70 years and above 70 years of age group.

Mid arm circumference of elderly above 70 years was significantly (P<0.01) lower as compared to other age groups, while non significant difference was noted among elderly below 60 years and elderly of 60 to 70 years of age group. Statistically non significant difference was observed among the waist circumference of selected elderly in different age groups. On the other hand highly significant difference (P<0.01) was noticed in triceps skin fold of different age groups elderly. As the age advanced the triceps skin fold reduced significantly. Hip circumference of elderly above 70 years of age was significantly lower as compared to other two groups. Hip circumference of both age groups of elderly below 60 years and 60 to 70 years of age group elderly was found to be at par.

Body mass index of selected institutionalized elderly (Table 3) indicated that mean body mass index of elderly subject below 60 years of age was higher (23.13 ± 3.48) as compared to elderly belonged to 60 to 70 years of age (22.14 ± 4.04) and elderly above 70 years of age (21.27 ± 4.24). As the age increased, the body mass index decreased significantly which was proved statistically. Body (23.13 ± 3.48) as compared to elderly belonged to 60 to 70 years of age (22.14 ± 4.04) and elderly above 70 years of age (21.27 ± 4.24).

As the age increased, the body mass index decreased significantly which was proved statistically. Body mass index of elderly female (22.74 ± 4.48) was highly significant as compared to elderly male (21.25 ± 3.33). Non significant difference was noticed among body mass index of illiterate and educated elderly subjects.

Table 3.

Body Mass Index of selected institutionalized elderly

Factors	Number	Body Mass Index	'z' value	
		Mean $\pm$ SD		
Total	500	22.05 ± 4.05		
Age				
<60 A	86	23.13 ± 3.48	A vs B	2.20*
60-70 B	265	22.14 ± 4.04	A vs C	3.63**
>70 C	149	21.27 ± 4.24	B vs C	2.04*
Sex				
Male A	231	21.25 ± 3.33	A vs B	4.25**
Female B	269	22.74 ± 4.48		
Educational level				
Illiterate A	255	21.74 ± 4.13	A vs B	1.77 ^{NS}
Educated B	245	22.38 ± 3.95		

** Significant at $P < 0.01$

* Significant at $P < 0.05$

NS Non significant

Distribution of the selected institutionalized elderly according to BMI is shown in Table 4. Results indicated that majority of elderly (63.2%) belonged to normal BMI (18.5-25.0). The per cent of over weight / obese ($BMI \geq 25$) elderly was marginally higher as compared to under weight ($BMI < 18.5$) elderly. Age wise distribution of BMI indicated that majority of elderly above 70 years of age (28.18%) were found to be under weight ($BMI < 18.5$) followed by elderly of 60 to 70 years of age (15.09%) and elderly below 60 years of age (3.48%). It was observed from results that with increasing age, there was a declining trend in both normal ($BMI 18.5 - 25.0$) elderly and over weight / obese ($BMI \geq 25$) elderly.

The prevalence of over weight / obesity (BMI $\geq$ 25) was higher in elderly females (27.50%) as compared to elderly males (10.82%) which were statistically proved. The percentages of elderly male and female belonging to normal BMI (18.5 – 25.0) were 69.69 and 57.62 respectively and the difference was significant statistically. No significant difference was observed in under weight (BMI<18.5) elderly male (19.48%) and elderly female (14.86%).

The per cent of illiterate and educated elderly belonging to BMI less than 18.5 were 19.60 and 14.28 respectively but the difference was not significant statistically. The prevalence of over weight / obesity was at par in both illiterate and educated elderly. The similar trend was noticed in normal BMI (18.5 – 25.0) of illiterate and educated elderly.

Table 4.

Percent distribution of the respondents according to BMI

Factors		No of elderly	BMI		
			<18.5	18.5 - 25.0	e" 25
Total		500	17.0	63.2	19.8
Age					
<60	A	86	3.48	70.93	25.58
60-70	B	265	15.09	66.03	18.86
>70	C	149	28.18	53.69	18.12
Sex					
Male	A	231	19.48	69.69	10.82
Female	B	269	14.86	57.62	27.50
'z' value			1.36 ^{NS}	2.83 ^{**}	4.90 ^{**}
Educational level					
Illiterate	A	255	19.60	63.52	16.86
Educated	B	245	14.28	62.85	22.85
'z' value			1.59 ^{NS}	0.15 ^{NS}	1.68 ^{NS}

** Significant at P<0.01

NS Non significant

Discussions

The results revealed significant decrease in body weight as the age advanced. This could be attributed to the universally accepted natural biological process where the peak weight attained by middle age would gradually decrease with advanced age (Macrae *et al.*, 1993). Not only body weight even height decreased with advancement of age due to influence of osteoporosis as stated by Heaney (1986). However, in the present study no significant change with respect to height was noted in the studied samples. Similar finding was noted for waist circumference however, the mid arm circumference and triceps skin fold significantly decreased once again with advancement of age which also could have contributed for the reduction in body weight. Findings of the Maracaibo Aging Study on Basic Anthropometry and Health Status of Elderly showed gradual decline with age in all three parameters viz. weight, height and BMI (MuñozA. M, *et al.*, 2010). Delarue, *et al.*, and Coworker, *et al.*, (1994) also observed similarly when conducted study on French population where they described a relation between reduced body weight and decreased body fat per cent. Rolfes *et al.* (1989) also expressed that triceps fat fold measures are mostly used anthropometric measurements based on patterns of body fat gains and losses parallel weight changes in both men and women. Study conducted by Singh, K. *et.al.* (2020) found height decreased non-significantly and weight decreased significantly among the elderly males residing in old-age homes.

The anthropometric measurements in the elderly subject in present study when compared sexwise revealed a significant difference for all measurement except mid arm circumference. Studies carried out on Indian population were also reported similarly where higher values were observed in elderly males. (Brahmam, 1999, Reddy *et al.*, 2004). Studies carried out earlier on local population who were none institutionalized in this region have also reported significant influence of sex on body weight and height of elderly subjects (Revanwar, 2002).

The body mass index which expresses the extent of malnutrition decreased in selected subject as the age advanced. It was clearly

evident that the body weights were significantly reduced with advancement of age which resulted in decreased body mass index in the studied elderly population. The advancement of age is usually characterized by reduced intestinal motility, reduced synthesis of enzyme, decreased efficiency of appetite center etc. which reflects low intake of food and thereby reduced body weight (Potty, 1996). Not only that in present study the elderly population were suffering from anorexia, stomach pain, indigestion and heart burn and the per cent of elderly suffering from health problems increased with age. This also would have influenced the significant decline in body weight which ultimately resulted in decreased body mass index. When considered sex wise female subjects were exhibiting higher body mass index as compared to male. This could be due to lower height (144.41 ± 7.59 cm) recorded in women of the studied sample because the calculations of body mass index are basically dependent on body weight and height.

It was noted that the prevalence of obese or overweight elderly females were higher (27.50%) than elderly males (10.82%) further majority of elderly above 70 years of age (28.18%) were underweight than their counterparts. However, irrespective of age, sex and education body mass index were falling in the normal range. Education wise no significant difference was noted with respect to body mass index which can be attributed to the homogenous living standards.

Zador *et al.* (1990) who also studied body mass index of institutionalized elderly in Blue mountain in South wales observed normal distribution of body mass index. Even study carried out on local population who were non institutionalized (Revanwar, 2002) also observed similar results when considered in terms of distribution of elderly in grade of malnutrition it was evident that irrespective of age, sex and education level majority were belonging to normal range. However, the per cent of under nutrition increased as the age increased and the per cent of obesity decreased with advancement of age. The per cent of lean body mass decreases with age which directly reflects the body weight (Macrae *et al.*, 1993). In the present investigation

the mid arm circumference decreased significantly with advancement of age which is an indication of reduced lean body mass not only that even triceps skin fold decreased significantly with age indicating loss of body fat. Thus loss of lean body mass and body fat contributed to changes in body weight resulted in reduced obesity and increased malnutrition as per body mass index. In 15-year longitudinal population-based study significant decline was observed in BMI among those aged ≥ 66 years and Mid Arm Circumference across all age groups (Jie Guo *et al.*, 2021). Brahman (1999) also reported similar results that obesity / over weight tended to be more in females than in males and tended to decline with advancement of age. The prevalence of over weight / obesity was relatively higher among females than males (Brahman *et al.*, 2000, Seidell and Visscher, 2000). Study on an elderly Italian population depicted that both sexes, weight and height significantly decreased with age. The BMI was significantly higher in women than in men and it was lower in the oldest than in the youngest subjects of both genders whereas obesity was shown to have a higher prevalence in women than in men. Waist circumference and waist: hip ratio values were higher for the youngest men than for the oldest men whereas in women the waist: hip ratio values were higher in the oldest women (Perissinotto E. *et al.*, 2002).

Conclusion

The anthropometric measurements of selected elderly subjects reported average body weight and height of 50.19 ± 10.49 kg and 150.8 ± 9.91 cm respectively. The mean values of mid arm circumference, waist circumference, hip circumference and triceps skin fold were 23.76 ± 2.81 cm, 77.69 ± 10.13 cm, 89.35 ± 8.75 cm and 12.58 ± 6.14 mm respectively. Sex wise comparison indicated that except for mid arm circumference the other entire circumferences and triceps skin fold exhibited significant difference between men and women. All anthropometric measurements decreased with increase in age. The majority of studied elderly were found to have normal BMI which decreased with advancement of age.

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Indian Journal of Gerontology

2025, Vol. 39, No. 1, pp. 35-50

ISSN : 0971-4189, UGC No. – List B, Science –121

Enhancing Dispositional Mindfulness and Alleviating Stress: The Role of Mindfulness-Based Stress Reduction among Elderly Residents in Old Age Homes

R.Naganandini, and K. Maheswari

Department of Psychiatric Nursing,

Vinayaka Mission's Annapoorana College of Nursing,

Vinayaka Missions Research Foundation, Deemed to be University,
Salem, (T.N.)

ABSTRACT

This study aimed to evaluate the effectiveness of an 8-week MBSR programme in improving dispositional mindfulness and reducing stress among 300 elderly residents in 20 old age homes located in Salem, Tamil Nadu. A quasi-experimental design with pre-test and post-test control groups was employed. The study subjects were divided into an experimental group (N=150) and a control group (N=150). The experimental group engaged in an 8-week MBSR programme that included weekly sessions and daily mindfulness exercises. Data were collected at three points: before the intervention (T1), immediately after the intervention (T2), and three months post-intervention (T3). Dispositional mindfulness was

measured using the Five Facet Mindfulness Questionnaire (FFMQ), while perceived stress was assessed with the Perceived Stress Scale (PSS). Qualitative data were gathered through semi-structured interviews. Data analysis involved SPSS for quantitative data and thematic analysis for qualitative data. The MBSR programme resulted in notable improvements in dispositional mindfulness and reductions in stress among participants in the experimental group. The FFMQ scores increased from a mean of 107.4 at baseline to 124.2 following the intervention, and PSS scores decreased from 25.6 to 17.3. These improvements were primarily sustained at the three-month follow-up, though there was a minor decrease in mindfulness and a slight increase in stress compared to the post-intervention period. The control group exhibited minimal changes. Qualitative feedback revealed enhanced self-awareness, improved emotional regulation, and better overall quality of life among the participants. Based on present findings, it may be concluded that the MBSR program effectively enhances dispositional mindfulness and reduces stress among elderly residents in old age homes. The positive effects were maintained over time, indicating that MBSR could benefit elder care practices. These results support the incorporation of mindfulness-based interventions in institutional settings to enhance the mental health and well-being of elderly individuals.

Keywords: Mindfulness-Based Stress Reduction, Dispositional Mindfulness, Stress Reduction, Elderly Residents

The increasing number of elderly individuals needing long-term care has led to a rise in the use of old-age homes. These institutions frequently become necessary due to a lack of family support or the

need for specialized care (Chakraborty & Sinha, 2022). However, institutional living can intensify feelings of loneliness, anxiety, and stress, significantly affecting the mental and emotional well-being of residents (Sharma & Mishra, 2021; Singh *et al.*, 2023).

Mindfulness-Based Stress Reduction (MBSR), a structured programme developed by Jon Kabat-Zinn in 1979, combines mindfulness meditation and practices to enhance mental health and well-being (Kabat-Zinn, *et al.*, 1992). Research shows that MBSR can effectively reduce stress, anxiety, and depression across various populations (Baer *et al.*, 2006; Shapiro *et al.*, 2007). However, there is limited research specifically addressing its impact on elderly residents in institutional settings (Bhasin & Kumar, 2021; Gupta & Bajpai, 2023).

Dispositional mindfulness, the inherent ability to remain present and aware without excessive reactivity or judgment, is a key focus of MBSR (Brown & Ryan, 2003). For elderly individuals, improving dispositional mindfulness through MBSR may provide a valuable approach to managing ageing-related stressors such as health concerns, losing loved ones, and adaptation to institutional living (Chiesa & Serretti, 2009). Enhancing mindfulness could improve the overall quality of life for elderly residents in old age homes (Smith *et al.*, 2019).

Significance of the Study

Elderly individuals in old age homes face numerous challenges, including social isolation, loss of independence, and adjustment to communal living (Singh *et al.*, 2023). These challenges often lead to deteriorating mental and emotional health, which can exacerbate physical health problems (Gupta & Bajpai, 2023).

This study seeks to address this gap by evaluating the effectiveness of the MBSR programme in enhancing dispositional mindfulness and reducing stress among elderly residents in old age homes. The findings could offer valuable insights for healthcare providers, caregivers, and policymakers on incorporating mindfulness-based interventions into standard care practices for the

elderly (Sinha, *et al.*, 2022). If the study demonstrates a significant positive impact, it could lead to the broader adoption of MBSR programs in old age homes. This would not only improve the mental health and well-being of elderly residents but also potentially reduce the burden on healthcare systems by preventing or alleviating stress-related conditions (Sharma & Mishra, 2021).

The expanding elderly population and the associated rise in mental health issues underscore the need for effective interventions in institutional settings. The MBSR program offers a promising approach to enhancing dispositional mindfulness and reducing stress among elderly residents in old age homes. By improving mental and emotional well-being, MBSR could contribute to a higher quality of life for elderly individuals and provide a valuable addition to elder care practices. Future research and implementation of MBSR programmes could further benefit elderly populations, offering a proactive solution to the challenges of ageing in institutional settings.

Methodology

Sample

Using a stratified random sampling approach to ensure that participants were representative, 300 elderly residents aged sixty years and above from 20 old age homes in Salem, Tamil Nadu, were selected for this experimental study. Only residents selected to reside in these selected old-age homes for a minimum of six months and had adequate cognitive function were assessed by a Mini-Mental State Examination (MMSE) score of 24 or higher. The subjects having MMSE scores below 24 and having major psychiatric disorders or conditions that would impede participation were excluded from the study. Willingness to participate in the study was sought individually from each subject prior to the study.

Study Design

A quasi-experimental design with pre-test and post-test control groups was used to evaluate the impact of the Mindfulness-Based Stress Reduction (MBSR) programme on dispositional mindfulness

and stress levels among these subjects. Participants were divided into two groups:

- Experimental Group: 150 participants who took part in the MBSR programme.
- Control Group: 150 participants who did not receive the MBSR intervention.

Intervention

The experimental group underwent an 8-week MBSR programme based on Jon Kabat-Zinn's original curriculum. The program included:

1. **Weekly Sessions:** One 2-hour session per week led by a trained mindfulness instructor.
2. **Daily Practice:** Participants practiced mindfulness techniques for 30 minutes each day, guided by audio recordings provided at their old age homes.
3. **Programme Components:** Sessions featured guided mindfulness meditation, body scanning, mindful movement (gentle yoga), and group discussions.

The control group continued their usual activities without any mindfulness intervention.

Data Collection

Data were collected at three stages: pre-intervention (T1), immediately post-intervention (T2), and three months post-intervention (T3).

Instrument used

Dispositional Mindfulness: Assessed using the Five Facet Mindfulness Questionnaire (FFMQ), which evaluates five dimensions of mindfulness: observing, describing, acting with awareness, non-judging, and non-reactivity.

Stress Levels were measured using the Perceived Stress Scale (PSS), a standard tool for evaluating stress perception.

Qualitative Data: Gathered through semi-structured interviews with a subset of participants to understand their experiences and perceptions of the MBSR programme.

Procedure

Baseline data (T1) were collected one week before the intervention began.

Post-intervention data (T2) were collected immediately following the 8-week MBSR program.

Follow-up data (T3) were collected three months after the intervention to evaluate the durability of the effects.

Data Analysis

Quantitative data were analyzed using SPSS software. Descriptive statistics were used to summarize demographic information. Inferential statistics, including paired t-tests and repeated measures ANOVA, were used to compare pre-test and post-test scores within and between groups. Qualitative data from interviews were analyzed using thematic analysis to identify recurring themes related to participants' experiences with mindfulness practice.

Ethical Considerations

Ethical approval was granted by the Institutional Ethical Committee (IEC) at Vinayaka Mission's Annapoorana College of Nursing, Vinayaka Missions Research Foundation, Deemed to be University, Salem, Tamil Nadu, India. Informed consent was obtained from all participants, ensuring confidentiality and the right to withdraw from the study. As an ethical consideration, the MBSR program was offered to the control group following the completion of the study.

Findings and Analysis

This study investigates the effects of a Mindfulness-Based Stress Reduction (MBSR) program on dispositional mindfulness and perceived stress among elderly residents in old age homes. The analysis examines the program's effectiveness in increasing mindfulness and decreasing stress and the persistence of these effects over time. It includes evaluating quantitative data, such as changes in the Five Facet Mindfulness Questionnaire (FFMQ) and Perceived Stress Scale (PSS) scores, alongside qualitative feedback from participants. This comprehensive analysis aims to assess the impact of the MBSR

intervention on the well-being of elderly individuals, providing insights into both the immediate and long-term benefits of mindfulness practices.

Quantitative Data Analysis

Table 1

Demographic Characteristics of Participants

Characteristic	Experimental Group (N=150)	Control Group (N=150)
Mean Age (Years)	72.4 (SD = 5.2)	72.6 (SD = 5.4)
Gender Distribution (%)	48% Male, 52% Female	48% Male, 52% Female
Duration of Stay (Years)	4.3 (SD = 2.1)	4.5 (SD = 2.0)
Educational Background (%)		
No Formal Education	30%	32%
Primary Education	45%	43%
Secondary Education	20%	18%
Higher Education	5%	7%

Demographic characteristics, including age, gender, duration of stay in the old age home, and educational background, were summarized using descriptive statistics. The mean age of participants was 72.5 years, with a standard deviation of 5.3 years. Gender distribution was balanced across both groups, with 48 percent males and 52 percent females (Table 1).

Table 2

Baseline Comparisons

Variable	Experimental Group (N=150)	Control Group (N=150)	p – value
Dispositional Mindfulness (FFMQ)	M = 107.4 (SD = 13.8)	M = 108.1 (SD = 12.6)	0.62
Perceived Stress (PSS)	M = 25.6 (SD = 4.9)	M = 24.8 (SD = 4.7)	0.58

Baseline comparisons between the experimental and control groups showed no significant differences in dispositional mindfulness ($p = 0.62$) and perceived stress levels ($p = 0.58$), indicating the groups were comparable before the intervention (Table 2).

Table 3
Changes in Dispositional Mindfulness (FFMQ Scores)

Group	Pre-Test Mean (SD)	Post-Test Mean (SD)	t-value	p-value
Experimental	107.4 (13.8)	124.2 (10.3)	10.32	<0.001
Control	108.1 (12.6)	109.2 (12.3)	0.64	0.24

A paired t-test revealed a significant increase in FFMQ scores from pre-test ($M = 107.4$, $SD = 13.8$) to post-test ($M = 124.2$, $SD = 10.3$) within the experimental group ($t(149) = 10.32$, $p < 0.001$). In contrast, the control group showed no significant change (pre-test $M = 108.1$, $SD = 12.6$; post-test $M = 109.2$, $SD = 12.3$, $p = 0.24$).

Repeated measures ANOVA demonstrated a significant time $\times$ group interaction effect for FFMQ scores ($F(2, 298) = 18.45$, $p < 0.001$), indicating that the experimental group's dispositional mindfulness improved significantly more than the control group over time.

Perceived Stress (PSS Scores)

The experimental group showed a significant reduction in PSS scores from the pre-test ($M = 25.6$, $SD = 4.9$) to the post-test ($M = 17.3$, $SD = 4.2$) ($t(149) = -12.76$, $p < 0.001$), while the control group's scores remained largely unchanged (pre-test $M = 24.8$, $SD = 4.7$; post-test $M = 24.2$, $SD = 4.6$, $p = 0.16$) (Figure 1).

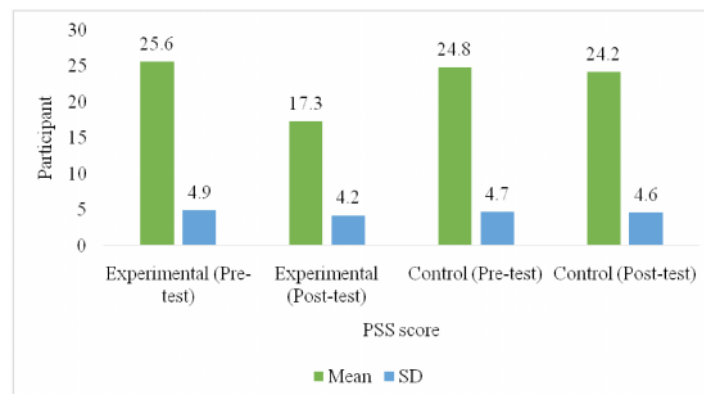


Figure 1: Comparison of stress score (Mean and SD) among elderly in Experimental and control group

Repeated measures ANOVA indicated a significant time $\times$ group interaction effect for PSS scores ($F(2, 298) = 22.37, p < 0.001$), suggesting a substantial reduction in perceived stress among the experimental group compared to the control group.

Sustainability of Effects (Follow-up at T3)

At the three-month follow-up (T3), the experimental group maintained their improved FFMQ scores ($M = 121.5, SD = 10.8$) and reduced PSS scores ($M = 18.1, SD = 4.5$). The changes were still significant compared to baseline. However, there was a slight reduction in mindfulness and a slight increase in stress compared to the immediate post-intervention scores, suggesting partial but sustained benefits (Figure 2).

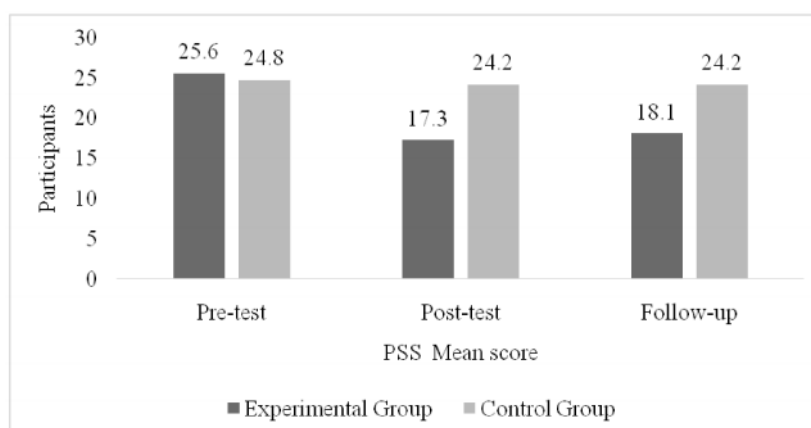


Figure 2 : Comparison of stress score (Mean) among elderly in Experimental and control group

The control group's scores remained consistent with their post-test levels, confirming the absence of significant change over time.

Sustainability of Effects

At follow-up, the experimental group showed a significant decrease in Five Facet Mindfulness Questionnaire (FFMQ) scores ($M = 121.5, SD = 10.8$) from the post-test ($M = 124.2$), with a p-value of <0.001 , indicating a statistically significant reduction. Similarly, perceived stress scale (PSS) scores increased slightly to

M = 18.1 (SD = 4.5) from the post-test (M = 17.3), with a p-value of <0.001, reflecting a significant change. In contrast, the control group exhibited no significant changes in FFMQ (M = 109.3, SD = 12.1, $p = 0.24$) and PSS scores (M = 24.1, SD = 4.6, $p = 0.16$) from post-test to follow-up (Table 4).

Table 4
Follow-Up Scores at T3

Group	Follow-Up Mean (SD)	Change from Post-Test	p-value
Experimental	FFMQ: 121.5 (10.8)	(Post-Test: 124.2)	<0.001
	PSS: 18.1 (4.5)	(Post-Test: 17.3)	<0.001
Control	FFMQ: 109.3 (12.1)	(Post-Test: 109.2)	0.24
	PSS: 24.1 (4.6)	(Post-Test: 24.2)	0.16

Qualitative Data Analysis

Table 5
Thematic Analysis of Interview Data

Theme	Description
Enhanced Self-Awareness	Increased awareness of thoughts, emotions, and sensations, leading to better responses to daily challenges.
Improved Emotional Regulation	Better management of anxiety, loneliness, and sadness contributes to a more balanced emotional state.
Perceived Quality of Life	Participants felt improved well-being and better coping with ageing and institutional living stresses.

Participants reported a heightened awareness of their thoughts, emotions, and physical sensations, which helped them handle daily challenges more effectively. They also noted improved emotional regulation, alleviating anxiety, loneliness, and sadness, fostering a more stable emotional state. Additionally, they experienced an enhanced quality of life, feeling more capable of managing the stresses associated with aging and life in an institutional setting (Table 5).

Discussion

The descriptive statistics revealed that the experimental and control groups were well-matched in terms of demographic

characteristics, such as age, gender, and duration of stay in the old age home. The mean age of participants was 72.5 years, with a standard deviation of 5.3 years, and the gender distribution was balanced, with 48 percent males and 52 percent females in both groups. Liu, *et al.* (2022) conducted a similar study on elderly populations and found that ensuring demographic balance between intervention and control groups strengthened the reliability of their findings. Their study highlighted the importance of initial comparability in evaluating the effectiveness of interventions. Baseline assessments of dispositional mindfulness and perceived stress showed no significant differences between the groups ($p = 0.62$ for mindfulness and $p = 0.58$ for stress), indicating that the groups were comparable at the start of the intervention. This comparability is crucial for ensuring that any observed effects of the MBSR program are attributable to the intervention rather than pre-existing differences.

The analysis showed a significant increase in FFMQ scores from pre-test ($M = 107.4$, $SD = 13.8$) to post-test ($M = 124.2$, $SD = 10.3$) in the experimental group ($t(149) = 10.32$, $p < 0.001$). This significant improvement in mindfulness among the experimental group was supported by a repeated measures ANOVA, which revealed a significant time $\times$ group interaction effect ($F(2, 298) = 18.45$, $p < 0.001$). In contrast, the control group's scores remained relatively stable, with no significant change observed. Kirk *et al.*, (2021) conducted a study on older adults and found that MBSR significantly increased mindfulness, similar to the results in this study. Their findings reinforce the effectiveness of MBSR in enhancing dispositional mindfulness. Singh *et al.*, (2023) reported that elderly participants who engaged in MBSR showed significant improvements in mindfulness, aligning with the observed increase in FFMQ scores in this study.

The experimental group showed a significant reduction in PSS scores from pre-test ($M = 25.6$, $SD = 4.9$) to post-test ($M = 17.3$, $SD = 4.2$), with a t -value of -12.76 and a p -value < 0.001 . The control group's PSS scores remained largely unchanged. The repeated measures ANOVA also demonstrated a significant time $\times$

group interaction effect ($F(2, 298) = 22.37, p < 0.001$), indicating that the stress reduction was substantially more significant in the experimental group.

Riley *et al.*, (2022) found that MBSR significantly reduced perceived stress among elderly participants, corroborating this study's findings. Smith *et al.*, (2023) also reported that elderly individuals participating in mindfulness-based programs experienced significant reductions in perceived stress, supporting the current study's results.

At the three-month follow-up, the experimental group maintained their improved FFMQ scores ($M = 121.5, SD = 10.8$) and reduced PSS scores ($M = 18.1, SD = 4.5$). Although these scores remained significantly different from the baseline, there was a slight reduction in mindfulness and a minor increase in stress compared to the immediate post-intervention period. This suggests that while the benefits of the MBSR program were sustained, there was a partial attenuation of effects over time. Chen *et al.*, (2023) observed similar patterns in their longitudinal study, where mindfulness benefits persisted but showed some attenuation over time. Their findings suggest that ongoing reinforcement of mindfulness practices might be necessary to maintain the gains. Johnson *et al.*, (2022) also noted a slight decline in mindfulness and a small increase in stress over time in their follow-up study, reinforcing the need for periodic practice to sustain mindfulness benefits.

The thematic analysis of semi-structured interviews revealed three primary themes: enhanced self-awareness, improved emotional regulation, and perceived quality of life. Participants in the experimental group reported increased awareness of their thoughts and emotions, better management of anxiety and sadness, and an overall improvement in their well-being. McCracken *et al.*, (2021) found that mindfulness interventions significantly enhanced self-awareness and emotional regulation among elderly participants, which aligns with the qualitative themes identified in this study. Santos *et al.*, (2022) reported improvements in quality of life and emotional well-being among elderly participants in mindfulness programs,

corroborating the perceived benefits noted by participants in this study.

Conclusion and Suggestions

The MBSR program demonstrated significant improvements in dispositional mindfulness and reduced perceived stress among elderly residents in old age homes, with these benefits largely sustained over three months. Both quantitative and qualitative data support the program's positive effects on mental well-being and emotional resilience. Recent research reinforces these findings, highlighting the continued effectiveness of mindfulness-based interventions in improving the quality of life for elderly individuals. The study underscores the value of integrating mindfulness practices into elderly care settings to enhance overall well-being.

The MBSR program effectively enhanced dispositional mindfulness and reduced perceived stress among elderly residents in old age homes. The experimental group showed substantial improvements in mindfulness and reduced stress levels, while the control group exhibited minimal changes. The positive effects of the MBSR program were largely sustained three months post-intervention, indicating that the benefits of mindfulness practice persisted beyond the immediate intervention period.

The study suggests that implementing MBSR programs in old age homes could be a valuable intervention for improving the mental and emotional well-being of elderly residents. These findings have important implications for healthcare providers and policymakers, highlighting the need to integrate mindfulness-based interventions into the care of elderly populations. *Qualitative Insights* The qualitative data provided a deeper understanding of how mindfulness practices impacted the participants' daily lives, emphasizing the role of mindfulness in fostering a sense of control and resilience in the face of aging-related challenges.

Acknowledgment : The researchers sincerely thank the elderly residents and staff of the old age homes in Salem, Tamil Nadu, for their participation and support. Our gratitude extends to the research

team of Vinayaka Mission's Annapoorana College of Nursing, Vinayaka Missions Research Foundation, Deemed to be University, Salem, Tamil Nadu, for resources, and our academic advisors for their invaluable guidance. We also appreciate the Institutional Ethics Committee for their ethical oversight and the data analysis team for their assistance. This study's success is due to the collective effort and support of all involved.

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Indian Journal of Gerontology
2025, Vol. 39, No. 1, pp. 51-63
ISSN : 0971-4189, UGC No. – List B, Science –121

Life Satisfaction and mental health among elderly : A comparative study of elderly livingin shelter homes and within family setup

Sanjay Kumar, Ghooman Ahirwar¹ and Archana Singh²

Department of Psychology, University of Allahabad, Prayagraj, U.P.

¹Department of Psychology, Pahalwan Guruddin College, Lalitpur.

²Department of Psychology, Doctor Harisingh Gour University,
Sagar, M. P.

ABSTRACT

The present comparative research, conducted with utmost objectivity, was designed to assess the life satisfaction and mental health of 1000 elderly (504 males and 496 females) living in Shelter Homes (N=500) and within Family Setups (N=500) of different Districts of Madhya Pradesh. They were administered the Mental Health Inventory (MH-5) and the Satisfaction with Life Scale (SWLS) for data collection. The study's findings revealed a significant difference in life satisfaction among the elderly living in Shelter Homes and within Family Setups. The results also revealed no significant difference in mental health among the elderly in the present study. In addition to that, the results revealed no significant difference in mental health and life satisfaction among the elderly concerning their gender and residence.

Keywords : Life satisfaction, Mental Health, Shelter Homes, Family Setup

Life satisfaction is a broad and complex construct, which encompasses an evaluation of the full range of overall functioning and an appraisal of one's life in general and in specific domains, such as family, health, social support, and environment (Diener *et al.*, 1999; Huebner, 2004). Life satisfaction is generally assumed and expected to decline in older age, most notably as health conditions deteriorate. In reality, the general finding of the large body of gerontological literature on the relationship between age and life satisfaction is that there is no age-related decline in life satisfaction (Larson, 1978; Herzog & Rodgers, 1981; Diener & Suh, 1997; Smith *et al.*, 1999).

Life satisfaction is considered to be a central aspect of human welfare. It is the ultimate goal, and human beings strive to achieve it. It is generally referred to as an assessment of the overall conditions of existence derived from comparing one's aspirations to one's achievements. According to Andrews (1974), Life satisfaction represents an overarching criterion or outcome of human experience. By the study of life satisfaction, we can monitor social progress. Life satisfaction of individuals in a particular group or country indicates the meaningfulness of life, but when satisfaction declines, it indicates possible problems. Life satisfaction of the elderly is an area that has attracted the attention of several researchers. Elderly people have seen many ups and downs over the years. This affects their approach towards their life as well as their life satisfaction. We must understand life satisfaction from their point of view.

Erikson (1963) has suggested that this development stage is characterized by psychosocial conflict, i.e., ego integrity versus despair. Integrity means integrating one's attitude, beliefs, motives, and experiences so that they fit together comfortably, and the outcome of integrity is a feeling of satisfaction with life. By studying the life satisfaction of the elderly, one can learn how certain factors play a positive role in maximizing life satisfaction and their crucial role in

reducing the effects of stress. Research in this area has analyzed how life satisfaction is influenced by social support, financial status, physical health, community, income, recreation, social life, career, etc. However, the presence of such factors does not ensure high life satisfaction. Several significant psychological variables in determining life satisfaction must be considered first and foremost. One aspect that comes to mind when discussing life satisfaction is perceived stress. Perceptions of stress influence our life satisfaction. Personal, professional, economic, social, etc., stressors affect the degree of life satisfaction.

Life satisfaction is considered to be a central aspect of human welfare. It is the ultimate goal, and human beings strive to achieve it. Satisfaction with one's life implies acceptance of life circumstances and the fulfillment of wants and needs for life as a whole (Webster's Dictionary, 1996). It is associated with social, economic, and familial factors. Therefore, we can understand the importance of improving the quality of life, which, in turn, the QOL can raise life satisfaction among them. Life satisfaction denotes the individual's positive attitude toward the world in which he lives (Koohbanani, *et al.*, 2013).

A relatively large body of gerontological and medical literature examines the effect of health on the life satisfaction of the oldest old. For example, to precisely assess health-related behaviours' effect on life satisfaction. Inal, *et al.*, (2007) examine the institutionalization of 133 Turkish individuals aged 60–90 and show that activities that enhance health (e.g., regular physical and leisure activities) are significantly related to life satisfaction. Similarly, Bowling and Farquhar (1996) demonstrate that subjective health and functional ability strongly predict life satisfaction. Two more recent analyses of life satisfaction among the oldest old in China (Li, 2005; Chen & Short, 2008) use two waves of the Chinese Longitudinal Healthy Longevity Survey, whose every wave includes over 5,000 people above 80 years. Both studies show perceived health to be a powerful predictor of life satisfaction among the elderly.

Mental Health

Globally, the population is ageing rapidly. Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double, from 12 percent to 22 percent. Mental health and well-being are as important in older age as at any other time. Mental health problems are under-identified by healthcare professionals and older people themselves, and the stigma surrounding these conditions makes people reluctant to seek help. It is as important in older age as in any other stage of life. It is not just the absence of mental disorders but also a sense of well-being and satisfaction that enables stresses that occur as a result of ageing to be dealt with. Old Age brings extraordinary pressures, unique upsets, and profound biological changes. People become more prone to illness and injury as they age, and they are likely to experience the stress of loss, the loss of spouses, friends, and adult children, and the loss of former activities and roles (Inselmann, 2004).

The elderly population is also highly prone to developing mental morbidities due to various factors such as aging of the brain, cerebral pathology, comorbid physical illnesses, and socioeconomic problems such as poor social support and reduced economic independence. The breakdown of family values and family support systems has led to social isolation, economic insecurity, physical and psychological abuse, and psychological problems (Ingle & Nath, 2008). The number of mental health (MH) professionals in India is inadequate to meet the MH needs of the geriatric population.

A multitude of social, demographic, psychological, and biological factors contribute to a person's mental health status. Almost all these factors are particularly pertinent amongst older adults. Factors such as poverty, social isolation, loss of independence, loneliness, and losses of different kinds can affect mental health and general health. Older adults are more likely to experience events such as bereavement or physical disability that affect emotional well-being and can result in poorer mental health. They may also be exposed to maltreatment at home and in care institutions (Deekin, 2003). On the other hand, social

support and family interactions can boost the dignity of older adults and are likely to have a protective role in the mental health outcomes of this population.

There may be multiple risk factors for mental health problems at any point in life. Older people may experience life stressors everyday to all people, but also stressors more common in later life, like a significant ongoing loss in capacities and a decline in functional ability. For example, older adults may experience reduced mobility, chronic pain, frailty, or other health problems for which they require some form of long-term care. In addition, older people are more likely to experience events such as bereavement or a drop in socioeconomic status with retirement. All of these stressors can result in isolation, loneliness, or psychological distress in older people, for which they may require long-term care. Mental health has an impact on physical health and vice versa. For example, older adults with physical health conditions such as heart disease have higher rates of depression than those who are healthy.

Mental health problems can have a high impact on an older person's ability to carry out essential daily living activities, reducing their independence, autonomy, and quality of life. The first step to reduce these negative consequences is simply to make a diagnosis. Unfortunately, too often, mental health problems are undiagnosed and untreated, and many older people struggle without proper help or any help at all. Today's older adult population is not likely to acknowledge mental illness or to access mental health services. Many stigmas exist regarding the meaning of mental illness. Many older adults view mental illness as a sign of weakness and are unlikely to admit to experiencing problems, especially when they fear the loss of independence.

Statement of the Problem

In developing countries, aging issues have recently emerged as a cause of social concern, and during the review process, the researcher reviewed many research articles related to elderly people. It was found that elderly people faced many problems at home, such as verbal abuse, physical abuse, financial, and fulfillment of basic needful things,

which leads to physical, emotional, mental, financial, and adjustment difficulties, dissatisfaction with life achievements, guilt feelings, etc. For these challenges, older people need to learn and use different coping strategies to cope with difficulties and adapt to new demands of their offspring's lifestyles. Sometimes, if they cannot adapt to these conditions or problems, they decide to go to a shelter home, and sometimes, their offspring leave them in the shelter home. However, shelter homes' infrastructures, rules, regulations, structures, schedules, and lifestyles demand another kind of adjustment and coping strategies. The elderly need specific amenities such as health care, nutrition, and a sense of belonging. However, the type and amount of treatment they receive mainly depend on the family's culture. Life becomes increasingly stressful during ageing process, and elderly people become a liability rather than an asset to their families (Yadava *et al.*, 1996).

It was depicted in the literature that research on life satisfaction in old age is determined by several factors, with social, physical, mental, and financial aspects as interactive variables. These factors must be paramount when caring for the elderly (Borg, *et al.*, 2006). Family relations significantly impacted the life satisfaction of older people with different resident statuses, as observed in mainland China (Yunong, 2012). It was also depicted from the literature that there is more depression, anxiety, and stress among the elderly residing in old age homes compared to the elderly living with their families (Parshad & Tufail, 2014). Moreover, they used more maladaptive coping strategies, and the elderly living with families used more adaptive coping strategies. In addition to that, elderly living with families have better mental health (Dean, *et al.*, 1992). Therefore, based on the reviewed literature, this study compares life satisfaction and mental health among the elderly living in shelter homes and within family set-up.

Objectives of the Study

- To find out the difference in life satisfaction and mental health among the elderly living in shelter homes and within family setups.

- To find out the difference in life satisfaction and mental health among the elderly living in shelter homes and within family setups concerning their gender and residence.

Hypothesis of the Study

- There will be significant differences in life satisfaction and mental health among the elderly living in shelter homes and within family setups.
- There will be significant differences in life satisfaction and mental health among the elderly living in shelter homes and within family setups concerning their gender and residence.

Method

Sample

In this study (N-1000), male and female elders (Age 60 Years or above) were selected through Purposeful sampling. Out of 1000 participants, 500 elderly people from shelter homes and 500 elderly people who live within family setups were recruited from different districts of Madhya Pradesh.

Tools of the study

The Life satisfaction scale

This scale was developed by Diener, *et al.*, (1985). It consists of five items designed to measure life satisfaction. Participants are instructed to indicate how much they agree or disagree with each of the five items using a 7-point scale that ranges from 7 strongly agree to 1 strongly disagree. The internal consistency of the scale is 0.8.

Mental Health Inventory

To measure the mental health of elderly people, a mental health inventory developed by (Veit, & Ware, 1983) was used. The MHI-5 was developed for use in the general population and designed to improve upon other instruments by including items that assessed psychological well-being. This inventory comprises five questions about mood over the past month, measuring the experience of psychological

well-being and the absence of psychological distress. Each of the items requires a response on a 6-point rating scale, with possible scores ranging from 6 to 30, and the instrument is scored such that higher scores indicate better mental health. The internal consistency reliability coefficients range from .80 to .96.

Results

Table 1

Showing the 't'-value of life satisfaction and mental health among the elderly living in shelter homes and family setups.

Variable	Condition	N	Mean	SD	t-value	Sig.
Life-Satisfaction	Shelter Homes	500	20.25	5.31	3.61	S
	Family setup	500	19.13	4.46		
Mental Health	Shelter Homes	500	19.79	5.32	.730	NS
	Family setup	500	20.01	4.03		

From Table 1 above, the mean score of life satisfaction of elderly living in shelter homes is 20.25, and within family setup is 19.13. Here, the findings depicted significant differences in life Satisfaction among shelter homes and within family setups. About the mental health of elderly living in shelter homes, the mean score is 19.79; within family setup, the mean score is 20.01. In this way the findings depicted no significant difference in mental health among both the groups

Table 2

showing the 't' - value of Life-satisfaction and mental health with respect to Gender

Variable	Gender	N	Mean	SD	t-value	Sig.
Life-Satisfaction	Male	504	19.64	5.02	.311	NS
	Female	496	19.73	4.84		
Mental Health	Male	504	20.02	4.92	.802	NS
	Female	496	19.78	4.51		

While examining the above table 2, the mean score of males on life satisfaction is 19.64 and females 19.73. With regard to mental

health, the mean score of males is 20.02 and females 19.78. Hence, the above findings revealed a nonsignificant difference among males and females.

Table 3

Showing the ‘t’ - value of Life-satisfaction and mental health with respect to Residence

Variable	Residence	N	Mean	SD	t-value	Sig.
Life-Satisfaction	Urban	482	19.80	4.85	.704	NS
	Rural	518	19.58	5.01		
Mental Health	Urban	482	20.13	4.96	1.51	NS
	Rural	518	19.68	4.47		

While examining table 3, the mean score of urban on life satisfaction is 19.80, and Rural is 19.58. Regarding mental health, the mean score for urban areas is 20.13, and for rural areas, it is 19.68. Hence, the above findings revealed no significant difference in life satisfaction and mental health concerning residence.

Discussion

The present study compared life satisfaction and mental health among the elderly living in shelter homes and within a family set-up. The study reveals that the mean life satisfaction score of elderly living in shelter homes is 20.25, and within a family setup, it is 19.13. Hence, it is evident from the findings that the elderly living in shelter homes have better life satisfaction than the elderly living with families. The above findings align with the previous study conducted by (Fengler, *et al.*, 1983), who reported that the elderly living in a family environment had higher life satisfaction compared to those living in other different homes.

Concerning the mental health of elderly living in shelter homes, the mean score is 19.79, and within a family setup, the mean score is 20.01. In this way, the findings depicted no significant difference in mental health among both groups. The above findings are contradictory to the study conducted by (Sahrawat, 2024), who

revealed that the elderly living alone suffer from mental health. While comparing the difference among elderly living in shelter homes and within family setups concerning gender, the findings depicted the mean score of males on life satisfaction as 19.64 and females as 19.73. Regarding mental health, the mean score of males is 20.02 and females 19.78. Hence, the above findings revealed a nonsignificant difference among males and females. The above findings align with the findings conducted by (Kawa *et al.*, 2017), who reported a significant difference in mental health and life satisfaction among aged people with respect to their gender. The findings also revealed that the elderly living in urban as well as in rural areas did not show significant differences in life satisfaction and mental health.

Conclusion

The findings of the study proved that the elderly living in shelter homes have better life satisfaction than the elderly living with families. However, there is no significant difference in mental health between the two groups. The findings also depicted that there is no significant difference between the elderly living in shelter homes and those living within family setups. Based on the findings, it can be concluded that support from family members is very significant for mental health and life satisfaction among the elderly. It may be suggested that some measures should be taken to fulfill the needs of such elderly people by the state and society. Moreover, there is a significant need to highlight the psycho-social problems that the elderly people in India are facing, and different strategies are needed to bring about an improvement in their overall quality of life.

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Indian Journal of Gerontology

2025, Vol. 39, No. 1, pp. 64-72

ISSN : 0971-4189, UGC No. – List B, Science –121

Effect of Diabetes Mellitus on Foot Biomechanics and Gait Dysfunction in Patients with Diabetic Neuropathy : An Observational Study

Sukhpreet Pabla, and Dilip Apturkar¹

Dr. APJ Abdul Kalam College of Physiotherapy,

¹Dr. Balasaheb Vikhe Patil Rural Medical College,

Pravara Institute of Medical Science, Loni, Maharashtra-413736.

ABSTRACT

An observational study on gait changes in patients with diabetes was conducted on 26 elderly persons (20 males and 6 females), ages varying from 50 to 70 years, in Pravara Rural Hospital in patients. These patients who had Diabetes Mellitus were screened for demographic data along with other details. A detailed assessment of patients was done using POMA (Tinetti Performance Oriented Mobility Index). This widely used tool scores 16 items (nine for evaluating balance and seven for assessing gait). Patients with diabetes frequently exhibit a conservative gait strategy with slower walking speed, a broader base of gait, and prolonged double support time. Glycosylation effects were observed in the lower extremities. On observation, it was concluded that there is a reduction in speed and alteration in the balance due to Diabetic Foot, which may be due initially to skin thickness decrease, skin hardness increase tendons

thickening muscles atrophy and exhibiting activation delays, bones become less dense joints have limited mobility, etc. Based on the findings of this study, it may be concluded that gait changes do appear in patients with diabetes. These changes, coupled with local soft tissue changes from advanced glycosylated end products, also alter a patient's gait, putting them at risk of foot ulceration. Understanding the biomechanics and the basic anatomy of the foot is essential for managing Diabetic Foot Patients and will also help in planning appropriate interventions and prevention. The need for further Studies to assess early implementation of the biomechanical changes to improve the Quality of Life is crucial and should be a focus of future research.

Keywords : Diabetes Mellitus, Diabetic Foot, Biomechanics of Foot, Gait.

Diabetes mellitus (DM) is a prevalent disease considered a Public Health problem with high social and economic costs. Among the clinical complications of DM are blindness, renal insufficiency, nephropathy, and peripheral neuropathy. PN seems to develop as an autonomic and sensorial disturbance and as a progressive and irreversible motor disease. It can interrupt the afferent and efferent functions of the lower extremities, which are responsible for maintaining normal posture and walking (Bus SA and Ulbrecht JS. 2020).

The World Health Organization has declared Type II diabetes an international epidemic. Despite the current incidence of diabetes being less than 10 percent in the United States, the decrease in the age of onset of diabetes and the increase in its incidence has led the World Health Organization to predict that by the year 2020, 30 percent of the world population will be diagnosed with Type II diabetes. A large-scale survey conducted across India revealed that over 43 percent of the respondents who had diabetes in 2021 were

above 60 years of age (Minhas, A. 2023). This data underscores the urgent need for proactive measures to address this growing health crisis.

Diabetic patients with peripheral neuropathy have lower gait velocity, decreased cadence, shorter stride length, increased stance time, and higher step-to-step variability than healthy controls. These gait alterations increase on irregular surfaces (Andersen H. et al.,)

Diabetic neuropathies develop diverse clinical manifestations, such as sensory loss and pain, and put patients at high risk for foot ulcers and amputation, an irreversible complication. Many people with Diabetic Neuropathy experience symptoms like Paraesthesia, pain, and allodynia, and this is Popularly Known as Diabetic Neuropathy.

In the present scenario, there is a tremendous hike of people suffering from Diabetes Mellitus, which is approximately 366 million. Along with the Rising Rates of Diabetes Mellitus, its Complications are rising too, which in turn leads to an Increased rate of Mortality and Morbidity, increased healthcare expenditure, and an emerging need to focus on the Specialized Care System. This underscores the crucial role that each healthcare professional, researcher, and student plays in addressing this growing health crisis.

Diabetic Foot is one of the most unnoticed and overlooked characteristics of Diabetic Care across the Indian scenario due to cultural and economic barriers. Poverty, lack of Education, and unavailability of resources, as well as the use of improper Footwear, lead to foot lesions. However, it's important to note that many of these issues are preventable with proper education, resources, and care, highlighting the need for increased awareness and action.

In the Indian scenario, diabetic Foot Ulcers account for 15 percent of the population during their lifetime. The Prevalence of diabetes is increasing worldwide. India ranks second in the world with 65.1 million Diabetic Patients. The prevalence rate of diabetic

Foot in Indians is 2.4 percent in Rural areas and 12-17 percent in urban areas.

Diabetic Neuropathy is a regular complication of diabetes mellitus, which leads to the development of Diabetic Foot Ulcers. These ulcers change the foot biomechanics, and Glycosylation is also responsible for altering gait in Patients with Diabetic Foot and diabetic Neuropathy.

Method

The study was conducted at the Orthopaedics Physiotherapy Department of Pravara Rural Hospital in Loni, Maharashtra, India, over one year (April 2023 to April 2024). The selection of participants began with referrals from the Medicine OPD at Pravara Rural Hospital. All consecutive patients with Type II Diabetes Mellitus and diabetic neuropathy were screened. Those who met the inclusion criteria—aged 50 to 70 years, willing to consent, and at risk of falls—were recruited. Patients with major orthopaedic issues, non-diabetic neuropathy, or significant comorbidities were excluded. After screening, 50 eligible participants (20 males and 06 females) were enrolled. Patients were selected through convenience sampling based on specific inclusion criteria, such as being referred from the Medicine OPD and willing to consent, while those with major orthopaedic or surgical problems, non-diabetic neuropathy, or significant comorbidities were excluded. The assessment involved using the Performance Oriented Mobility Assessment (POMA) to evaluate gait parameters and the effect of glycosylation was assessed using the radiographs (Mears' Angle and Calcaneal Pitch). Statistical analysis was performed using SPSS software, employing Pearson's correlation to explore relationships between variables.

Results

This study evaluated 26 subjects with a gender distribution highly biased in favor of the male gender (20 males and 6 females). All the subjects were aged between 50-70 years, indicating that this was a majority of elderly subjects. The performance-oriented mobility assessment scale, POMA, was used to classify the participants according to various falling risk categories. The results showed that

19 percent of subjects (5) were low-risk, having POMA scores between 25 and 28. The majority, at 54 percent (14 subjects), was in the moderate risk category, where their scores ranged between 19 and 25. The remaining 27 percent belonged to the high-risk category, with POMA scores less than 19. This high-risk group had people with conditions ranging from neuropathy, absence of pulses, deformities, or skin conditions, all of which signify the relatively high risk of falling. These findings are demonstrated to illustrate the relationship between diabetic neuropathy, loss of sensation, structural changes of the feet, and an increased risk of falls that underlines the importance of early intervention in managing these risks effectively.

The number of participants in this research was 26, and the gender distribution was skewed towards male participants (20 males and 6 females). The participants were divided into two groups: men and females. Participants aged 50 to 70 were included, most of whom were deemed elderly.

Table 2

Distribution of study Participants based on POMA scale

AOLDC & AOLU Risk Category	% of Participants	No. of participants	POMA Score
Low Risk	19%	5	25-28
Moderate Risk	54%	14	19-25
High Risk	27%	7	<19

The participants were examined using a scale called the Performance Orientated Mobility Assessment (POMA), which categorized them into various risk categories for falling, including the following category: The participants were examined using a scale called the Performance Orientated Mobility Assessment (POMA), which categorized them into various risk categories for falling, including the following category:

The test findings indicated that only five individuals with normal sensation and palpable pulses were discovered to have fallers considered low risk. This was the only group of individuals assessed

to have fallers. When the pulse was tested, it was discovered that sixty-four percent of the persons, or fourteen of them, were at a moderate risk of falling. This was found after the pulse had decreased. Twenty-seven percent of the participants were comprised of seven persons who had neuropathy, no pulses, deformities, or skin abnormalities that were suggestive of a high risk of falling. These individuals were included in the high-risk individual category.

Discussion

Nature's Somatic Reflex Effects on Glycosylated Alterations in Gait Biomechanics

For glycans, it has been shown that hyperglycemia affects various tissues and alters gait biomechanics in several ways. These changes are pronounced in bones, tendons, joints, skin, and fat pads, significantly impacting the peripheral nervous system (PNS) and blood vessels. Appreciating these changes is essential for comprehending the influence of metabolic diseases, such as diabetes, on the musculoskeletal system and mobility.

Increased Glucose Uptake and Its Impact on Bone and Soft Tissues: Increased Glucose Uptake and Its Impact on Bone and Soft Tissues:

High blood sugar concentration increases the diffusion of glucose in the tissues and organs of the body, mainly where glucose transporters are abundant, such as in bone and soft tissue masses. This enhances glucose uptake, yielding mature AGEs that change the architecture of collagen and every other protein. AGEs were reported to increase the rigidity of tendons and ligaments and decrease the skin's elasticity and fat pads, including the plantar pad of the foot. These biomechanical changes in SCFE are associated with abnormal gait patterns, including reduced joint movement range, increased joint stiffness, and a shift of weight load over the foot during gait.

In line with our research, past studies have established that hyperglycemia-related glycosylation disarrays the Achilles tendons and plantar fascia's elasticity, affecting muscle contractile force and gait

mechanics. For example, Bus *et al.*, (2020) found diabetic patients have higher plantar pressures walking; this study also supports that observation. Further, the increased plantar pressure of the diabetic foot can worsen the likelihood of foot ulcers, a common occurrence in diabetic patients.

Adverse Effects on the Peripheral Nervous System and Neuropathy: Adverse Effects on the Peripheral Nervous System and Neuropathy

The vasculature, especially microvascular beds and blood vessels, is dramatically vulnerable to glycosylation-related damage. This damage is frequently seen in microangiopathy, which leads to the dysfunction of blood flow to the nerves, thus resulting in peripheral neuropathy. The dying-back pattern of neuropathy suggests that distal nerve fibers get demyelinated before proximal fibers because glycosylation affects the function of Schwann cells. These cells are necessary for neuronal survival, expression of essential genes, transportation of molecules along the axon, and nerve regeneration.

As researchers have seen through analysis of delayed axonal transport, Schwann cells cannot fully support the condition of their neurons, and nerve function consequently deteriorates. Clinically, this neuropathy manifests in terms of protective sensation, muscle atrophy, and impaired proprioception, which lead to impaired gait. Microvascular disease is also associated with diabetic neuropathy in the present study; Tesfaye *et al.*, (2010) described microvascular disease as an indication of progressive diabetic neuropathy with consequent influence on gait balance and higher propensity to falls.

Comparison with Other Studies

The present research outcomes observed notable positive relationships between glycemia, glycosylation, and changes in gait, which corroborated previous studies conducted by other scholars. For instance, Andersen *et al.*, (2004) revealed that the characteristics of patients with longstanding diabetes type 1 consist of decreased

joint movement and increased gait, especially in the ankle and knee joints. Our data also reflected such deficits, indicating that joint stiffness and restricted ROM were common complaints among poorly controlled diabetic patients.

Furthermore, to our knowledge, this is one of the few reports demonstrating that superimposing hyperglycemia causes outcomes that can be ameliorated through early diabetes management. The conclusions of Boulton *et al.*, (2008) work, which evidenced that strict glycemic control would reduce the frequency of neuropathic complications, agreed with our conclusion that early intervention is necessary to prevent gait impairment in diabetic patients.

Conclusion

Individuals with diabetic neuropathy exhibit distinct alterations in gait characterized by decreased gait speed, shortened steps, an increased base of support, and prolonged double support time. These modifications were consistent with the findings of Muller *et al.*, who reported reduced walking speed, shorter stride length, and diminished ankle mobility in this population. The mobility restrictions observed, particularly joint limitations at the first metatarsophalangeal and ankle joints, significantly impair the normal rollover process during gait. This disruption contributes to an altered walking pattern, further exacerbating musculoskeletal strain and reducing overall functional capacity. Moreover, the structural changes in the foot, driven by neuropathy and glycosylation, lead to a shift in plantar support, increasing plantar pressure and the risk of ulceration. The heightened plantar pressure, coupled with impaired sensation due to neuropathy, predisposes individuals with diabetes to foot ulcers, which can have severe consequences if left unmanaged.

In short, diabetic neuropathy affects nerve function and induces significant biomechanical changes in gait. These changes highlight the importance of early and targeted interventions to preserve joint mobility and minimize plantar pressure to reduce the risk of foot complications in individuals with diabetes.

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Indian Journal of Gerontology

2025, Vol. 39, No. 1, pp. 73-85

ISSN : 0971-4189, UGC No. – List B, Science –121

A Comprehensive Psychological Skill Training for Enhancing Elderly Wellbeing

Susmita Haldar, and Shinjini Samajdar

Department of Psychology, St. Xavier's University, Kolkata (W.B.)

ABSTRACT

The present study aimed to determine the efficacy of a comprehensive well-being intervention package delivered through 5 caregivers for the 20 elderly (11 males and 9 females) aged 75 to 90. These caregivers were trained to enhance the physical, emotional, and cognitive well-being of the elderly through a tailor-made intervention package of six months of different modules. The training modules were designed to be flexible, allowing for modifications tailored to the specific needs of each elderly individual, most notably to enhance their daily activities and well-being. The caregivers were educated on incorporating cognitive, emotional, and daily living tasks into everyday routines. The pre-post qualitative analysis provides insight into the effectiveness of the wellbeing intervention package. The feedback from caregivers revealed improved physical, emotional, and cognitive functioning, supplemented by GHQ scores.

Keywords : Psychological Skill Training, Elderly Population, Wellbeing, comprehensive

With an increasing trend of nuclear families and offspring moving to other cities for occupation, there is an increase in the number of elderly people staying alone, taking care of themselves through paid caregiving services or without significant help from others. These elderly people are often at risk of neglect and subsequent poor well-being.

Elderly people's poor well-being adds to the stereotyped public perception and opinion of the elderly being unproductive despite older individuals making significant social, economic, and cultural contributions (Lyons, 2009). Many elderly persons experience social isolation, living alone, and feeling like a burden to their families (Choudhury & Halder, 2022). These variables and interruptions in their typical daily routines can significantly impact their general well-being. Living alone (Esteve *et al.*, 2020), retirement (Odone *et al.*, 2021), or a reduction in mobility (Freiberger *et al.*, 2020) can all contribute to social isolation, which is an increasing problem. This isolation can lead to emotions of loneliness, despair, and alienation, all of which have a terrible influence on emotional health and tend to cause suicidal ideation (Halder & Manot, 2020). Furthermore, living alone might raise concerns about safety and security, especially for people with decreasing physical condition. This might limit their participation in daily activities and intensify their sense of loneliness. All of these can contribute to feelings of powerlessness and low self-esteem. This can disrupt family ties and harm the general well-being of the elderly. Disruptions in routine everyday activities are also substantial. Retirement can lack structure and purpose, while deteriorating physical capacities may restrict participation in hobbies and social gatherings. This disturbance can lead to feelings of boredom, a lack of fulfillment, a low sense of self-efficacy, and even suicidal thoughts or conduct, as well as passive self-harm. These combined variables generate a complicated web of issues that substantially influence the health of our ageing population.

Wellbeing is a multidimensional notion that includes physical, mental, social, and spiritual well-being. It is a state of wholeness where

individuals may grow and live fulfilling lives. However, the older population's well-being might be especially vulnerable (Ryff, 2021). The W.H.O. encourages a healthy lifestyle that includes physical activity, nutritious food, and the avoidance of tobacco, alcohol, and other addictive substances. A positive attitude and mental well-being improve life quality as one ages (WHO, 2015).

This may be strengthened by initiatives that improve the health and functional abilities of the elderly in all domains. Understandably, the goals of active ageing may not be realistic for every older person, especially those with complicated comorbidities or severe cognitive impairments. The economic and non-economic costs of caring for the elderly are evident, and they will continue to rise as the number of people living to a very old age increases. The newly published WHO data demonstrate significant disparities in older people's health and functional condition in various developing nations (Rudnicka *et al.*, 2020).

While necessary for meeting fundamental requirements, professional caregiving frequently falls short of supporting overall well-being. Sympathy and support, while important, are not sufficient. To effectively improve the well-being of our senior population, we require a comprehensive intervention strategy.

Daily care and support are not adequate for the ageing population; they also require social and empathetic care and effective skill training to become self-sufficient, engaged, and cognitively sound. So, the present study aimed to find out the efficacy of a comprehensive well-being intervention package delivered through caregivers for the elderly, which may address the physical, emotional, and cognitive well-being of the elderly population.

Method

Sample

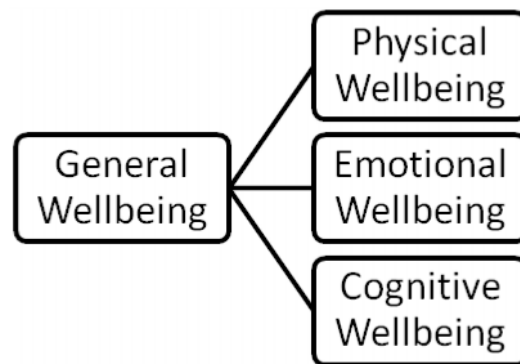
For the present study, 20 elderly people (11 males and 9 females) aged 75-90 years were recruited for the study. They all received assistance and social support for everyday functioning and essential

medical needs from a 'Care Unlimited' NGO in Kolkata. Participants stayed at their homes, were independent in mobility, and capable enough to engage in meaningful dialogue. Those with any major physical illness at a severe level and needing assistance in immediate activities of daily living were not included in the study. All the participants received support from the caregivers; however, there was no structured activity to enhance their physical, emotional, and cognitive well-being. Thus, a tailor-made intervention package spanning six months was planned. The caregivers working in the organization were oriented regarding the intervention through different modules which were implied on the participants.

All five caregivers cared for 20 elderly individuals and were given six months of training. The purpose of the training was explained to them during their training. The caregivers were provided with psychoeducation based on the current cognitive, psychological, and emotional functioning of the elderly individuals under their care and the baseline assessment findings.

Outline of the Intervention Program:

Main Focus:



Plan of the programme:

The intervention approach focused not only on providing support to elderly people but also on helping them improve their physical,

cognitive, social, and emotional functioning. The intervention approach includes the following modules:

Module I : Orientation : In the very first phase of the intervention process, the aim and purpose of the intervention were discussed with the concerned organization. Five caregivers provided support to all 20 elderly participants. The focus of the first module was to orient and guide all the caregivers for better intervention implementation. A workshop for the caregivers was organized, and the purpose of the workshop was based on the following:

1. Imparting knowledge regarding general issues faced by the elderly population.
2. Explaining the roles and responsibilities of caregivers beyond social support only and incorporating the idea of comprehensive mental health care and how it differs from mere social support.
3. Assessment and intervention process.
4. Domain-wise (Physical, cognitive, social, and emotional), tailor-made activities and skill training techniques were detailed to the caregivers.

Module II : Assessment : At the end of the workshop, all the caregivers were provided with the assessment tool GHQ-12 (Goldberg *et al.*, 1997) to assess the participants' overall cognitive functioning and functional level. The researcher demonstrated to the caregivers the procedure and rationale of each assessment tool. Then, assessments were done, and the caregivers shared scores for each measure.

Module III : Training : The results from the caregivers' scores, along with each participant's socio-demographic details, were analyzed. Another workshop was arranged where the result was discussed with the caregivers, and feedback was given. Domains were identified separately, and the training programme was demonstrated. Tailor-made tasks were provided to the caregivers for specific identified problems for the participants (e.g. if a participant was not able to remember his/her daily chores, flashcards were prepared and was

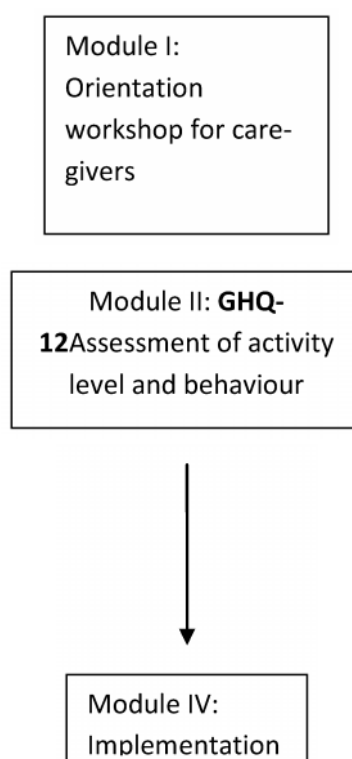
trained to use that card appropriately rather than showing them the flash card directly or providing them hands-on guidance on that specific chores). At the end of the workshop, queries were answered.

Module IV : Implementation : The skill training approach was tailor-made, and all trained caregivers gave it for next 6 months. At the end of every month, a meeting was arranged with the caregivers, and they asked about any specific issues they faced in implementing the training program. Intermediate meetings for progress reports and queries were organized every month. It also provided information about how much the training programme was appropriate for each participant. Minor discrepancies or inefficiencies were addressed in those meetings, and we discussed problem-specific solutions with the caregivers. Their overall feedback about the skill training approach was noted down.

Module V : Post-intervention assessments & Follow-up: After the intervention, the caregivers administered GHQ-12 again to all the participants. Scores were analyzed, and feedback was given to the caregivers. Lastly, after four weeks, one follow-up session was conducted with all the caregivers, using all previous data and the participants' improvement patterns.

Module VI : Feedback : The last module was dedicated to all the organization's members, including the caregivers. Feedback for the whole intervention program was consolidated as a well-being package delivered to the concerned elderly care organization.

Procedure



Results

Table 1

Base-line assessment of activity and behaviour of the participants

Assets	Deficits
• Reading newspaper • Yoga • Learning new languages • Following instructions • Cooking • Nurturing plants	• Physical functioning-low • Lethargy • Immobility- due to low motivation • Reluctant to do any work • Anxiety • Irritability • Difficulties in remembering

Table 2
Activities for well-being of elderly

Physical	Cognitive	Emotional
• Brisk walking • Watering plants, • Sweeping or dusting • Arranging shelves, table • Light weight lifting (using household items like water bottles) • slow, deliberate movement exercises • Relaxation exercises, hand-neck exercises, breathing exercises, yoga	• Newspaper reading • Grain sorting • Sudoku • Card games (color matching), puzzles, Word finding games • Day planning, daily journal, market list preparing • Reading books and discussing them • Mental games • Segregate color beads • Cooking new recipes	• Activity scheduling • Journal writing • Autobiographical story writing • Letter writing • Emotional wheel: finding out emotions & life event lists • Keeping a scrapbook of memories and significant events • Record life story audio/video • Group discussion & support groups

Table 3
Pre-post comparison of cognitive, emotional and functional status

Domains	Pre-Intervention	Post-Intervention
GHQ-12	16.5 (Low functioning)	11.32 (Improved functioning)
Physical activity	Significantly low	Improved
Motivation	Low	Engaging more in works
Rigidity	High	More Flexible in decision making and problem solving
Apprehensions	High	Improved tolerance
Irritability	Frequent	Decreased
Memorization	Poor	Better
Social interaction	Not present	More than previous
Individual accountability	Low	More independently can work

Discussion

In this study, a customized well-being intervention programme delivered through caregivers significantly improved overall well-being for the participating elderly population (n=20). The programme was initiated with orientation and training for caregivers, which were presented in a workshop and training programme, followed by individual sessions with caregivers. The initial target was educating individuals providing care on the most prevalent issues the elderly encounter. Baseline, post-intervention, and follow-up assessments were done, where participants' functional status and individual strengths and weaknesses were identified in baseline, and later changes and improvements were recorded post-intervention and follow-up sessions. The pre-post qualitative analysis provides insight into the effectiveness of the wellbeing intervention package.

The initial assessment aimed to understand the level of physical mobility, cognitive status, and nature and quality of social interaction among participants. The post-intervention findings suggest substantial increases in social connectivity, physical functioning, and active cognitive functioning. Participants reported being more supported and involved in the programme and gained more control of their daily activities and health. In addition to quantitative findings, the qualitative analysis added dimension to the intervention programme. As a general impression, participants' verbatim narrations reflected their increased sense of purpose, confidence, and emotional resilience, which suggests a positive impact of the program. This feedback was then used to develop strategies following the individualized needs of each participant. These strategies focused on three major domains: physical activity, cognitive training, and emotional regulation. Notably, all interventions were carefully tailored to fit smoothly into the participants' everyday routines, maximizing adherence while minimizing disturbance to their current lifestyle. A regular and detailed feedback process was included to ensure continual improvement and address any newly developed difficulties. Regular meetings were held on a weekly and monthly basis. Weekly sessions provided the scope for participants and caregivers to

review progress, address immediate issues, and adjust specific components of the intervention strategy. While follow-up assessments with the organization confirmed significant improvements in participant well-being, the intervention faced numerous obstacles throughout implementation. One significant difficulty was caregiver burden (Matsumoto *et.al.*, 2007). The complex nature of the intervention programmes, including physical activity, cognitive training, and handling one's emotions, created a considerable logistical challenge for caregivers. Balancing the various demands of each participant while guaranteeing regular participation in the specified activities proved difficult. It indicated the importance of further research into strategies for supporting caregivers and mitigating caregiver burden in future iterations of the intervention.

Table 4

Shows the challenges faced by caregivers and suggestions given by Clinical Psychologists

Challenges Faced by Caregivers	Caregiver Challenges in verbatim	Suggestions given by clinical psychologists
Balancing miscellaneous needs of the elderly persons	"It is challenging to meet the varied needs of each participant."	Implement individualized care plans tailored to specific needs.
Ensuring Consistent Engagement	"Some participants show reluctance to participate regularly."	Incorporate personalized motivators and rewards to boost engagement.
Managing Time Constraints	"Limited time and resources hinder our ability to provide comprehensive support."	Streamline administrative tasks and seek additional support from volunteers or community resources.

In addition to the issues described above, care providers encountered general hurdles common in delivering care to the elderly. These included dealing with complicated health issues, difficulties in planning activities who may have movement and other restrictions, and communicating with participants who may have developed hearing, speech, and cognitive deficits. Also, the daily care of the elderly causes stress on care providers, which may impact the quality of service.

Despite these challenges, it was noted that caregivers displayed perseverance and devotion to their responsibilities, emphasizing the importance of continued support, training, and resources to improve care delivery and increase the well-being of both participants and caregivers. Caregivers expressed their comfort and satisfaction after the orientation and training program and reported it was highly beneficial and effective for both parties.

As the programme was effective, it sheds light on further work and research. Based on the line of progress, the present intervention program can be modified and keep scope for both inclusion and exclusion of components. One idea is to include technology to improve the overall skill-based programme and facilitate skill-specific development, which can have a long-term impact on elderly people. Further, a collaborative and multidisciplinary approach can be taken to ensure the wholesome effectiveness of the program.

Working in collaboration with healthcare providers, medical experts, mental health professionals, and social workers can result in a more comprehensive approach to meeting the complex and multidimensional demands of the ageing population (Hughes *et.al.*, 2020). In this regard, awareness and participation of family members and community people are also mandatory to make the programme effective. This partnership might create more complete and focused intervention components that address physical, cognitive, emotional, and social well-being (Goodwin *et.al.*, 2021). The implication of the study in clinical and non-clinical settings appears promising.

Conclusion

The study assessed the elements that influence older people's well-being. Our findings provide a clear message: while social support is essential, it cannot improve older persons' functioning and general well-being. Self-efficacy, or belief in one's capacity to manage obstacles and achieve goals, appears increasingly important (Khan *et.al.*, 2021). These results have important implications for future treatments. While social support networks are beneficial, programmes should focus on increasing the senior population's daily living and cognitive skills.

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Indian Journal of Gerontology

2025, Vol. 39, No. 1, pp. 86-96

ISSN : 0971-4189, UGC No. – List B, Science –121

Improving Quality of Life in Elderly Patients with Knee Osteoarthritis Through Homeopathy : A Case Report

S Stevenson , and Vinodini V. Patil

Department of Homoeopathic Philosophy and Organon of Medicine,
Bharati Vidyapeeth (Deemed to be University) Homoeopathic
Medical College Pune (M.S.)

ABSTRACT

This study aimed to evaluate the effectiveness of homeopathic medicine in managing osteoarthritis (OA) symptoms and enhancing the quality of life of a 60-year-old woman with chronic knee osteoarthritis (OA). The patient's progress was assessed using the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) before and after six months of homeopathic treatment, as well as the Modified Naranjo Criteria for Homoeopathy (MONARCH) to show a causal relationship between treatment and outcome. The patient showed marked improvement after treatment with homeopathic remedies Bryonia alba 200C and Lachesis mutus 200C. WOMAC scores revealed significant reductions in pain, stiffness, and difficulty with daily activities. The patient also experienced better blood sugar control and relief from varicose vein symptoms. The MONARCH score

indicated a probable causal relationship between the treatment and clinical improvement, suggesting that homoeopathy may offer a viable non-surgical option for OA management in the elderly. However, it's important to note that this is a single case study and the findings may not be generalizable to all elderly patients with knee OA. Although further research with larger samples is necessary, this case highlights the potential role of homeopathic treatment in improving the quality of life for elderly patients with knee OA and associated health issues.

Keywords : Homoeopathic medicine, *Lacheismutus*, Osteoarthritis, WOMAC index.

As people age, osteoarthritis (OA) (International Classification of Diseases 10 code—M17) becomes more common. More than 80 percent of the general population has osteoarthritis changes either symptomatically or radiologically. OA can affect almost every joint in the body, but the knee is most commonly affected (Bhandakkar *et al.*, 2020).

The elderly population nearing 60 years and above is more likely to be affected because OA doesn't show any symptoms until the joint is structurally damaged to a significant level interiorly in the body, which can be identified in the radiographic images (Law, n.d., 2001). The knee joint is one of the joints that contribute to bearing the body's weight, which accounts for more pain and functional limitations in the elderly individual (Loeser, 2000).

Obesity is one risk factor that leads to the development of osteoarthritis (OA) in the knee, coupled with minor injuries, overuse of the joint, and abnormalities in the normal anatomy of the joint from birth that results in deterioration of the knee joint as people age (Käfer *et al.*, 2004). In addition to OA, several comorbid disorders that develop because of restricted mobility due to persistent pain in the joint can also lead to lifestyle diseases such as diabetes mellitus and

heart disease. Ultimately, it could lead to a decreased quality of life (Loeser & Shakoor, 2003).

A comparative study involving two participant groups, one with OA diagnoses and the other without OA, was carried out. Physical activity levels were evaluated in both groups. Information on any discomfort patients had or difficulties doing their regular physical activities was gathered. According to the study's findings, people with OA struggled with daily personal care, domestic chores, and social and communal activities (Gignac *et al.*, 2006).

The only treatment for advanced osteoarthritis is knee joint replacement surgery, although late-stage problems are specific to seniors (Jonsson *et al.*, 2016). Instead, an increasing number of people choose non-surgical treatments like homeopathy in the hopes of receiving long-term comfort (Murphy *et al.*, 2018). This case study describes a 60-year-old patient with persistent knee discomfort for three years.

Methodology

Objective – To evaluate the effectiveness of Homoeopathic medicine for knee osteoarthritis in enhancing the quality of life.

Study design – Case report.

Assessment – Western Ontario and McMaster University Osteoarthritis Index (WOMAC) and Modified Naranjo criteria for Homoeopathy (MONARCH) were used. The WOMAC index was taken before and after 6 months of Homoeopathic treatment to assess improvement, and MONARCH was taken to assess the causal relationship between the treatment and the patient's clinical outcome.

Case presentation

A 60-year-old woman presented with the complaint of bilateral knee osteoarthritis for 3 years, which is worsened by standing and walking and better by rest. She also had complaints of varicose veins on the left leg and diabetes mellitus for 2 years. She was taking

conventional medicine, which was giving pain relief, but due to those analgesics, she started to develop heartburn with acute gastritis, for which she was advised to take antacids. Due to these complaints, her normal day-to-day function was affected. Daily activities are managed with much difficulty and pain. In longing for long-term relief without many side effects, she approached homeopathic treatment; she was initially prescribed Bryoniaalba 200C. The choice of Bryoniaalba was based on its known efficacy in reducing joint pain and stiffness. She was advised to take one dose a week for one month. It gave her temporary pain relief, but the pain was frequently re-appearing. Then, by considering all the symptoms, she had general body weakness and other chronic diseases such as varicose veins in the left leg and diabetes mellitus. Homeopathic medicine Lachesis mutus 200C was advised to take one dose weekly for 5 months with a follow-up interval of one month. The choice of Lachesis mutus was based on its known efficacy in improving blood circulation and reducing varicose vein symptoms. Homeopathic medicines were classically selected by considering the symptoms of the patient. The 'Repertory' is a tool used to find the corresponding remedy to the symptoms expressed by the patient. In this case, repertory is used for the selection of the remedy, which is given in (Table 2).

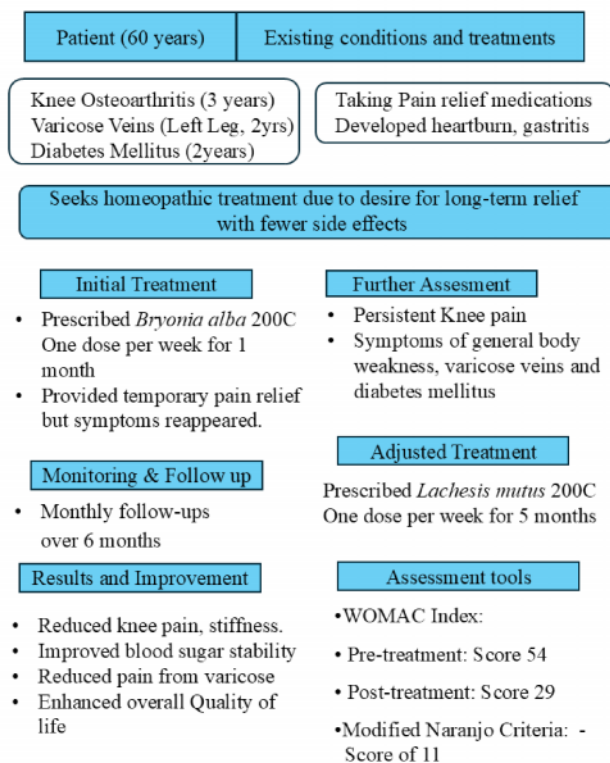
Following the comprehensive homeopathic treatment plan, the patient's quality of life significantly improved. Recurrent acute pain in the knee was reduced, her blood sugar level was maintained within the normal range, and varicose vein pain was alleviated. This case report is a beacon of hope, demonstrating that homeopathic treatment can provide relief from pain and stiffness in the knee joint, and improve overall health.

Result

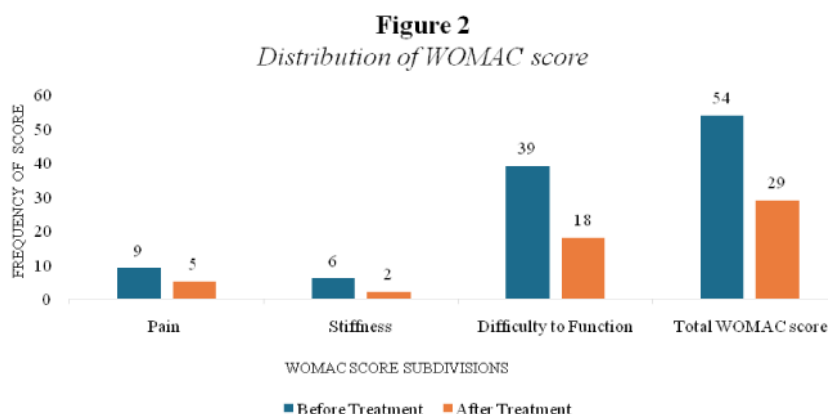
"The WOMAC questionnaire was utilized with individuals with hip or knee OA. It is an invaluable instrument for assessing the course of the illness and the likelihood of recovery following therapy. The

questionnaire provides three subcomponents to evaluate how OA progresses: Pain, stiffness in the joints, and difficulty in function (da Silva Júnior, 2023).

Fig- 1. Flow of Study



WOMAC index score before and after 6 months of Homoeopathic treatment was shown in (Figure 2) where all the sub-parameters of pain, which were before the treatment 9 and after treatment became 5, stiffness, which was scored before the treatment as 6 got reduced after the treatment to 2 and difficulty to function which was 39 reduced to 18 after the treatment. The total score before the treatment was 54, and after the treatment became 29. The reduction of the WOMAC index score suggests the betterment of the patient's complaints related to OA with the use of homoeopathic medicine.



Modified Naranjo Criteria were used to evaluate clinical case reports to determine the possibility of a causal association between homeopathic intervention and clinical results. A “probable” correlation between the medication and the result was indicated by the overall score of 8, which ranges from definite (e”9) to probable (5-8), plausible (1-4), and questionable (d” 0). This case showed a total score of 11 (Table 1), which signifies a definite relation between the medicine prescribed and the improvement of the patient (Van Haselen, R. A., 2016).

Table 1
Assessment of Modified Naranjo Criteria

S. No	Criteria	Score
1.	Was there an improvement in the main symptom or condition for which the homeopathic medicine was prescribed?	Yes:2
2.	Did the clinical improvement occur within a plausible time frame relative to the drug intake?	Yes:1
3.	Was there an initial aggravation of symptoms?	Yes:1
4.	Did the effect encompass more than the main symptom or condition, that is, were other symptoms ultimately improved or changed?	Yes: 1
5.	Did overall wellbeing improve?	Yes:1
6 (A)	Direction of cure: did some symptoms improve in the opposite order of the development of symptoms of the disease?	Yes:1
6 (B)	Direction of cure: did at least 2 of the following aspects apply to the order of improvement of symptoms: from organs of more importance to those of less improvement, from deeper to more superficial aspects of the individual, from the top downwards	Yes:1
7.	Did ‘old symptoms’ (defined as non-seasonal and non-cyclical symptoms that were previously thought to have resolved) reappear temporarily during the course of improvement?	Yes:1

8.	Are there alternate causes (other than the medicine) that with a high probability could have caused the improvement? (consider known course of disease, other forms of treatment and other clinically relevant interventions)	No:1
9.	Was the health improvement confirmed by any objective evidence? (in these cases: SCORAD and photographs)	No:0
10.	Did repeat dosing, if conducted, create similar clinical improvement?	Yes: 1
Total		11

Note: Maximum score: 13, minimum score: 6.

Discussion

Two common illnesses that become more common as people age are Knee OA and varicose veins, particularly in women. Standing posture, hard and heavy work, age, sex, BMI, and occupation are risk factors for both (Clarke *et al.*, n.d.).

According to some research, venous stasis and the inflammatory process can harm the subchondral regions, resulting in cartilage loss and osteoarthritis in the elderly (Cao *et al.*, 2023).

In a case-control study involving postmenopausal women, we discovered that patients with knee OA had a greater frequency of venous insufficiency and that the coexistence of these two conditions worsened pain and functional status (Bagis *et al.*, 2005). Though there was little data to conclude that OA and chronic venous insufficiency interact, some individuals with knee OA have enlarged legs and varicose veins (Mazieres *et al.*, 2001).

The WOMAC questionnaire has five questions in the pain component, with a minimum score of 0 and a maximum score of 20. Two questions measured joint stiffness ranges in scores from 0 to 8. The physical function test consists of 17 questions with a score ranging from 0 to 68. When combined, the three elements will yield a score ranging from 0 to 96. There are a total of 24 questions among the three components. Every question contains five possible answers on the Likert scale: none, mild, one, moderate, two, severe, three, and extreme. A higher score corresponds to increased joint stiffness, physical functional strain, and pain severity. The aggregate and

Table 2
Repertory – Medicine selection chart

Rubrics/Symptoms	Lach	Bry	Puls	Rhus-t	Calc	Sulph	Lyc	Apis	Kali-c	Nat-m
EXTREMITIES - PAIN - Knee	2	3	3	3	2	2	2	2	2	2
EXTREMITIES - PAIN - Knee - motion - agg	1	3	1	1	2	1	2	1	2	1
EXTREMITIES - PAIN - Knee - standing - agg	1	2	2	2	2	2	2	1	2	2
EXTREMITIES - PAIN - Knee - walking - agg	1	3	2	1	2	2	2	1	2	2
EXTREMITIES - PAIN - Knee - rest - amel	1	3	1	1	1	1	1	1	1	1
GENERALITIES - AGE - elderly people	3	1	2	2	2	2	3	2	2	2
EXTREMITIES - VARICOSE VEINS - Left	3	1	2	1	1	2	2	2	1	2
STOMACH - HEARTBURN	2	2	2	1	2	3	3	1	2	2
STOMACH - INFLAMMATION - Gastritis	2	2	1	1	2	3	2	1	2	2
GENERALS - DIABETES MELLITUS	2	1	1	1	1	2	2	1	1	2
EXTREMITIES - STIFFNESS - Knee	2	2	2	3	2	1	1	1	2	1
GENERALS - WEAKNESS	2	2	3	2	3	2	3	2	2	3
Total Score	22	25	22	19	22	23	25	16	21	22

individual subcomponent scores for pain, joint stiffness, and physical functional strain may be computed and assessed independently, a benefit of the WOMAC score. Also, many studies verified its clinical relevance (da Silva Júnior, 2023).

Conclusion

This case study shows the potential effectiveness of homeopathic treatment in alleviating symptoms and improving the quality of life for individuals with knee osteoarthritis (OA). The reduction in WOMAC scores after six months of homeopathic intervention suggests significant improvement in pain, joint stiffness, and functional ability. The Modified Naranjo Criteria score suggests that the homeopathic treatment is linked to the patient's improvement. While knee OA remains a common debilitating condition in the elderly, non-surgical approaches like homeopathy may offer a viable alternative for patients seeking long-term symptom relief with minimal side effects. Further studies with larger sample sizes are necessary to validate these findings and explore how homeopathic medicine may impact OA and associated conditions like varicose veins and diabetes. This study underscores the importance of exploring complementary treatments in managing chronic, age-related conditions to enhance patient outcomes and quality of life.

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Indian Journal of Gerontology

2025, Vol. 39, No. 1, pp. 97-115

ISSN : 0971-4189, UGC No. – List B, Science –121

Nutritional Status of Middle-Aged and Elderly Males of Medinipur Sadar Block, Paschim Medinipur, West Bengal, India

Arunima Kundu, Samir Behara, Shimul Roy

Department of Anthropology,

Vidyasagar University, Midnapore, West Bengal-721102

ABSTRACT

The nutritional and demographic transition in recent times has many challenges. The middle-aged and elderly population is one of the most vulnerable sections of the population to malnutrition. The present study was conducted among the middle-aged (45-60 years) and elderly (60+ years) population of Paschim Medinipur (West Bengal) to assess the nutritional status of tribal (Santal) and non-tribal (Hindu caste communities) participants. A total of 200 male participants (100 from each community) were selected for this cross-sectional study using purposive sampling. According to BMI and MUAC classifications, undernutrition is much higher among the tribal participants (42% and 56%) compared to non-tribal participants (23% and 40%), and the difference is statistically significant according to both BMI ($\chi^2=10.628$; $p<0.05$) and MUAC ($\chi^2=5.128$; $p<0.05$). Contrary to undernutrition, overnutrition is higher

among the non-tribal participants (19%) than tribal participants (8%). Central obesity is also higher among the non-tribal population (56%) than the tribal population (25%) according to WC ($\chi^2=19.940$; $p<0.05$) categories. The nutritional status of the study participants is highly associated with factors like ethnicity ($\chi^2=10.628$; $p<0.05$), family size ($\chi^2=13.538$; $p<0.05$), education ($\chi^2=12.873$; $p<0.05$) and income ($\chi^2=6.063$; $p<0.05$) of participants. The study found that undernutrition is a significant issue among tribal participants. At the same time, overnutrition is a concern among the non-tribal population, resulting in a high level of malnutrition across all groups. These findings underscore the need for targeted interventions to address the specific nutritional needs of these populations.

Keywords : Undernutrition, Overnutrition, Double burden of malnutrition, Geriatric population, Socio-economy

In middle and lower-income countries, the prevalence of undernutrition and nutrient deficiencies is a significant concern. Moreover, the global surge in overweight and obesity is a growing issue (UNFPA 2017; Nguyen *et al.*, 2021). India, in particular, is grappling with a dual burden of malnutrition, marked by a rise in overnutrition and a decline in undernutrition among adults (Dutta *et al.*, 2019). While over-nourishment is on the rise in the socio-economically developed strata of the Indian population, many tribal communities continue to battle high levels of undernutrition (Banik, 2009). A wealth of studies underscores the high prevalence of undernourishment among the Indian tribal population (Adak, 2006; Banik, 2008; Chakrabarty *et al.*, 2008; Banik, 2011; Das and Bose, 2015). Conversely, other research has documented a surge in overweight and obesity among the general population, particularly in mainstream urban communities (Riamei & Ghosh, 2019; Khan *et al.*, 2023; Singh & Chattopadhyay, 2023).

In middle and lower-income countries like India, undernutrition is more prevalent than overnutrition. However, rapid changes in diets and activity patterns have accelerated the risk of overweight and obesity (Abraham *et al.*, 2018), leading to the double burden of malnutrition. Undernutrition is associated with symptoms such as fatigue, tiredness, and susceptibility to infections, while overnutrition is linked to severe health conditions like diabetes, hypertension, and cardiovascular diseases (Kandapan *et al.*, 2022). The impact of malnutrition on the health status, overall life conditions, and the economy of the population is significant (Nazan & Buket, 2018; Obeng *et al.*, 2022). Malnutrition indirectly causes millions of deaths annually (CDC 2018; Roth *et al.*, 2018) and poses a significant threat to global public health (Nesa Priya, 2017).

The role of nutrition in healthy aging cannot be overstated (Khan *et al.*, 2023), and malnutrition in both groups is a serious public health concern. With advancing age, different co-morbidities have been observed alongside malnutrition. The prevalence of malnutrition among the elderly is significantly influenced by socio-demographic, psychological, educational, physiological, and personal factors (Arlappa *et al.*, 2015; Abraham *et al.*, 2018; Kushwaha *et al.*, 2020).

Understanding the nutritional status of the middle-aged and elderly population is crucial as it can help mitigate many vulnerabilities in the later stages of life (Rao, 2001; Nesa Priya, 2017; Kushwaha *et al.*, 2020; Khan *et al.*, 2023). Given the significance of this issue, the present study was undertaken to comprehensively assess the nutritional status of tribal and non-tribal male populations. This comprehensive assessment is a crucial step towards addressing the dual burden of malnutrition in India, as detailed in the following section.

Objectives of the Study

The specific objectives of the study were as follows:

1. To assess the nutritional status of tribal and non-tribal males of Midnapore Sadar block.

2. To examine the factors associated with the nutritional status of the study population.
3. To compare the nutritional status of tribal and non-tribal populations.

Method

A cross-sectional study was conducted among 200 male participants residing in Midnapore Sadar block, Paschim Midnapore district, West Bengal. The present study was conducted among older adults (45 years and above), including middle-aged 45-60 years (Ickwon, 2017) and the elderly (aged 60 years and above). Participants of this study were selected using the purposive sampling method. Among the 200 participants, 100 were from the Santal community (A recognized tribal community in West Bengal) and 100 from local Hindu caste communities (non-tribal). Primary data are of two types, viz. socio-demographic data and anthropometric data. Socio-demographic data was collected from the study participants using a structured schedule and interview method. Anthropometric measurements like Height, Weight, Mid-Upper-Arm-Circumference (MUAC), Waist Circumference (WC), and Hip Circumference (HC) were collected using standard measuring procedures (Lohman *et al.*, 1921). Data was analyzed using the Statistical Package for Social Science (SPSS) version 16. The mean and standard deviations of anthropometric and derived variables were also calculated. Appropriate statistical tests were conducted, and a significance level of $p \leq 0.05$ was used. The objectives and measurement procedures were explained to the participants, and verbal consent was obtained from them. Participation in the study was voluntary. Nutritional status was determined using the cut-off value proposed by the BMI category (WHO, 2006), WC category (WHO, 2000), MUAC category (Standardized Mid-Upper Arm Circumference Cutoffs for Adolescents and Adults, Food and Nutrition Technical Assistance III Project (FANTA, 2017), and WHR category.

Results

Table 1 shows the socio-demographic background of the study participants. Nearly all of the study participants were married (92%). Most participants live in extended family (58.5%) followed by nuclear family (34%). The table also shows that 62 percent of participants belong to the 45-60 age group, and the rest (37.5%) belong to the above 60 age group. Most people used to reside in Kanchcha house (45.5%), while 37.5 percent lived in Pacca house. The Occupation category shows seven types of occupational activity except unemployment (31%). The following activities are agriculture (23.5%) which shows the highest percentage, followed by labor (22%), businessman (8%), private job (6.5%), government job (3.5%), driver (3%), and self-employed (2.5%). The education category data shows that most people are pre-literate (33.5%), while 23.3 percent can only sign their name. Next, 19 percent of people completed their upper primary education, and only 11 percent completed primary education. The percentage of the people who fall under Higher Secondary (H.S.), Undergraduate (U.G.), and Post Graduate (P.G.) are 5 percent, 2.5 percent, and 0.5 percent respectively.

Table 1
Socio-demographic profile of the population

Variables	Category	n	%	Variables	Category	n	%
Ethnicity	Non-tribe	100	50	Occupation	Agriculture	47	23.5
	Tribe	100	50		service	20	10
Age group	60	125	62.5		Business	21	10.5
	≥ 60	75	37.5		Labour & craftsman	50	25
Marital status	Married	184	92	Education	Not working	62	31
	Unmarried	1	0.5		Pre-literate	67	33.5
	Divorce	1	0.5		Can sign	47	23.5
	Widower	14	7		Secondary	69	34.5
Type of family	Nuclear	68	34		H.S. and above	38	19
	Joint	15	7.5				
	Extended	117	58.5				

House type	Kachcha	91	45.5	Income	<5000	81	40.5
	Pucca	75	37.5		5001-10000	63	31.5
	Semi Pucca	34	17		10001-15000	33	16.5
	—	—	—		15001-20000	8	4
	—	—	—		>20000	15	7.5

Table 2 shows Differences in anthropometric variables of tribal and non-tribal populations. The result shows differences in anthropometric variables between tribal and non-tribal populations. The difference is significant for all variables ($p \leq 0.05$). The total mean value of anthropometric variables that means height, weight, Waist Circumference (WC), Hip Circumference (HC), and Mid-Upper-Arm-Circumference (MUAC) are 158.7 cm ($SD \pm 6.66$), 52.89 kg ($SD \pm 1.16$), 79.68 cm ($SD \pm 11.32$), 83.92 cm ($SD \pm 8.54$) and 24.07 cm ($SD \pm 3.47$) respectively. The mean values of the derived variables that mean Body Mass Index (BMI) and waist-hip ratio (WHR) are 20.94 ($SD \pm 4.20$) and 0.94 ($SD \pm 0.07$), respectively. Significant differences in nutritional status over ethnicity have been observed in the table.

Table 2

Differences in anthropometric variables of tribal and non-tribal population

Variables	Non-tribe		Tribe		Total		t value
	Mean	SD	Mean	SD	Mean	SD	
Height	160.03	± 7.28	157.38	± 5.71	158.7	± 6.66	2.86*
Weight	57.07	± 12.31	48.71	± 9.17	52.89	± 1.16	5.44*
WC	83.36	± 11.84	76.01	± 9.50	79.68	± 11.32	4.84*
HC	86.82	± 9.05	81.02	± 6.91	83.92	± 8.54	5.08*
MUAC	25.08	± 3.08	23.05	± 3.56	24.07	± 3.47	4.30*
BMI	22.25	± 4.44	19.64	± 3.52	20.94	± 4.20	4.59*
WHR	0.95	± 0.08	0.93	± 0.07	0.94	± 0.07	1.97*

* = statistically significant

Table 3 represents the nutritional status of the population according to ethnicity. Nutritional status was shown using the

undermentioned categories: BMI, WC, MUAC, and WHR. BMI shows that the prevalence of underweight among tribal males (42%) is more than that of non-tribal males (23%). MUAC category also shows that underweight is more prevalent among tribal males (56%) than non-tribal males (44%). Contrary to undernutrition, overnutrition is higher among the non-tribal population. WHR shows that the prevalence of obese participants is higher in the case of non-tribal males (31%) than that of tribal males (25%). WC shows that the prevalence of centrally obese participants is higher in the case of non-tribal males (56%) than that of tribal males (25%). The ethnicity of the participants is significantly associated with MUAC, BMI, and WC categories.

Table 3
Nutritional status of tribal and non-tribal participants

Nutritional Status	Tribe	Non-tribe	Total	Nutritional Status	Tribe	Non-tribe	Total
	n	n	n		n	n	n
BMI Category				WC Category			
Underweight	42	23	65	Normal	75	44	119
Normal	50	58	108	Centrally obese	25	56	81
Overweight	8	19	27	—	—	—	—
χ^2	10.628*			χ^2	19.940*		
MUAC Category				WHR Category			
Underweight	56	40	96	Normal	75	69	144
Normal	44	60	104	Obese	25	31	56
χ^2	5.128*			χ^2	0.893		

*=statistically significant; ($n=100$ in each group, so the percentage and frequency are the same)

Table 4 represents socio-demographic factors associated with nutritional status (BMI). The table shows that nutritional status (BMI) is associated with ethnicity, number of family members, education, and income. The prevalence of undernutrition is more prevalent among tribals, and overweight is more prevalent among non-tribals. The association is statistically significant ($p < 0.05$). The result also shows that the tribal participants who fall under the undernutrition

category also belong to the family with more than four family members. On the contrary, the non-tribal participants who fall under the overweight category also belong to the family with less than four family members. It leads to the fact that the greater the number of family members in any family, the greater the food will be divided among them. The number of family members is significantly associated with nutritional status ($p < 0.05$). Regarding education status, the result shows that undernutrition is more prevalent among the pre-literate group. With the increase in education status, the prevalence of undernutrition tends to fall off. Education plays a significant role in nutritional status. Hence, education status is significantly associated with nutritional status ($p < 0.05$). The income category shows that the person who earns less than Rs.12000 per month tends to exhibit more undernutrition than the participants who earn more than Rs.12000 per month. Hence, income is significantly associated with nutritional status ($p < 0.05$). No significant association has been observed between occupation and nutritional status in this study. The age group and occupation are not significantly associated with nutritional status in this study ($p > 0.05$).

Table 4

Socio-demographic factors associated with nutritional status

Socio-economic variables	Nutritional Status (BMI)			χ^2	df	p- value
	Undernutrition	Normal	Over- nutrition			
	n (%)	n (%)	n (%)			
Ethnicity						
Tribe	42(42%)	50(50%)	8(8%)	10.628*	2	0.005
Non-tribe	23(23%)	58(58%)	19(19%)			
Family member						
<=4	21(22.8%)	51(55.4%)	20(21.7%)	13.538*	2	0.001
>4	44(40.7%)	57(52.8%)	7(6.5%)			
Education						
Preliterate	30(44.8%)	33(49.3%)	4(6%)	12.873*	6	0.045
can sign	15(31.9%)	26(55.3%)	6(12.8%)			

Secondary	17(24.6%)	40(58%)	12(17.4%)			
H.S.	3 (17.6%)	9(52.9%)	5(29.4%)			
Income						
<12000	34(42%)	36(44.4%)	11(13.6%)	6.063*	2	0.048
>12000	31(26.1%)	72(60.5%)	16(13.4%)			
Occupation						
Agriculture	19(40.4%)	23(48.9%)	5(10.6%)	6.721	8	0.567
Service	5(25%)	11(55%)	4(20%)			
Businessman	4(19%)	12(57.1%)	5(23.8%)			
Labor & craftsman	18(36%)	28(56%)	4(8%)			
Unemployed	19(30.6%)	34(54.8%)	9(14.5%)			
Age group						
Middle age (<60)	46(71.9%)	78(72.2%)	23(88.5%)	3.167	2	0.205
Old age (e"60)	18(28.1%)	30(27.8%)	3(11.5%)			

*=statistically significant

Table 5 shows the socio-demographic factors associated with nutritional status (WC). The table shows that nutritional status (WC) is associated with ethnicity, number of family members, income, and education. The result shows that obesity is more prevalent among non-tribal males than tribal males. Ethnicity shows a significant association with nutritional status ($p < 0.05$). Income shows that the participants who earn more than 12000 rs per month tend to be centrally obese. On the other hand, the participants who earn less than 12000 rs per month are found to be normal. It may suggest that the more family income, the more money will be spent on food. Income shows a significant relationship with nutritional status ($p < 0.05$). Families that have more than four family members tend to show undernutrition, and families that have less than four family members tend to be more obese than their counterparts. Hence, family members are significantly associated with nutritional status ($p < 0.05$). The occupation category also shows no significant relationship with nutritional status ($p < 0.05$). Most participants who depend on agriculture for their subsistence and are labor or unemployed fall under the normal category. However, the majority of the participants who are servicemen and businessmen fall under

the obese category. Usually, the participants in agriculture, labour, and unemployed groups earn less than Rs.12000. Hence, occupation is not significantly associated with nutritional status ($p>0.05$). The age group is also not significantly associated with nutritional status in this study ($p>0.05$).

Table 5
Socio-demographic factors associated with central obesity

Socio-economic variables	Central Obesity (WC categories)		χ^2	df	p-value
	Normal	Obese			
	n (%)	n (%)			
Ethnicity					
Tribe	75 (75%)	25 (25%)	19.940*	1	0.000
Non-tribe	44 (44%)	56 (56%)			
Family member					
≤ 4	52 (56.5%)	40 (43.5%)	0.627	1	0.428
> 4	67 (62%)	41 (38%)			
Education					
Preliterate	48 (71.6%)	19 (28.4%)	6.521	3	0.089
can sign	26 (55.3%)	21 (44.7%)			
Secondary	37 (53.6%)	32 (46.4%)			
H.S.	8 (47.1%)	9 (52.9%)			
Income					
< 12000	59 (72.8%)	22 (27.2%)	10.053*	1	0.002
> 12000	60 (50.4%)	59 (49.6%)			
Occupation					
Agriculture	36 (76.6%)	11 (23.4%)	10.114*	4	0.039
Service	9 (45%)	11 (55%)			
Businessman	9 (42.9%)	12 (57.1%)			
Labor & craftsman	28 (56%)	22 (44%)			
Unemployed	37 (59.7%)	25 (40.3%)			
Age group					
Middle age (< 60)	88 (75.2%)	59 (72.8%)	0.141	1	0.707
Old age (≥ 60)	29 (24.8%)	22 (27.2%)			

*=statistically significant

Discussion

Nutritional status is vital for a community's well-being (Kesari & Noel, 2023). Malnutrition directly or indirectly causes many problems, and the vulnerability increases with age (Norman *et al.*, 2021). Many socio-demographic and economic factors largely influence a person's nutritional status. In the present study, factors like ethnicity, age group, occupation, marital status, family type, house type, education, and income were considered or better understood to influence the participants nutritional status. The socio-economic profile of the participants is shown in Table 1. We can understand that the study population could be more economically sound as most (71.5%) earn Rs. <10000/-. Lower educational (81% of participants with secondary or bellow education; 33 percent preliterate) and occupational status (mainly agriculture and labour) also show that the present study population is socio-economically underprivileged. Most of these socio-economic factors are associated with the participants' nutritional status, which will be discussed in the later parts.

The tribal communities in India are comparatively more vulnerable to many health issues, including nutrition. Comparative account of anthropometric variable shows much lower mean values for tribal participants, and the difference in mean values tribal and nontribal participants are statistically significant in height ($t=2.86$; $p\leq 0.05$), weight ($t=5.44$; $p\leq 0.05$), WC ($t=4.84$; $p\leq 0.05$), HC ($t=5.08$; $p\leq 0.05$), MUAC ($t=4.30$; $p\leq 0.05$), BMI ($t=2.86$; $p\leq 0.05$) and WHR ($t=1.97$; $p>0.05$). Comparative studies also showed lower anthropometric measurement values among tribal populations (Karim *et al.*, 2023). Undernutrition is much more prevalent among the tribal participants (BMI-42%, MUAC-56%) than among non-tribal participants (BMI- 23%, MUAC-40%). Contrary to undernutrition overnutrition is much higher among non-tribal (BMI-19%, WC-56%, WHR-31%) population compared to tribal population (BMI-8%, WC-25%, WHR-25%). The difference in nutritional status of tribal and nontribal participants is statistically significant in BMI (χ^2

=10.628, $p < 0.05$) and WC ($\chi^2 = 19.940$; $p \leq 0.05$) categories. Many other studies also reported higher undernourishment among tribal populations (Das and Bose, 2015; Basar & Das, 2018) and higher overnourishment among non-tribal populations (Pradhan *et al.*, 2019; Subramanian *et al.*, 2006). Results from all these studies, including the present study, suggest that the tribal population is more vulnerable to undernourishment, and overnourishment is more serious among the nontribal population. The overall undernutrition is high among the participants (32.5%). Many other studies in different communities and areas of India show higher (Rai *et al.*, 2018; Mustafa & Singh 2024) and lower (Bhandari *et al.*, 2018; Dutta *et al.*, 2019) prevalence of malnourishment, suggesting a large disparity among Indian populations.

Many socio-demographic and economic factors influence nutritional status. The present study considered factors like ethnicity, family size, education, income, and occupation. Most of the mentioned factors are statistically significantly associated with the nutritional status (BMI categories) of the participants, i.e. ethnicity ($\chi^2 = 10.628$; $p \leq 0.05$), family size ($\chi^2 = 13.538$; $p \leq 0.05$), education ($\chi^2 = 12.873$; $p \leq 0.05$) and income ($\chi^2 = 6.063$; $p \leq 0.05$). Undernutrition is more prevalent in tribal populations, members of more prominent families (>4 members), those with lower education levels, and lower income groups compared to their counterparts. Other studies have also reported that these factors are significant in a person's nutritional status (Sen *et al.* 2013; Rengma *et al.*, 2015). So, to fight undernourishment, improvement in this socio-economic factor is significant.

Overnutrition is also a severe nutritional challenge (Nathan *et al.*, 2017), which comes with a lot of complications (Zhang *et al.*, 2008; Gupta *et al.*, 2023), and it's an increasing problem (Venkatrao *et al.*, 2020; WHO, 2024). Central obesity is also high among the study population. Central obesity is higher among the nontribal population (56%), higher income group (49.6%), and in occupations with less physical activity (service–55%, Business–

57.1%) compared to Santals (25%), lower income groups (27.2%) and occupation with more physical labour (agriculture- 23.4 percent, labour and craftsman-44%). Many other studies also reported that a higher prevalence of overnutrition is associated with these factors (Abraham *et al.*, 2017; Nazan & Buket, 2018; Cheah *et al.*, 2020; Kandapan *et al.*, 2022). There is no statistically significant association between family size and educational level with central obesity in the present study population. While ethnicity ($\chi^2=19.940$; $p\leq 0.05$), income ($\chi^2=10.053$; $p\leq 0.05$), and occupation of participants ($\chi^2=10.114$; $p\leq 0.05$) has a statistically significant association with the nutritional status of participants. Many other studies reported a high level of central obesity (Pradeepa *et al.*, 2015; Gupta *et al.*, 2023), especially among the non-tribal population (Rautela *et al.*, 2018; Chaudhary & Sharma, 2023). Like many other areas, the present study area is also facing a two-faced challenge with undernutrition (Dutta *et al.*, 2019) and overnutrition (Nguyen *et al.*, 2021; Kandapan *et al.*, 2022; Dwivedi *et al.*, 2023) with a very high level of malnutrition (Govind *et al.*, 2020).

In the present area, undernutrition is higher among tribal community participants, and overnutrition is higher among the non-tribal population. At the same time, overall malnutrition is high among both communities, creating a double burden of malnutrition.

Conclusion

In this study, the prevalence of undernutrition is more than two times higher than overnutrition. Based on ethnicity, undernutrition is more prevalent among tribal males, and overnutrition is prevalent among non-tribal males. The better nutritional status of the adult and elderly population is associated with ethnicity, number of family members, education, and income. These socio-demographic factors influence the nutritional status of the population. Only occupation does not seem to influence the nutritional status of the population. This may suggest that the non-tribal population is at risk of developing lifestyle disorders.

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Indian Journal of Gerontology

2025, Vol. 39, No. 1, pp. 116-128

ISSN : 0971-4189, UGC No. – List B, Science –121

Gender Differences in Emotional Regulation among Urban Elderly Men and Women

Priyansi Kanakia, and Nasreen Ansari

Karnavati University, Gandhinagar, Gujarat-382422

ABSTRACT

This study uncovers the gender differences in the Emotion Regulation (ER) mechanisms of the 110 metropolitan elderly persons (55 males and 55 females) selected from the urban housing complexes of Ahmedabad based on age sixty years and above. The study aimed to investigate the elderly population's mental health, particularly emotional resilience, which is crucial to help them endure life's challenges and maintain a high quality of life. The Emotion Regulation Questionnaire (ERQ) was used to evaluate two methods of emotional regulation: cognitive reappraisal and expressive suppression. The results revealed no significant gender disparities in the overall use of emotional regulation. However, they did indicate a slight trend suggesting women use the cognitive reappraisal strategy more than men to regulate ER. This study's findings challenge the notion that ageing is linked to a decline in emotional well-being and advocate for initiatives to enhance the emotional health of this

population. Identifying these gender differences can inform the development of public health policies and psychological support services that cater to the emotional needs of both men and women, potentially revolutionizing how we approach elderly care. This, in turn, can strengthen seniors' social relationships, reduce loneliness, and improve their quality of life, offering hope for a brighter future for the elderly.

Keywords : Emotional regulation, Cognitive reappraisal, Expressive suppression, Gender differences, Elderly well-being

As people age, they face more challenges, necessitating creative solutions (Sirbu, 2022). As young people leave for better opportunities, the urban elderly in India face social isolation and empty nest syndrome (Rath, 2024). They also struggle to adjust to technology, which makes them feel alienated and isolates them from family (Segura *et al.*, 2023). Their mental distress is compounded by changing dynamic relationship frameworks and adapting to new social standards. Specialized therapies are needed to fulfill urban-aged people's mental health needs.

Managing emotions allows us to react constructively to life's variations. Lack of emotional regulation impairs daily living, causing physical and mental health difficulties. Understanding older folks' quality of life requires understanding mental and physical health. Elderly people have better emotional management, dispelling the myth that ageing means decline and deterioration. This suggests a smaller, more intimate social group (Christopher & Facal, 2023).

Given these problems, it is essential to comprehend the emotional regulation mechanisms employed by the elderly to manage their stressors. Hence, effective emotional regulation skills, including cognitive reappraisal and expressive suppression, are essential for assisting the elderly in sustaining emotional stability and enhancing well-being (Gross, 2002; Gross & John, 2003). Cognitive reappraisal entails reinterpreting adverse experiences in a positive light, therefore

diminishing the severity of unpleasant feelings. Although expressive suppression is less efficacious in diminishing negative emotions, it aids in regulating their external manifestation, mitigating social consequences (John & Gross, 2004). Consequently, by advocating for adaptive emotional regulation techniques, especially cognitive reappraisal, the emotional well-being and happiness of the older urban demographic may be enhanced. Gross and John (2003) conducted an additional study examining the effects of emotion management strategies, namely suppression and reappraisal, on social relationships, emotional well-being, and overall well-being through five investigations. Their findings revealed that suppressors exhibited and articulated more significant negative emotions and diminished enjoyment, while reappraisers showed superior interpersonal functioning and well-being.

The Socioemotional Selectivity Theory (SST) asserts that as individuals age, they prioritize emotionally significant goals and experiences because they perceive time as finite (Carstensen *et al.*, 1999). This transition profoundly influences the emotional regulation of elderly persons. Carstensen, *et al.*, (2003) assert that older persons prefer cognitive reappraisal versus expressive suppression, which is consistent with their objective of enhancing pleasant emotional experiences. Thus, this facilitates more effective management of stress, anxiety, and depression, thereby improving general well-being.

Nonetheless, studies have also concentrated on gender disparities in emotion regulation. Men and women may face different emotional challenges as they age, influenced by biological factors and societal norms. Men and women demonstrate significant differences in emotional processing, stress management, and emotional regulation, which can significantly affect mental health, social interactions, and overall well-being in later life. (Nixdorf *et al.*, 2023). For instance, men may fail to accept their emotions due to conventional gender standards that restrict emotional sensitivity. At the same time, women may struggle to achieve emotional clarity, making it harder for them to negotiate complex emotional landscapes. Understanding these gendered differences is essential for designing interventions that

improve both genders' emotional well-being and healthy ageing. Urban seniors experience extra pressures such as social isolation and quickly changing technical and social surroundings, making this crucial.

This study explores gender differences in emotional regulation among older urban men and women, focusing on cognitive reappraisal and emotional suppression strategies. The research underscores the urgent need for tailored, gender-sensitive treatments to address the emotional well-being of the elderly in urban environments. While current research mainly focuses on business urban populations, the impact of urban stressors and social isolation on gender disparities is not fully understood. This study aims to fill this gap and develop interventions that can improve the emotional health of both genders in the context of healthy ageing. Urban seniors experience extra pressures such as social isolation and quickly changing technical and social surroundings, making this research crucial for developing effective interventions.

Objectives of the Study

1. To examine the notable gender disparities in emotional regulation among older urban males and females.
2. To examine the notable gender disparities in emotional regulation strategies, specifically Cognitive Reappraisal and Emotional Suppression, among older urban males and females.

Methodology

Sample

Using a quantitative, non-experimental design, the study looked at emotional regulation in metropolitan men and women over 60 and above. A purposive sampling method was used to select 110 participants from prominent private housing estates in Ahmedabad, comprising 55 males and 55 females. Participants of both genders were admitted to the study after giving informed consent. Still, to maintain the accuracy and consistency of the data, those with severe cognitive impairments or long-term physical or mental health issues were

excluded. A standardized, self-administered paper-pencil survey was used to collect data, and it gave deep insights into the targeted demographics' emotional regulation techniques. After completing the study, men and women were informed about the importance of the survey. Those requiring assistance understanding some questions were explained in their local language to reduce their apprehension.

Tools used

A standardized questionnaire and an Emotional Regulation Questionnaire were used to collect the data.

Emotional Regulation Questionnaire : The Emotion Regulation Questionnaire (ERQ) is a 10-item self-report instrument intended to evaluate two emotion regulation strategies: expressive suppression and cognitive reappraisal, as delineated by Gross's framework. The ERQ comprises six items that examine cognitive reappraisal and four that evaluate expressive suppression. Participants evaluate their agreement with each item using a 7-point Likert scale, where 1 signifies significant disagreement, and 7 indicates strong agreement (Maria Jose' Gutiérrez-Cobo *et al.*, 2021). Items 2, 4, 6, and 9 correspond to the expressive suppression dimension, whereas items 1, 3, 5, 7, 8, and 10 relate to the cognitive reappraisal dimension. Each facet is scored separately to maintain distinctiveness in analysis. The scale has demonstrated good reliability, with Cronbach's alpha coefficients ranging from 0.73 to 0.79 and test-retest reliability of 0.69 (Saleem *et al.*, 2019). The highest possible score on the ERQ is 70, while the lowest is 10, indicating the range of potential responses.

Data Analysis

Independent sample t-tests were performed for each hypothesis to investigate gender disparities in emotional regulation. The preliminary experiment tested that elderly urban males and females had similar affect regulation mechanisms. The second t-test tested the hypothesis that Cognitive Reappraisal and Emotional Suppression have no gender differences. Both analyses used a 95 percent confidence interval, and Levene's test checked variance equality. Statistical investigations using SPSS software showed that gender

strongly influenced older urban consumers' discrete emotion control strategies.

Ethical Approval : The study received Ethical Approval from the University Ethics Committee Review of Karnavati School of Research, Karnavati University. The participants were informed about the research in a language they comprehended, and informed consent was obtained.

Results

Table 1

Gender Distribution of Participants

Descriptive Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Emotional Regulation	Male	55	46.9455	8.88073	1.19748
	Female	55	49.0727	9.61067	1.29590

Note. N=110

Table 1 presents the descriptive data for emotional regulation scores categorized by gender. Females (M = 49.07, SD = 9.61) exhibited marginally superior emotional control scores compared to males (M = 46.95, SD = 8.88). Nonetheless, both sexes exhibit similar degrees of variability, as evidenced by the standard deviations.

Table 2.

Independent Samples t-Test for Emotional Regulation by Gender

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Emotional Regulation	Equal variances assumed	.538	.465	-1.206	108	.231
	Equal variances not assumed			-1.206	107.333	.231

Note. The t-test compares emotional regulation scores between male and female participants (N = 110). A p-value exceeding .05 signifies the absence of a statistically significant difference between genders.

Table 2 presents the test results employed to compare the mean scores of two independent samples regarding the emotional control of male and female participants. The Levene test for homogeneity of variances indicated $F(1,108) = 0.538$, $p = 0.465$, suggesting that the null hypothesis of homogeneity is upheld. The independent samples t-test results indicate that the differences in emotional control between male ($M = 46.95$) and female ($M = 49.07$) individuals are not significant, with $t(108) = -1.206$, $p = 0.231$. The probability measures indicating no differences between the two groups is $p > 0.05$, $p = 0.231$. Consequently, the initial hypothesis of this study – ‘there is a significant difference in emotional regulation strategies between elderly urban men and women’ – must be rejected, as the analysis of results revealed no significant difference in emotional regulation scores between the genders.

Table 3

Group Statistics for Emotional Regulation, Cognitive Reappraisal, and ES by Gender

Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Emotional	Male	55	46.9455	8.88073	1.19748
Regulation	Female	55	49.0727	9.61067	1.29590
Cognitive	Male	55	28.0364	6.59114	.88875
Reappraisal	Female	55	30.3818	6.25830	.84387
Emotional	Male	55	18.9091	5.30992	.71599
Suppression	Female	55	18.6909	5.48018	.73895

Note. $N = 110$. Average scores, standard deviations, and standard errors of emotional regulation, cognitive reappraisal, and emotion suppression (ES) were categorized by gender.

Table 3 shows the group averages of emotional regulation, cognitive reappraisal, and ES scores for both male and female individuals. Females had better scores in ER ($M = 49.07$) and CR ($M = 30.38$) than males ($M = 46.95$ and 28.04 respectively). Males and females exhibited comparable scores in emotion suppression

(Males: $M = 18.91$, Females: $M = 18.69$ with slight variation in standard error between the groups. These descriptive results are consistent with the results presented in Table 5 above. Based on present findings, it may be concluded that there are gender differences in emotional regulation, namely cognitive reappraisal and emotional suppression, among elderly urban men and women, which are negated by these findings.

Table 4.

T-test for independent samples based on gender for emotional suppression, cognitive reappraisal,

	T-test for Equality of Means			
	t	Df	Sig. (2-tailed)	Mean Difference
Cognitive Reappraisal	-1.914	108	.058	-2.34545
Emotional Suppression	.212	108	.832	.21818

Note. $N = 11$, mean differences, p -values, degrees of freedom (df), and t -values

Table 4 displays the independent samples t -test results for emotional suppression and cognitive reappraisal in older urban men and women. The results of the cognitive reappraisal t -test approached significance; however, there was no statistically significant difference between the genders ($t(108) = -1.914$, $p = .058$). This shows that the difference was insufficient to meet traditional statistical criteria despite a trend showing that women do somewhat better than males in cognitive reappraisal. Regarding emotional suppression, the t -test revealed no discernible gender difference ($t(108) = 0.212$, $p = .832$), suggesting that men and women use it to similar degrees. Consequently, the ideas are rejected, given the previously indicated data.

Discussion

This study examined how elderly men and women handle emotional stress in metropolitan settings and gender differences in emotional regulation. (Forgas & Fitness, 2008). According to gender stereotypes, women are more susceptible to mood, feelings, and

affect, while men avoid processing and reporting feelings. (Kaur *et al.*, 2022). Later life concerns include retirement, health issues, and societal changes, making self-regulation of emotions essential (Aldwin, 2014). Our results showed no significant difference between the two sexes in emotional regulation mechanisms, suggesting that both may handle stressors similarly in this age group. This marked contrast to other studies may be due to the study's nature. The life-span perspective and socioemotional selectivity theory can be used to conclude (Carstensen *et al.*, 2003; Lockenhoff & Carstensen, 2004). According to this idea, as people get older, they focus on priorities and goals since time is limited. For seniors, narratives center on emotionally charged events and connections, emphasizing affective well-being without new or distant goals. According to Carstensen, aging increases emotional regulation and shifts toward problem-solving and positive feelings. (Kaliterna Lipovčan, 2009).

A combination of potential consequences and age-related factors may have explained this study's gender-neutral emotional regulation. The population's urban origins suggest that cultural factors played a significant role because urban groups have better access to health, nutrition, school attendance, and social care. Urban men and women can equally get anger management training, narrowing social power disparities. City residents are also more likely to have completed post-secondary education, which may help men and women manage their emotions. Since both sexes are stronger at coping with emotional pressures, socioeconomic and psychological resources may explain the similarities.

People may acquire ideas and behaviour habits that become inflexible over time. Due to rigidity, reactions to some cues may become highly similar, and men and women may use comparable emotional management strategies. How individuals warm quickly to express strongly polarized opinions may indicate inflexibility and the building of corroborative emotional response patterns over time. In major urban regions, developing cultural ways of expressing feeling states may have destroyed conventional male and female scripts that

shaped sensations differently. Due to age, both sexes reach an optimal psychological maturity where they employ similar methods to regulate their emotions.

Lastly, the lack of substantial differences between men and women in this study could be explained by the fact that social support networks in urban contexts are typically solid and well-developed. This could have reduced the requirement for separate gendered coping techniques.

Limitations & Future Research

The studies' constraints on the issue are significant factors or limitations that always exist while researching a subject and must be considered when evaluating the results.

Culture and personality may have made specific questions unimportant. Question comprehension may have been hindered by reading issues. Gender differences, not emotional control or adoption, were the focus. A paradigm response can be biased. Future studies should examine ER's environmental and psychological causes. Continuous research in this understudied interdisciplinary topic should focus on gerontology, urban sociology, and psychological toughness. More studies can help us understand how social capital, SES, and life course trajectories affect ER in older adults. Longitudinal and mixed research designs will also improve the understanding of gerontology. Exploring dematerialized literacy and telemedical therapies will help us understand how technology can improve the elderly's affective wellness through cultural, educated urban literacies.

Implications

A large number of the business and educated classes are aging, which means that there are vast implications for their mental health that require further research. It focuses on mental health services tailored for people, specifically training them on emotional strength and remediating or absorbing them into society or work. There is another reason why it is necessary to show such a population the

facilities where they can voice their feelings and understand the additional peculiarities of the retired life, duties, loneliness, and staying relevant. Finally, there should be priority legislative measures through policy reforms and psychoeducation concerning this aspect, acknowledging the unique role of emotional regulation.

Conclusion

This research examined gender disparities in emotional management techniques among older metropolitan males and females. The results indicated no substantial gender disparities in the utilization of cognitive reappraisal or emotional suppression methods, implying that both men and women adopt analogous emotional coping mechanisms as they mature. These findings indicate that aging emphasizes emotional stability and well-being, reducing gender-based differences. The study's limitations, including cultural biases and insufficient investigation into the rationale for strategy utilization, underscore the necessity for more extensive research in this domain.

Acknowledgment : The authors thank Dr. Kishor Bhanushali, Director of Karnavati School of Research, Gandhinagar-382422, (Gujarat), for his valuable help.

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Indian Journal of Gerontology

2025, Vol. 39, No. 1, pp. 129-156

ISSN : 0971-4189, UGC No. – List B, Science –121

The Landscape of Urban Marginality : Exploring Social Inequalities in Old Age in India

Yatish Kumar

Indian Social Institute, New Delhi-110003

ABSTRACT

This study aims to provide a conceptual outline for understanding the nuances of marginality and how social inequality and gender disparities can exacerbate vulnerabilities in old age. The findings highlight the increasing complexity of life for older adults in urban areas, necessitating multifaceted strategies for addressing their needs. It sheds light on various factors deeply intertwined with social inequalities and the limited representation of certain groups in mainstream activities. Drawing from data collected from multiple sources and building upon previous studies, this research underscores the importance of addressing social and cultural practices to facilitate healthy ageing in urban environments. Further, this study emphasizes the crucial role of community involvement in implementing remedial measures at institutional or residential levels to address the concerns surrounding the cultural, socio-economic, and community aspects of elderly life in metropolitan cities.

Keywords : Ageing, Inequality, Marginality, Urban and Women

Background

Population ageing and urbanisation are significant global trends currently shaping the world and will continue to do so in the future. Over half of the worldwide population (54 per cent) resides in urban areas, a figure expected to increase to 66 per cent by 2050 (HelpAge International, 2016). Advanced marginality in the post-Fordist context of Western market economies means isolation and exclusion from the mainstream economy and society, while in China, urban marginality is very much the necessary condition for, and engineered outcome of, structural competitiveness (Wu, 2009). Wacquant (1999) has identified four structural logics that fuel the new marginality, i.e. (i) the macro social dynamic, the resurgence of social inequality, (ii) the economic dynamic: the mutation of wage labour, (iii) the political dynamic: the reconstruction of welfare states and (iv) the spatial dynamic: concentration and stigmatisation to discussed the urban poverty in western metropolis. It has also been reported that, in urban slums, healthcare infrastructure and the availability of healthcare services are at a low level. In the recent decade, rapid urbanisation has occurred in Indian cities. Urban places dealing with climate change, dynamics of poor housing, water shortage and inaccessible of drinking water and sanitation with poor access to healthcare services. Individuals in urban areas, especially those living in slums are faced with a dual burden of ageing and poverty that push them into a state of increased vulnerability (Ghosh & Mukhopadhyay, 2021). Generally, marginality occurs in areas which experience a convergence of political, cultural, economic and environmental problems (Mehretu *et al.*, 2000). The author of this research focuses on the following interests: (i) who is urban marginal, (ii) what are the consequences of this marginality, (iii) what is the key causing of marginality, (iv) perspectives of community rejoinders on marginality in urban settings, and (v) identification of institutional protection for this marginality especially in old-age. In the past decades, the incidences of growing aging have accelerated , and their utmost concerns will

be crucial for sustainable aging. In the context of the present work, the socioeconomic interpretation of marginality implies that the elderly could be described as being socially isolated. Poverty and social exclusion of older adults in deprived areas could be described as multi-dimensional concerns in Indian society. A report by OECD published in (2015) provides several policy strategies for actions in ageing cities. An implicit or explicit policy perspective on sustainable aging in cities indicates that Sustainable Development Goals (SDGs), agreed upon in 2015, promote healthy aging and tackle the critical risk factors linked with urban living (HelpAge International, 2016).

Townsend (1987) defined deprivation as *a state of observable and demonstrable disadvantage relative to the local community or the wider society or nation to which an individual, family or group belongs*. Jarman (1983) identified underprivileged areas based on social and service factors. In this study, the individual-level risks and adverse health outcomes are associated with social isolation later in life (Weldrick & Grenier, 2018). This also highlights the importance of social capital access, enabling older citizens to maintain productive, independent, and fulfilling lives (Cannuscio *et al.*, 2003). Factors such as lack of social capital, nuclearisation of households, modernization, and intergenerational changes are the possible forces deeply responsible for social/physical isolation and financial crisis in old age (Kumar & Bhakat, 2022).

Database and Research Design

The study examines the contextualization of marginalized older adults in metropolitan areas using data from various sources like the Longitudinal Ageing Study of India (LASI) Wave 1 (2017-2018), NSSO 75th round (2017-18), National Crime Records Bureau report (2021), and Census of India (2001-2011). Over the past several decades, the number of older adults aged 60 years or above has been steadily increasing, particularly in countries like India, where the longevity of older adults is a significant concern. Urban ageing highlights challenges such as financial vulnerability, lack of post-

retirement benefits, and inadequate old-age pensions that are crucial in understanding the issues faced by marginalized older adults. According to the 2011 Census, the older population in India was 104 million, accounting for 8.6 per cent of the total population. By 2026, the elderly population will reach 173 million, constituting 12.4 per cent. The proportion of urban elderly individuals (above 60 years) to the total urban population has risen from 6.7 per cent in 2001 to 8.1 per cent in 2011. The study also aims to explore the impact of social inequalities and income disparities on active ageing in urban settings, using the United Nations standard of age 60 to define “older or elderly” individuals.

Table 1*Trends of Urbanisation in India 1961-2011*

Year	Urban Population	Share of Urban Population to Total Population (%)	Number of Cities/Towns	Annual Exponential Urban Growth Rate (%)	Percentage Share of Urban Elderly Population in Total Population	
					Male	Female
1961	78.94	19.97	2657		4.42	5.11
1971	109.11	19.91	3081	3.23	4.73	5.26
1981*	159.46	23.34	3981	3.79	5.08	5.69
1991*	217.55	25.72	4615	3.09	5.59	6.01
2001	285.36	27.86	5161	2.75	6.25	7.21
2011	377.10	31.16	7933	2.76	7.17	8.52

Explanatory Note: *As the 1981 Census was not conducted in Assam, and the 1991 Census was not held in Jammu and Kashmir, the population of India includes projected figures for these states in those periods.

Source: Census of India, 1961-2011

Urban population in India has grown from 78.9 million in 1961 to 377.1 million in 7933 cities. *It is projected that by 2050, around 2.5 billion more people will be added to the world's urban population, which will happen in developing countries. Thus, it is projected that 404 million inhabitants will be added to India's urban population during the same period* (Abhisheket al., 2017). This section includes data relating to different aspects of urbanisation,

such as the share of urban population to total population, the number of cities and the exponential urban growth rate. Moreover, it shows the growth of the elderly population in 1961-2011. In order to support affordable housing in metro cities, “*the Delhi Development Authority introduced a senior citizen housing scheme which proposes to build 2,500 one-room studio apartments, measuring 40–45 sq.m for the senior citizen of 60 years of age or above*” (GoI, 2016). Social diversity in Indian society is still an area of multiple folds. Older adults in the socio-economically disadvantaged group (SEDG)¹ require particular interventions to maintain their healthy lives. According to the census of India 2001, around 6.9 percent of the elderly were scheduled caste, and this share increased to 0.9 percent in 2011. Furthermore, about 6.9 percent of the elderly were scheduled tribe in (2011) followed by 7.0 percent in rural and 5.5 percent in urban areas.

What is Marginality?

To begin, the definition of marginality is “an involuntary position and condition of an individual or group at the margins of social, political, economic, ecological, and biophysical systems, that prevent them from access to resources, assets, services, restraining freedom of choice, preventing the development of capabilities, and eventually causing extreme poverty” (Von Braun & Gatzweiler, 2014). This term, explained by scholars globally in various disciplines and contexts, holds universal relevance. Historically, the concept of marginality was introduced in 1928 in an essay by Robert Park titled “Human Migration and the Marginal Man”. Although primarily concerned with migration, the essay marked the beginning of the exploration of marginality (Dunne, 2005). Park, in his 1928 work *Human Migration and the Marginal Man*, notes:

When the traditional organisation of society breaks down, as a result of contact and collision with a new invading culture, the effect is, so to speak, to emancipate the individual man (Park 1928, p. 887).

India has been witnessing a rapid change in the culture, rituals and social stratification at different levels. It has happened chiefly due to mobility within or outside the country, widening economic vulnerability and shifting the curves of responsibility and living patterns in families. More specifically, “Marginality is a complex condition of disadvantage that individuals and communities may experience because of vulnerabilities which may arise from unequal or inequitable environmental, ethnic, cultural, social, political and economic factors” (Mehretu *et al.*, 2000). In the past, marginality was generally visualised as a discipline of vulnerable groups unable to access equal resource mobilisation. It has been long discussed that urban margins are subject to multiple negligence and need institutional interventions and removal of social stratifications. In addition, Gurung and Kollmair (2005) described marginality as generally used to describe and analyse sociocultural, political and economic spheres to which disadvantaged people struggle to gain access. Similarly, Hall (1999) noted how marginalisation was seen as a sociopolitical process, producing both vulnerabilities (risks) and strengths (resilience). The crucial cause of marginality is the combination of social segregation, poverty, lack of rights, geographical isolation, and systemic disparities that prevent marginalised individuals and groups from fully participating in society and accessing the resources and opportunities available to the mainstream section. The policy framework calls for integrated strategies addressing the structural forces of poverty, exclusion, and ecological degradation to overcome marginality’s complex, systemic drivers. More pointedly, social networks, as a critical form of social capital, play a significant role in fostering cultural autonomy within marginalized urban communities, enabling them to cope with social isolation and weakening ties between individuals and communities.

Who are the Marginalised Poor?

Marginality is an involuntary position and condition experienced by individuals or groups at the peripheries of social, political, economic, ecological, and biophysical systems. The concept of marginality overlaps with poverty as a relative concept and as a

concept of capability deprivation (Sen, 1981; Sen, 1999) but includes spatial and environmental dimensions. Atkinson (1998) identified a three-way relationship between relativity, agency, and dynamics. Relativity implies that exclusion is always defined in comparison to other individuals or groups who occupy similar space and time. Agency means that someone or something actively generates exclusion. Finally, dynamics refers to the fact that exclusion is generated by various social and economic factors that negatively impact future participation in society. Individuals or groups are socially 'excluded' when they lack effective participation in critical activities or benefits of the society in which they live (Razer *et al.*, 2013). The countenance of 'marginality' is widely used in different contexts. According to Varghese and Kumar (2022), "*term marginalised refers to people or communities on the lower spectrum of the hierarchy in terms of economic, social or cultural resources or power*". In other words, *marginalisation* may be defined as a process or a condition that prevents individuals or groups from entirely involvement in social, economic and political activities. Over the past several decades, India has significantly reduced overall poverty as measured by different calculations. Liberalisation and privatisation have increased income inequality (Wu, 2004). In the Indian context, the New Economic Policy of 1991 encompassed three significant elements: liberalisation, privatisation, and globalisation. These reforms significantly influenced various aspects of the economy and society. Urban marginality has far-reaching consequences for older adults' physical, financial, mental, and social well-being. Addressing the systemic drivers of urban marginalisation is crucial for promoting inclusive and affordable living. When part of a broader, multi-pronged approach, these efforts can significantly improve equity and social sustainability in cities. Institutionalised collaboration with marginalised communities is essential for developing tailored solutions, offering hope for a more inclusive future.

In urban areas, a multicultural population and diverse living arrangements can enhance the quality of life for residents. However,

many Indian cities are currently grappling with overcrowding, leading to challenges in finding affordable living spaces. This situation is particularly pronounced among urban migrants with low socio-economic backgrounds, a significant portion of whom reside in slums, JJ colonies, or makeshift roadside dwellings. Communities or residents in these localities often lack access to basic civic amenities such as electricity, public toilets, safe drinking water, and affordable housing options. The lack of proper housing and essential services impacts their quality of life and poses significant health and safety risks. Moreover, the recent focus on climate change and environmental hazards further compounds the challenges faced by urban dwellers, especially those in marginalized communities. By addressing the needs of vulnerable populations and promoting inclusive urban growth, cities can create more resilient and livable environments for all residents, fostering a sense of community, well-being, and sustainability.

Making “Aging-Friendly” Communities in Cities

Ageing-friendly community involvement is recognised and growing in the United States (Plouffe & Kalache, 2010), Europe (Van Hoof *et al.*, 2018), and Australia (Kendig *et al.*, 2014). Old age is a period when individuals have strong desires for care, adequate financial support and affordable places. Within this context, the WHO (2002) stressed that the notion of “*active ageing refers to optimising opportunities for health, participation and security to enhance the quality of life as people age*”. In 2007, the WHO identified eight major themes of urban areas that could make a community “age-friendly”. Urban ageing is an emerging domain in social and health sciences (Van Hoof *et al.*, 2018).

Over the past decades, environmental vulnerabilities and climate change hazards have made human survival difficult and indefensible. In order to make healthcare more affordable, (Beard & Petitot, 2010) have discussed an equitable approach to foster the health of older people in urban areas. In the context of growing urbanisation, older adults will necessitate a more integrated ageing infrastructure, with increased housing, transportation, social service, and health care

options (Alley *et al.*, 2007), and urban hazards and risks may affect like traffic congestion and limited provision of public toilets and pedestrian fatalities (Buffel *et al.*, 2012). In an “ageing-friendly community, there are ample opportunities for older adults to develop new sources of fulfilment, productive engagement, and social interaction” (Scharlach, 2009). Within this growing corpus of research, globally, societies are growing older, longevity, minority status, ethnicity and being a widow places older women at risk of poverty residing in urban (Onolemhemen, 2009). In developing ageing-friendly communities, Scharlach (2009) has identified person-environment fit, individuals as constructive agents, behaviour settings, lifespan developmental processes, and physical, social, and cultural contexts as fundamental principles to create ageing-friendly communities. In recent years, community support and institutional benefits provisions could alter older adults’ needs, especially in cities. Marginalised urban communities in India actively negotiate their marginality through self-organisation, livelihood strategies, engagement with local government, and challenging exclusionary social and spatial norms. Policy interventions, such as affirmative action in public service provision and inclusive urban planning, are necessary to dismantle caste-based segregation and promote a more equitable urban environment. By adopting these multifaceted approaches, policymakers and practitioners can enhance adaptive capacity and resilience at multiple scales and strengthen community protection and financial inclusion of marginalised urban communities in India.

Crime and Ageing Security in Urban Areas

Crime against the elderly is an emotive issue (Mawby, 1982). The most deprived and marginalised communities in cities are called slums. Violence against women in urban slums is widespread (Jungari *et al.*, 2022). The study identifies several reasons against women’s atrocity, including women’s vulnerability, men’s alcoholism, dowry, low education levels, spousal age difference, and gender inequality. It has been observed that crime against women started at early ages and continued till their last breath in different forms—the intensity and

complexity of crime against elderly persons are often subject to frequent insecurity in cities.

News about crime via newspapers, radio, or television can also increase the elderly's fear of crime (Norton & Courlander, 1982). Most of the time, the elderly are soft targets because they are physically weaker and slower when confronted by an attacker or burglar (Ibid). In urban areas, a large number of elderly persons live alone and find themselves isolated and helpless under such circumstances. Older persons also expressed fears about targeting criminals when they get their pension checks at the end of the month (World Bank, 2010). A study conducted in West Flanders, Belgium, by De Donder *et al.* (2005) highlighted key determinants of fear of crime among elderly persons, and it suggested that gender, physical vulnerability and income correlate with fear of crime. Also, Burnett (2006) finds that the *“impact of actual crime, victimisation and indeed worries about safety issues can have a serious impact on older people's lives”*. According to National Crime Records Bureau report (2021), in 2019 around 4867 cases were registered against senior citizens (60 years or above) followed by 4029 cases in 2020 and 4264 cases in 2021 were registered against senior citizens in 19 metropolitan cities². Nationally, the charge sheeting rate (2021) was just 53.6 per cent, and out of 19 metropolitans' cities, only five cities were marked below the national average (NCRB, 2021).

This study also aimed to understand further the extent of fear of crime that could increase with age. In addition, Clemente and Kleiman (1976 p. 207) observed that ‘it is reasonable to argue that for older people fear of crime is even more of a problem than crime itself. It is a widely shared assumption in ageing research that ‘where people live ... makes a difference’ (Köber *et al.*, 2022). The discovery of fear of crime as a phenomenon shaping life in cities (Pain, 2001). The linkage between objective risk of victimisation and fear on the one hand and age and fear on the other (Greve, 1998). With increased awareness, neighbourhood security, residential support, and

institutional provisions, older adults have minimised their psychological stress, which helps them to secure a healthy lifestyle. For a deeper understanding, Kappes *et al.* (2013) explain that older adults show a higher level of precautionary behaviour regarding crime.

Verticals of Living Spaces

In India, the residential pattern is influenced by several determinants, such as social groups, class, religion, and community domination. These factors are not unique to India but have global relevance, as evidenced by the differences in residential patterns and family disruption of Blacks, Asians, and Hispanics compared to Whites and non-Hispanics (Himeset *al.*, 1996). This study further indicates that minority elders are much less likely than Whites to live alone or with only their spouse and are more likely to live with other family members. The prevalence of small apartments in the housing stock of large cities, and the variation in the percentage of people living alone across metropolitan and rural areas (Boyd, 1991), highlight the global variations in living arrangements. Importantly, this research underscores the global variations in living arrangements, the availability of healthcare, and access to institutional care, and how these are shaped by factors such as caste, religion, and ethnicity, which play a significant role in defining an individual's quality of life. Similarly, Becker (2003) highlighted the

“This study found that many elders belonging to minority ethnic groups lived in rooms without bathrooms or kitchens, and many others lived in overcrowded apartments.

The conditions under which they lived were often highly marginal. *Further, this study indicates that they lived in areas with a long history of illegal activities such as drug dealing, prostitution and gambling, presenting particular challenges to creating a sense of home in old age”*. It has also been noticed that poor Blacks have moved out to peripheral as well as inner suburbs and live in somewhat ethnically mixed neighbourhoods in places like Victorville and Lancaster (Agnew, 2010). The combination of old age and residence in deprived neighbourhoods increases the risks of

feeling unsafe, dissatisfied and lonely (Scharf & de Jong Gierveld, 2008). Social isolation and loneliness suggest that both are significant issues for older people, regardless of geographic location (Havens *et al.*, 2004) and significant differences both between and within ethnic minority groups in access to material and social resources (Evandrou, 2000). Scharf *et al.*, (2002) examine the degree to which older adults in deprived areas of England are affected by the condition and process of social exclusion. As discussed, marginality refers to being at the edge or periphery of social, economic, or ecological systems. For effective policy and identification of institutional protection for the elderly population, several measures such as the National Policy on Older Persons (NPOP, 1999), The Indira Gandhi National Old Age Pension Scheme (IGNOAPS, 2007), Maintenance and Welfare of Parents and Senior Citizens Act, 2007 and Integrated Programme for Older Persons (IPOP, 2008) are adopted and ensuring a holistic, rights-based approach that addresses the multifaceted nature of urban marginality. By implementing these legislative, policy, and programmatic measures, the government aims to create a more comprehensive and equitable eco-system for the elderly. It is strengthening community support, fostering intergenerational connections, and ensuring access to comprehensive healthcare coverage that reduces the impact of structural exclusion on vulnerable groups, particularly older people in cities.

Paid Help and Care Deficit

In urban settings, the establishment of old-age homes and alternative institutional care units for older people has a long historical precedent. However, the current care landscape for the elderly is facing unprecedented deficits, with factors such as heavy out-migration, unstable employability, shifts in marital practices, and changes in family structures, particularly in urban areas, exacerbating the situation. Older adults are increasingly recognizing the importance of caregiving in later stages of life. According to LASI Wave 1 data, the prevalence of living alone or with a spouse is substantial, highlighting the need for precise attention at both policy and

institutional levels. It is crucial for policy makers and healthcare professionals to understand that addressing these evolving needs requires a comprehensive approach that takes into account the complexities of urban living and the changing dynamics of familial and social support structures for the elderly (See Table 2).

Table 2

Percent distribution of elderly age 60 and above by type of current living arrangement by background characteristics, India, LASI Wave 1, 2017-18

Background Characteristics	Living alone	Living with spouse	Living with spouse and children	Living with children (without spouse)	Living with others	Number of respondents
Place of residence						
Rural	6.3	21.5	40.6	25.6	6.0	20,725
Urban	4.1	17.5	40.7	32.6	5.0	10,739
Sex						
Male	2.5	26.0	54.4	13.2	3.9	15,098
Female	8.5	15.2	28.2	40.7	7.4	16,366
Marital status						
Currently married	0.2	33.0	65.9	0.6	0.3	19,920
Widowed	14.3	-	-	73.5	12.2	10,719
Divorced/Separated/ Deserted/Others	19.1	-	-	29.5	51.4	825
Religion						
Hindu	5.8	20.8	40.1	27.6	5.7	23,037
Muslim	4.0	17.8	44.7	28.1	5.4	3,731
Christian	10.3	23.3	31.5	26.8	8.0	3,150
Others	3.5	15.9	46.6	27.4	6.6	1,546
Caste						
Scheduled tribe	5.1	22.1	38.0	27.3	7.4	5,173
Scheduled caste	6.0	19.5	39.4	28.7	6.5	5,140
Other backward class	6.3	21.5	39.8	27.1	5.4	11,886
None of the above	4.7	18.5	43.6	28.0	5.3	9,265

Education

No schooling	7.2	18.8	34.0	32.8	7.1	16,889
Less than 5 years complete	5.4	20.9	43.4	25.7	4.7	3,781
5-9 years complete	3.5	21.6	49.6	21.1	4.2	6,017
10 or more years complete	2.5	24.4	53.3	16.8	3.0	4,777

Work status

Currently working	5.3	25.9	49.5	14.9	4.4	9,307
Worked in past but currently not working	6.3	19.9	38.9	29.1	5.8	13,377
Never worked	5.2	14.5	33.0	40.1	7.2	8,780

MPCE quintile

Poorest	5.5	13.4	44.4	30.0	6.8	6,484
Poorer	3.7	14.5	44.1	30.8	6.9	6,477
Middle	5.6	21.4	41.8	25.8	5.5	6,416
Richer	6.7	23.3	37.8	27.7	4.5	6,170
Richest	7.5	32.4	32.7	22.8	4.6	5,917
Total	5.7	20.3	40.6	27.6	5.7	31,464

Source: Longitudinal Ageing Study in India (LASI) Wave 1, (2017-18).

Explanatory Notes: (-) indicates less number of cases/no cases.

Financial Vulnerabilities and Behaviour of Labour Market

A growing body of research demonstrates that participation of older adults in the formal and informal sectors is deeply rooted in financial vulnerability, absence of post-retirement benefits (pension system includes coverage for medical management) and family conflicts (Börsch-Supan *et al.*, 2021; D'Addio *et al.*, 2010; Walwei & Deller, 2021; Whiting, 2005). In the labour market, elderly workers are often viewed as dispensable or optional. Factors such as low wage rates, unequal distribution of tasks, long working hours, and transportation challenges contribute to employers considering them as non-essential. Recent changes in the labour market, driven by demand and supply chain shifts, have significantly altered the working culture. The Covid-19 pandemic, for example, prompted the adoption of alternative methods to keep markets

operational. Challenges such as the unavailability of job opportunities nearby and the lack of decent work can significantly impact the efficiency of elderly workers, especially in their later years. These circumstances highlight the importance of addressing social constraints and challenging age and gender-based assumptions to enhance the employment-related attributes of elderly workers. Addressing these issues makes it possible to improve the working conditions and opportunities for older individuals in the labour market. According to the Census of India (2011), among the elderly, about 8.99 per cent are primary workers, while 8.46 per cent are marginal workers in India. Furthermore, work participation among the elderly is essential from the point of view of understanding their economic dependence. In order to calculate the work participation rate (WPRs) for 2001 and 2011, both main and marginal workers were combined to get the total workers.

Table 3

Workforce Participation Rate (WPRs) of Elderly Population by Sex and Place of Residence: 2001-2011

Place of Residence	2001			2011		
	Total	Male	Female	Total	Male	Female
Total	40.3	60.3	20.9	41.6	60.4	23.4
Rural	45.0	65.6	24.9	47.1	66.4	28.4
Urban	26.2	44.1	9.0	25.4	48.6	13.0

Source: Calculations based on Census of India, 2001-2011

Numerous factors contribute to the disadvantaged circumstances faced by elderly individuals in rural areas. A considerable portion of the elderly remains actively involved in the workforce, often in sectors without a defined retirement age. Their continued engagement in labour is frequently influenced by socioeconomic disparities that restrict their financial stability options. The departure of adult children for migration further compounds the economic and emotional strain on elderly parents left behind. Consequently, there is a growing demand for care and assistance among the elderly, encompassing financial support and physical aid. Faced with these challenges, elderly individuals in rural areas often feel compelled to work, irrespective of their health status. This highlights the critical need for holistic strategies that address the

economic, social, and healthcare requirements of the elderly population residing in rural areas. By implementing comprehensive approaches, it is possible to support better and enhance the well-being of elderly individuals in rural communities.

Urban Governance and Healthy Ageing

Numerous studies have reported how social factors like education, social class and wealth influence health over an individual's life span (Di Monaco *et al.*, 2020). In old age, health is a critical variable determining the quality of life among older adults. It is widely understood that, in India, health awareness and the importance of healthcare services are still areas of serious attention. In addition, the move from 'cure' to 'care' necessitates new paradigms in both healthcare delivery and study on older adults in less-developed nations (Van Eeuwijk, 2006). In India, persons by health expenditure coverage type indicate that in rural areas, around 85.9 and in urban areas, about 80.9 per cent of persons were not covered under the specific health plans (NSS 75th 2017-18). More specifically, government-sponsored insurance schemes (12.9 per cent in rural and 8.9 per cent in urban) and government/PSU as an employer (0.6 per cent in rural and 3.3 per cent in urban) were covered under sponsored insurance plans (NSS 75th 2017-18). It has also summarised that the availability of healthcare services and their utilisation are not equally distributed across groups. This notion implies that the accumulation of financial stability has defined the intensity of caring patterns and attains the quality of healthcare services.

Table 4

Percentage break-up of aged persons by physical mobility in India

Mobility Category	Percentage Share of elderly by age-group					
	60-64	65-69	70-74	75-79	80+	60+
Physically Mobile	96.5	94.3	91.3	89.6	72.5	92.4
Confined to Home	2.4	4.3	6.9	8.0	18.6	5.5
Confined to Bed	0.6	0.9	1.2	1.7	6.5	1.4
Wheelchair-Bound	0.5	0.5	0.5	0.7	2.4	0.6

Source : NSS 75th 2017-18

Elderly persons by physical mobility indicate that approximately 92.4 per cent are physically mobile, followed by 5.5 per cent confined to home, 1.4 per cent confined to bed and just 0.6 per cent wheelchair-bound. Older people's poor housing conditions cause health problems, and regional planners often face increased demand for health and social care services (Giarchi, 2006). In old age, an individual faces multiple illnesses and living patterns that could be essential while caring for older adults. Financial stability and reduced care deficit can strengthen the quality of health in old-age people, especially those in the marginal section. In the context of this, Hall (1999) has also recognised that marginalised people are vulnerable to health risks resulting from discrimination, environmental dangers, unmet subsistence needs, severe illness, trauma, and restricted access to health care. The idea of 'age-friendly cities' initiated by the World Health Organisation (WHO 2007) reflects attempts to develop supportive urban communities for older adults (Buffel *et al.*, 2012). Another research indicates a low utilisation of healthcare services among older people living in the two slum communities (Ezeh *et al.*, 2006).

Issues for future Research and Conclusions

The term "marginalization" refers to a gradual process where individuals become detached from the organizations and communities that make up society. It also involves detachment from the rights and obligations inherent in society. The global share of elderly persons is expected to rise from 13.4 per cent in 2020 to 21.3 per cent by 2050 (LASI Wave 1, 2017-18). This study aimed to provide an overview of how the role of social inequalities and marginalization patterns impacted those aged 60 or above in Indian cities. *'The term 'marginalization' was coined to define this gradual process. It is defined as the process of becoming detached from the organization and the communities a society is composed of and from the rights and obligations it embodies. Marginalization focuses on relational issues, such as inadequate social participation and lack of social integration and power (Theobald,*

2005 p.7). To summarise these patterns, *“caste-based disparities, social backwardness, and economic vulnerabilities are major forces that have mainly described the effectiveness of social capital”* (Kumar & Bhakat, 2022). This study further reveals that *“nuclearisations of family structure, work culture and ideological differences are the key factors which may deteriorate intergenerational solidarity within families and social cohesion”*. Indeed, socio-economic inequalities, economic capability (poverty), gender, age, caste, religion, etc., are essential variables that indicate exclusion from social and economic opportunities. In India, caste has long been used to regulate economic life in all ages. For this study, in the Indian labour market, caste-based hierarchies perpetuate inequalities and exclusion (Banerjee & Knight, 1985; Deshpande, 2011). This study has also explored how exclusion manifests in the old-age, *‘Social exclusion is viewed as a continuum of combined and accumulated disadvantages, which emerge gradually in reduced social participation’* (Theobald, 2005, p.7). Another study by Kumar and Bhakat (2021) reveals the role of social networks in measuring the standard of life in old age. In order to improve the quality of life, old-age exclusion involves interchanges between multi-level risk factors, processes, and outcomes (Walsh *et al.*, 2020).

Alaazi *et al.* (2019) explain that most older populations live in resource-poor settings with deficient housing and neighbourhood conditions. It is estimated by (Beard & Petitot, 2010), *“By 2050, it is expected that a quarter of urban populations in less developed countries will be over 60 years. In developed countries, 80 per cent of older people already live in urban areas”*. Urbanisation and ageing are inevitable outcomes of economic growth. In urban settings, the nature of community engagement and neighbourhood interactions change as people age. To provide appropriate institutional support to the elderly, the Government of India has implemented several key initiatives. These include the National Policy on Older Persons (NPOP) in 1999, the Maintenance and Welfare of Parents and Senior Citizens Act in 2007, the establishment of the

National Council for Older Persons (NCOP) in 1999, the launch of the Indira Gandhi National Old Age Pension Scheme (IGNOAPS) in 2007, and the introduction of the Pradhan Mantri Vaya Vandana Yojana (PMVVY) in 2017. These initiatives have been designed with comprehensive provisions to ensure a good quality of life for the elderly “*The rapid rise in India’s elderly population coupled with changing family structures and limited social provisions presents policymakers with pressing economic, health, and social challenges*” (LASI Wave 1, 2017-18).

In India, the family unit plays a crucial role in providing necessary support and financial stability to the elderly, with sons often primarily responsible for ensuring healthy and active ageing. However, over the past few decades, factors such as increasing urbanisation, job insecurity, low wages in existing professions, and mobility within or outside the country have led to a trend of elderly parents being left alone in their old age. The concept of old-age homes in India is typically seen as a last resort when family members are unable to care for their elderly due to various reasons. Family and relatives’ refusal, lack of community readiness, and limited urban presence contribute to the perception of old-age homes. In rural areas, the absence of such facilities suggests that families and communities still possess the capability to support their elderly. Challenges like inadequate income sources, affordable housing, and limited educational opportunities discourage establishing old-age homes in rural regions. Despite facing poverty and social inequalities, rural areas tend to rely on familial care for the elderly.

On the other hand, urban areas face structural challenges in maintaining a healthy lifestyle in old age due to various factors. Enhancing institutional capabilities and community readiness at different levels is crucial. Developing policies and programs to create elder-friendly environments in metropolitan cities is essential for supporting the elderly population effectively. Social inequalities and marginalisation significantly affect older adults in Indian cities. Addressing social inequalities and marginalisation requires targeted

policies and programs. In addition, implementing inclusive policies that prioritise the needs of older adults can mitigate marginalisation. The paper recommends several strategies:

- **Preserving cultural identity:** Efforts should be made to maintain and celebrate the cultural heritage of elderly individuals. This includes promoting traditional practices, family values, interpersonal relations, and customs.
- **Awareness and Advocacy:** Raising awareness about older adults' challenges and advocating for their rights is crucial. They are strengthening community networks and promoting institutional care facilities to support elderly persons.
- **Social Safety Measures and Pension Protection:** Ensuring financial security through pension schemes and implementing measures that create a supportive environment for elderly populations across all societal sections.

Conflict of Interest (COI) Declaration : The author is not aware of any affiliations, memberships, funding, or financial holdings that might be perceived as affecting the objectivity of this study. Thus, the author of this manuscript declares no conflict of interest.

Funding : This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Acknowledgements : Author of this manuscript would like to thank the anonymous reviewers for their comments and feedback.

Notes

1. please see final draft of National Educational Policy 2020 Socio-Economically Disadvantaged Groups (SEDGs) can be broadly categorised based on gender identities (particularly female and transgender individuals), socio-cultural identities (such as Scheduled Castes, Scheduled Tribes, OBCs, and minorities), geographical identities (such as students from villages, small towns, and aspirational districts), disabilities (including learning disabilities), and socio-economic conditions (such as migrant communities, low income households, children in vulnerable situations, victims of or

children of victims of trafficking, orphans including child beggars in urban areas, and the urban poor).

2. 19 Cities with more than 2 million Population. For more information, please visit at <https://ncrb.gov.in/uploads/nationalcrimerecordsbureau/post/1679310741CII2021Volume2.pdf>

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