

Indian Journal of GERONTOLOGY

(a quarterly journal devoted to research on ageing)

Vol. 35 No. 3, 2021

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Indian Journal of Gerontology

(A quarterly journal devoted to research on ageing)

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)

Rs. 800.00 Libraries in India

Free for Members

Financial Assistance Received from :

ICSSR, New Delhi

Printed in India at :

Aalekh Publishers

M.I. Road, Jaipur

Typeset by :

Anurag Kumawat

Jaipur

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NEWS & VIEWS

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 347–359

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

Effects of Guided Forward Stepping Training Verses Guided Lateral Stepping Training in Sub-Acute Stroke Patients To Improve Standing Balance and Gait Speed-A Randomized Clinical Trial

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ABSTRACT

The research aims to compare the effects of forwarding guided stepping vs lateral guided stepping to improve standing balance and gait speed in sub-acute stroke patients. In the present study, a total of 30 participants (M=25 and F=5) aged between 50–70, who were fitting in the inclusion criteria and agreed to participate in the study were selected. All the participants were randomly allocated into two groups, 15 participants were assigned to group A (Guided forward stepping) and the remaining 15 participants were assigned to group B (Guided lateral stepping). The balance and gait speed of participants were assessed using the Berg Balance Scale (BBS) and the Time up and Go test (TUG), respectively at the pre-and post-Interventional levels. Paired and Unpaired T-Test was used for the data analysis. Pre and post-interventional effects were measured within and between groups, which revealed that BBS and TUG values significantly improved in group A. Based on

the present findings it may be concluded that the "Guided Forward Stepping Training" is more effective in the standing balance and gait speed in patients with sub-acute stroke than "Guided Lateral Stepping Training".

Keywords: Guided, Forward stepping, Lateral stepping, Balance, Standing Balance, Gait Speed.

According to the World Health Organization, 15 Million people worldwide suffer from stroke every year, and one much-concentrated component in concern with stroke, i.e. ability to regain balance and walking (Reisman, D. *et al.*, 2013). Despite this, 60 per cent of stroke survivors are considered independent walkers (Mao, Y. *et al.*, 2015) with the characteristic features mainly reduced cadence, stride length, and lack of balance. Recapturing the balance and walking dexterities has been the main asset need to be improved (Rose, D.K. *et al.*, 2018). Various studies on the balance of deficits have shown that people with stroke have enormous postural sway and abnormal weight distribution, which make it unmanageable for them to shift body weight towards the frailer lower extremities. This improper shifting of the center of gravity (COG) glitches the balance of the individuals (Kumar and Pathan, 2016). Following the stroke, the functioning mechanism of neural pathways becomes compromised, these fallout into the development of atypical movement and deviations in the gait pattern. It has also been noted that altered lower limb kinetics and kinematics, muscle spasticity, odd trunk movement contribute to creating the abnormal movements and gait deviations (Kim, H.S., *et al.*, 2016). The pelvic and trunk stability are the two most imperative factors in the balance and gait deficits following stroke. It was observed that excess anterior and lateral pelvic tilting in patients with a sub-acute stroke affects the ability of the person to stand and weigh independently (Dubey, L., *et al.*, 2018). Exercises cementing the stable trunk are essential for independent walking, neutral position, proper weight shifting, and appropriate use of the center of gravity (Adnil, *et al.*, 2018).

Various studies were done concerning balance retraining and focusing on stepping patterns such as lateral stepping and backward stepping training along with conventional physiotherapy options, but very little literature is available on the comparison between guided

lateral stepping training and guided forward stepping training, hence this study has been taken up to compare the effects of guided lateral and guided forward walking training in subacute stroke patients to improve their standing balance and gait speed.

Materials and Methods

Design and Subject Selection

In the present single-blinded randomized clinical trial, thirty subacute stroke participants aged between 50 to 70 were selected from MGM's Neuro Physiotherapy OPD Aurangabad, (M.S.). A diagnosis of subacute stroke was made after reviewing the patient's medical history and investigation reports. Before randomization, the allocation of the group was concealed from the participants. Once the patients were meeting the inclusion criteria for this current study, a signed consent form was obtained. After the first evaluation stage, all the participants were asked to pick one of the 30 papers from an envelope. 15 papers had printed as G1 and the other 15 had printed G2. All papers inside the envelope had been shuffled. The paper picked by each participant determined their respective grouping; i.e. G1 for the Guided Forward Stepping group (GFST) and G2 for Guided Lateral Stepping group (GLST). Both groups were evaluated and treated by an experienced physiotherapist. The participants were blind to their group. All participants received a total of 4 sessions in a week.

Inclusion Criteria

- Both gendered subacute stroke participants aged between 50–70.
- Occurrence of stroke within 1–3 months.
- Able to walk with or without assistive devices such as a walker or cane.
- Patients who understand and follow command.
- Berg Balance Scale score (BBS) score ranges between 21–40.

Exclusion Criteria

- Presence of contractures in unilateral or bilateral lower limbs Patients with severe limitations in passive range of motion at lower extremities.
- Severe limitations in passive range of motion at lower extremities.
- Any other neurological injuries concerning balance Patients with proprioceptive, sensory, and cognitive disorders
- Orthopedic injuries with impaired balance

Interventions

Guided Forward Stepping Training

In *Group A (GFST)* guided forward stepping training was given. The patient was encouraged to perform forward stepping on the even surface with the assistance of the trained physiotherapist for 15 minutes consisting of 3 sets of 10 steps each. Conventional physiotherapy sessions focused on ADL skills incorporating Active Assisted range of motion exercises, Active range of motion exercises, Strengthening exercises, Exercises in the different functional weight-bearing positions, Weight shifting exercise, multi-directional reach-outs in sitting, kneeling, and standing positions, Basic ADL activities (Brushing, Combing, Cutting, Drinking, Eating, etc.) and Gait training were also delivered to participants.

Guided Lateral Stepping Training

In *Group B (GLST)* guided lateral stepping training was given. The patient was encouraged to perform lateral stepping on the even surface with the assistance of the trained physiotherapist for 15 minutes consisting of 3 sets of 10 steps each. Similar sessions of Conventional physiotherapy were given to participants of this group also. The total duration of each session was 50 min (35 min conventional PT treatment, 15 min guided forward and lateral stepping training respectively) for 4 days in a week for 4 weeks. At the end of the fourth week of the interventions, the effects were assessed with BBS and TUG.

Tools Used

1. *Berg Balance Scale (BBS)*: To determine the balance, the Berg Balance Scale (BBS) was used. The BBS is 14 items, 5 points ordinal scale, aimed to analyze the balance in subacute stroke population and other neurological conditions. It barely takes 15–20 min. There is no need for any specialized training to administrate in the participants. The maximum score for BBS is 56 (Berg KO., *et al.*, 1992; Lusardi, M.M., *et al.*, 2017).
2. *Timed Up and Go Test (TUG)*: It is the test to estimate gait speed and to distinguish the individuals with a risk of fall. It is the time performance of getting up from a chair, walking 3m, turning around, and walking back to sit down again. The participants who take more than 12sec to complete the TUG test are considered to be at a higher risk of fall. This TUG test is highly recommended by the American Geriatrics Society, British Geriatrics Society for screening the fall risk (Shumway, *et al.*, 2000; Bohannon, 2006).

Analysis of Data

SPSS (version 23) was used to analyse the data. The unpaired test was performed for inter-group comparison of BBS and TUG test between both the groups, i.e. Group A and Group B at pre interventional and post interventional stage. The paired test was done for intragroup comparison of BBS and TUG for Group A and Group B at pre interventional and post interventional stage, with 95 per cent confidence level. P values < 0.05 were considered significant findings.

A total of 36 patients were screened, out of which 6 participants did not fit in the inclusion criteria. So, 30 patients were screened for further assessment and were allocated into two groups, i.e. Group A (forward stepping) and Group B (lateral stepping) consisting of 15 participants in each group. The comparison was done for the score of BBS pre and post-training in both the groups. There was a statistically significant increase in the score of BBS from 20.466 ± 4.969 points pre to 28.8 ± 3.931 post-training for Group A (forward stepping) while for Group B (lateral stepping) the values increased

from 20.73 ± 3.34 points pre to 31.067 ± 4.65 post-training for Group B. When comparison was done for the scores of TUG, a statistically significant decrease was seen in Group A from 26 ± 1.512 before to 23.133 ± 1.995 after training. The values obtained in Group B did not show any significant statistical decrease in the score, i.e. from pre to post-training.

Results

Figure 1
Group A Chart for Paired T-Test

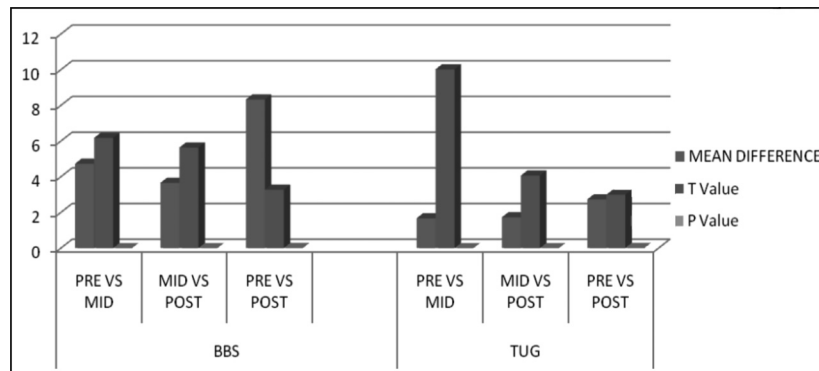
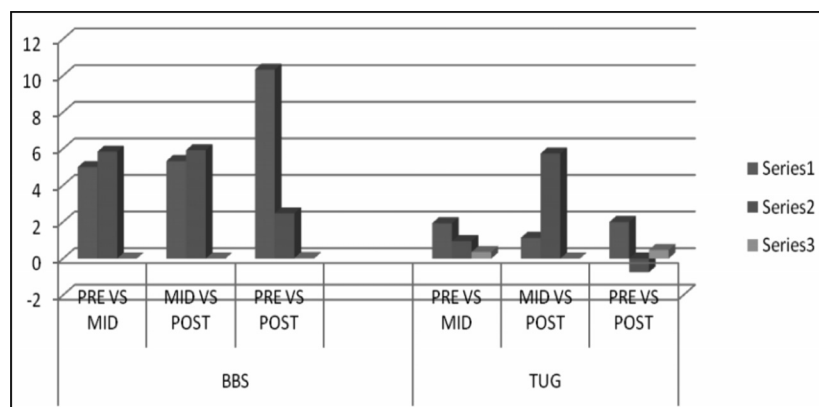


Figure 2
Group B Paired T-Test

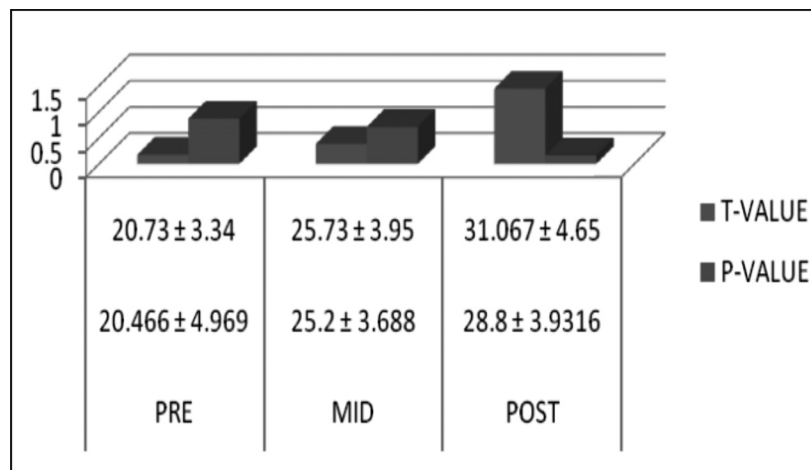


Paired T-Test

	Group A	Mean Difference	T Value	P-Value	SIGN
BBS	Pre Vs Mid	4.73	6.173875	0.0000396	Highly Significant
	Mid Vs Post	3.66	5.637004	0.0001095	Highly Significant
	Pre Vs Post	8.33	3.27326	0.0066628	Highly Significant
TUG	Pre Vs Mid	1.67	10.02065	0.00000035	Highly Significant
	Mid Vs Post	1.73	4.066633	0.00156301	Highly Significant
	Pre Vs Post	2.73	2.988957	0.01129615	Highly Significant
BBS	Pre Vs Mid	5	5.843083	0.0000792	Highly Significant
	Mid Vs Post	5.33	5.922561	0.00007	Highly Significant
	Pre Vs Post	10.33	2.472875	0.029338563	Highly Significant
TUG	Pre Vs Mid	1.933	0.953964	0.3589242	Not Significant
	Mid Vs Post	1.133	5.737788	0.0000934	Highly Significant
	Pre Vs Post	2	-0.75005	0.4676764	Not Significant

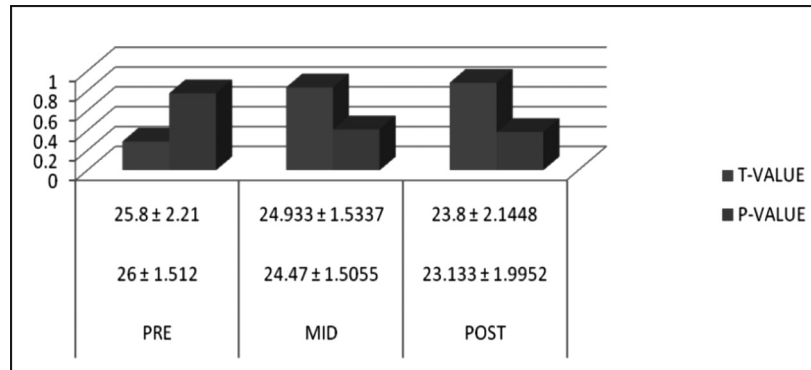
Figure 3
BBS Group A and B

Unpaired T-Test



TUG Group A and B

Unpaired T-Test



Unpaired T-Test

BBS	Group-A Mean ± Sd	Group-B Mean ± Sd	T-Value	P-Value
PRE	20.466 ± 4.969	20.73 ± 3.34	0.1724	0.8644
MID	25.2 ± 3.688	25.73 ± 3.95	0.3798	0.7069
POST	28.8 ± 3.9316	31.067 ± 4.65	1.4419	0.1604
TUG	Group-A Mean ± Sd	Group-B Mean ± Sd	T-Value	P-Value
PRE	26 ± 1.512	25.8 ± 2.21	0.2893	0.7745
MID	24.47 ± 1.5055	24.933 ± 1.5337	0.8344	0.4111
POST	23.133 ± 1.9952	23.8 ± 2.1448	0.8819	0.3854

Discussion

When the analysis was done between Group A (forward stepping) and Group B (lateral stepping) at the baseline, no statistical difference was found which showed that subjects of both the groups were matched for baseline characteristics. There was no significant difference between BBS and TUG scores in both Group a (forward stepping) and Group B (lateral stepping) which shows that there was no statistically significant difference at the pre-intervention level between both the groups. When a comparison was done for Group A (forward stepping) from pre to mid-intervention level for BBS and TUG statistically significant improvement was seen in the values of

BBS ($p=0$) and TUG ($p=0$). Also, when comparison was done for mid to post interventional level for BBS and TUG, values obtained were statistically significant.

When pre and post-interventional levels for BBS and TUG in both the groups were compared, statistically significant improvement was seen in the values of BBS ($p=0.01$) and TUG ($p=0.01$) which shows that forward stepping training along with conventional physiotherapy is effective in improving standing balance and gait speed. When a comparison was done for Group B (lateral stepping) from pre to mid-interventional level for BBS and TUG, statistically significant values were obtained for BBS ($p=0$) but there was no statistically significant improvement for the TUG ($p=0.36$) score. Also, when comparison was done from mid to post interventional level for BBS and TUG, BBS ($p=0$) score showed statistically significant difference and but TUG ($p=0$) score showed no statistical significance in the values. When a comparison was done for pre and post-interventional levels for BBS and TUG, no significant improvement was seen in the statistical values of TUG ($p=0.47$). This shows that lateral stepping training along with conventional physiotherapy is beneficial in improving standing balance and gait speed in sub-acute stroke patients. When intergroup comparison was done at post interventional level for BBS and TUG for both the groups, i.e. Group A (forward stepping training) and Group B (lateral stepping training), it was found that Group A showed significant statistical improvement in the values of BBS (28.8 ± 3.9316) and TUG (23.133 ± 1.9952) score, whereas, no significant improvement was seen in the statistical values for TUG (23.8 ± 2.1448) in Group B. Thus, it can be concluded that forward stepping training along with conventional physiotherapy is more beneficial than lateral stepping training along with conventional physiotherapy (Group B) to improve balance and gait speed in sub-acute stroke patients.

The findings of this study are consistent with the study done by Gi-Deok Park *et al.*, who examined the effects of multidirectional stepping training on balance, gait, and fall efficacy following stroke. They concluded that combined stepping can be an effective intervention to improve the balance, gait ability, and fall efficacy in stroke

patients (Park G.D., *et al.*, 2016). The findings of our current study also consent with the study of Park, I.J., *et al.*, (2019) who compared the effects of different assistance forces during robot-assisted gait training on locomotor functions in patients with sub-acute stroke. They concluded in their study that gait training combined with conventional physiotherapy may be more beneficial in the improvement of locomotive function in patients with a subacute stroke (Ibid.). The conclusion of our study is similar to the study of done by Golijar, N., *et al.*, (2010) who concluded that conventional balance training is beneficial in improving balance in sub-acute stroke patients. The findings of our study also agree with the study of Kim, *et al.*, (2016) who examined the effects of mirror therapy on the balance ability of subacute stroke patients and came to a conclusion that mirror therapy may be beneficial in improving balance ability among sub-acute stroke patients (Dundar, *et al.*, 2014). The conclusion of our study is in consent with the study of Dundar, *et al.*, (2014) who did a comparative study on conventional physiotherapy vs robotic training combined with physiotherapy in patients with stroke. Their study concluded that robotic training combined with conventional physiotherapy shows improvement in lower limbs of patients of stroke patients (Ibid.). The findings of our current study consents with the study of Dhawale, *etal.*, (2018) who studied the effects of trunk control exercises on balance and gait in stroke patients. They concluded in their study that trunk control exercises show significant effects on gait and balance in stroke patients (Ibid.). Data of our study is similar to the study done by Muniyar, and Darade, (2018), using Swiss ball training and conventional physiotherapy in improving balance, concluded that a combination of conventional physiotherapy and Swiss ball training is beneficial for balance improvement and gait training.

Conclusion

It is concluded that both guided, i.e. forward stepping with conventional physiotherapy, i.e. Group A and lateral stepping training along with conventional physiotherapy Group B are beneficial in improving standing balance and gait speed in sub-acute

stroke patients. However, patients treated with forwarding stepping along with conventional physiotherapy (Group A) showed additional benefit in improving standing balance and gait speed in sub-acute stroke patients.

Acknowledgment: The researchers would like to extend their gratitude towards all the participants of this study, without their co-operation this wouldn't have been a possibility.

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 360–374

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

Everyday Memory Self-Efficacy and Self-Reported Health Among Elderly Persons

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ABSTRACT

The study was carried out on 600 elderly persons, (Male=300 and Female=300), age varying from 60 years and above, from the Rayalaseema region (AP), using a multi-stage random sampling technique to investigate the memory self-efficacy related to everyday performance. An adapted version of memory self-efficacy related to everyday memory (Berry, et al., 1989) and health status was assessed by using the adapted Cornell Medical Index to meet the objective of the study. The results reveal that the data concerning memory self-efficacy shows that the sub-groups namely gender, education, and family differed significantly in their memory self-efficacy related to everyday memory. The association between memory self-efficacy with other socio-demographic variables indicates that subgroups like district, age, gender, education, and self-reported health status are significantly associated compared to other subgroups. The data on memory self-efficacy shows that they are a significant association between memory self-efficacy and self-reported physical health, psychological health. The results were discussed in the light of memory interventions to improve the quality of life of the elderly.

Keywords: Everyday Memory Self-efficacy, Health status, Community-dwelling Elderly, Andhra Pradesh.

According to Bandura (1993), four steps are involved in human engagement in day-to-day dealings. They are: analyze a situation, consider alternate courses of action, judge one's ability to carry out this action successfully (self-efficacy), and finally, estimate the results such actions are likely to produce. Based on judgments derived from these estimates, people act and later reflect on how well their thoughts served them in managing the given event, then make changes to their thinking (Bensadon, 2007) accordingly.

Individual's motivation, affective states, and actions are dependent on the objectively true belief system. There is a link between belief and behavior. Memory-self-efficacy refers to a dynamic, self-evaluative system of beliefs and judgments regarding one's memory competence and confidence. MSE has evolved since the mid-1980s to its present identity and status in the cognitive ageing and adult developmental research literature. Self-efficacy theory and methods provide a rich theoretical network of testable, falsifiable hypotheses. Some hypotheses have received strong empirical support, such as those applied to achievement domains, including mathematics, and writing. Research on mediational effects supports the reciprocal nature of self-efficacy and goal setting/attainment, although not equivocally

The memory self-efficacy and anxiety are inversely related to each other, i.e. as the strength of individuals, efficacy increases their anxiety decreases (Bandura, 1988). Many studies predicted the role of Memory self-efficacy on memory performance (Berry, *et al.*, 1989; Rebok and Balcerak, 1989; Best, *et al.*, 1992; Lachman, *et al.*, 1992; McDougall, *et al.*, 2010;). Everyday tasks are also influenced by Memory self-efficacy (Berry, *et al.*, 1989; Rebok and Balcerak, 1989). Seeman, *et al.*, (1993) found the relationship between beliefs and cognitive performance for men and not for women.

Periodical reviews on Geropsychology in India show that there are few studies on memory performance in the elderly in India (Ramamurti and Jamuna, 1993, 1995). However, some studies are available on memory and other cognitive aspects in the elderly (Pershad, 1976, 1979a, 1979b; Ramamurti, 1978, 1990; Sharma, *et al.*, 1992; Kohli *et al.*, 1992; Verma, and Pershad, 1996; Dube, 1996; Khan

and Khan, 2002; Lalitha, 2000). They reported a general decline in cognitive function in later years. Some studies focused on different facets of memory and related psychosocial variables like physical health, psychological health, and social supports (Lalitha and Jamuna, 2005, 2010, 2015). Age, gender, and education are important predictors of everyday memory (Lalitha, 2015). The above scenario indicates a dearth of studies on the above topic. Keeping this in view, the study was taken up with the following objectives:

- To assess Everyday Memory self-efficacy status across age, gender, and educational, economic status groups of older persons.
- To assess the relationship between memory self-efficacy and socio-demographic variables.
- To assess the relationship between memory self-efficacy and Health status (Physical and Psychological Health).

Based on the objectives the following Hypotheses were framed:

- *Hypothesis 1:* There is a significant difference between age, gender, locality, marital status, educational status, and marital status in Memory self-efficacy.
- *Hypothesis 2:* There is a significant relationship between Memory self-efficacy and socio-demographic factors among the Elderly.
- *Hypothesis 3:* There is a significant relationship between Memory Self-efficacy and trail-making test, self-reported physical health, and self-reported psychological health among the Elderly.

Method

Sample

The sample consisted of 600 elderly persons of both sexes (Male=300 and Female=300), age varying from 60 and above. The multistage random sampling technique was used in the selection of subjects from rural and urban areas of the Rayalaseema region which covers five districts namely Kadapa, Chittoor, Nellore, Ananthapur, Kurnool of Andhra Pradesh (Vide Table-1 for socio-demographic details).

Table 1
Socio-Demographic details of the sample

S. No.	Sub-Group	N	%
1.	Age		
	60–65	200	33.3
	66–70	200	33.3
	71–75	200	33.3
2.	Gender		
	Male	300	50
	Female	300	50
3.	Education		
	No Education	237	39.5
	Primary Education	207	34.5
	Secondary Education	127	21.2
	Higher Education	29	4.8
4.	Family		
	Nuclear	322	53.7
	Joint	278	46.3
5.	Location		
	Rural	300	50
	Urban	300	50

Tools Used

Memory Self-Efficacy Questionnaire (An adapted version of Berry *et al.*, 1989) An adapted version of memory self-efficacy related to everyday memory was developed in regional language, i.e. Telugu with 11 items to assess everyday memory in the aged. The questions were translated into regional language, i.e. Telugu. *Assessment of Self-Reported Physical and Psychological Health Questionnaire* is based on Cornell Medical index (CMI). This was adapted for use on Indian Elderly Widows by P.V. Ramamurthi (1989). It has two parts, Part-A deals with a list of manifested somatic symptoms and Part-B deals with a list of manifested psychological symptoms. The questionnaire which was used by Ramamurthi (1989) consists of 64 items. SRPH (Part-A) consists of 34 items and SRPSH (part-B) consists of 30 items. The whole procedure of standardization was again carried out in

connection with a major research project (Jamuna and Ramamurti, 2000). A score on part-A indicates the presence of the feeling of physical distress and a score on part-B indicates the presence of the feeling of psychological distress. High score in SRPH and SRPSH indicates the presence of somatic and Psychological symptoms. Apart from these tools a *Personal data sheet* to assess data on age, gender, educational status, economic status, locality, marital status, etc. was also used in this study.

Procedure of Testing

All the subjects were contacted personally and prior consent was taken for participation in the study. Only those subjects who gave consent to participate in the study were administered the tests. The subjects were also assessed for their functional capability in self-help skills in their daily life and their interest in the investigation was observed. If this was poor, they were not included in the sample. The subjects who had difficulty in communication and comprehension or were not willing to participate in the study were also identified and excluded from the sample. The whole investigation was carried out in one session usually lasted for an hour to one and half hours

Results and Discussion

The obtained data were analysed to meet the objectives of the study

Firstly, to see the impact of age on Memory self-efficacy related to Everyday memory was analyzed. Everyday memory self-efficacy performance was reported in Table 2. Everyday memory self-efficacy was divided into two types of tasks namely: Everyday tasks and Lab tasks. Everyday tasks related to our day-to-day aspects in life (1 to 9 items). Lab tasks are related to specific task-related activities. This measure is a self-reported one where the subject gives his ratings based on his estimation from 10 per cent to 100 per cent. The memory trends are calculated to understand the level of Everyday Memory Self-Efficacy as reported by different age groups.

Table 2
Impact of Age on Everyday Memory self-efficacy Performance

<i>S. No.</i>	<i>Statements</i>	<i>60–65 yrs. (n=200)</i>	<i>66–70 yrs. (n=200)</i>	<i>71–75 yrs. (n=200)</i>
		<i>M (↯)</i>	<i>M (↯)</i>	<i>M (↯)</i>
Everyday task				
1.	Grocery 1	32.41(30.54)	36.25(25.85)	26.05(28.14)
2.	Grocery 2	42.55(35.03)	45.40(28.67)	34.75(31.14)
3.	Grocery 3	52.10(32.07)	58.00(26.61)	42.95(32.62)
4.	Grocery 4	58.35(27.30)	56.80(24.34)	51.05(26.39)
5.	Grocery 5	59.40(25.89)	61.00(21.21)	54.40(26.40)
6.	Phone	46.50(24.03)	43.77(24.86)	42.72(26.94)
7.	Location	50.65(23.27)	48.10(23.30)	49.20(23.45)
8.	Map	37.32(26.68)	34.25(25.66)	34.00(26.97)
9.	Errands	42.88(24.34)	39.55(23.17)	40.15(25.55)
Lab Tasks				
10.	Picture	51.85(22.84)	48.55(23.28)	47.40(22.40)
11.	Word	50.65(25.00)	49.00(23.25)	47.80(26.52)
12.	Digit	34.85(28.95)	30.85(28.33)	33.95(32.00)
13.	Photographs	36.50(28.70)	33.16(25.08)	32.75(29.31)
14.	Maze	22.75(28.54)	18.77(27.11)	19.35(28.67)

The observations related to the means of Everyday memory self-efficacy clearly show that the age group of 66–70 years means are high in grocery-related items (1 to 5) compared to the remaining items. The age-wise trends clearly show that the age group of 71–75 years reported less efficacy compared to other age groups. The lab-related tasks also the 60–65 years age group means in different lab-related tasks are high compared to other age groups. The above trend clearly shows that the grocery items which are very important for the day-to-day functioning of the older people were efficiently reported by all the age groups compared to Lab related tasks.

Secondly, The results related to memory self-efficacy related to everyday memory (vide Table 3) shows that the mean in different sub-groups is as follows: the age group wise the means are as follows: 60–65 (M= 61.61); 66–70(57.56); 71–75(56.09) and the t-values a-b (t=1.63), b-c (t= 0.66). The memory self-efficacy is good 60–65 age group compared to other age groups. The gender-wise data shows that the mean for the male subjects is 64.35 compared to the female subjects

($M=52.49$) and the t -value 6.14 which is statistically significant indicates gender differences in reporting the self-efficacy related to the memory-related to everyday tasks. The educational-wise trends that the subjects with no education ($M=48.80$); Primary Education ($M=56.01$); Secondary Education ($M=74.14$); Higher education ($M=85.34$) and the t -values ($a-b= 3.61$; $b-c= 7.41$; $c-d= 2.04$). The above data suggest that education plays a significant role in reporting their responses related to their memory and the sub-group difference were also statistically significant. The data relating to the family shows that those who are living in nuclear ($M=56.44$) reported less memory self-efficacy compared to those in Joint (60.80) families and the t -value is 2.18 which is statistically significant. The Locality-wise data shows that the subjects from rural ($M=57.13$) areas reported less self-efficacy compared to those who are from urban ($M=60.25$) and the obtained t -value ($t=1.59$) is statistically not significant.

Table 3
Means, S.D's, and 't' values related Memory Self efficacy in different sub-groups

S. No.	Sub-Group	N	M ($\neg$)	't'
1	Age			
	(a) 60-65	200	61.61(28.39)	1.63(a-b)
	(b) 66-70	200	57.56(20.68)	0.66(b-c)
	(c) 71-75	200	56.09(23.08)	
2	Gender			
	Male	300	64.35(25.87)	6.14**
	Female	300	52.49(21.14)	
4	Education			
	(a) No Education	237	48.80(21.37)	3.61(a-b)**
	(b) Primary Education	207	56.01(20.58)	7.41(b-c)**
	(c) Secondary Education	127	74.14(22.37)	2.04(c-d)*
	(d) Higher Education	29	85.34(27.52)	
5	Family			
	Nuclear	322	56.44(23.78)	2.18*
	Joint	278	60.80(24.81)	
6	Location			
	Rural	352	57.13(25.83)	1.59
	Urban	248	60.25(21.97)	

* Significant at 0.05 level; ** Significant at 0.01 level

Results related to the status of Memory self-efficacy show that the majority of the subjects reported average and good memory. The subgroups like the subjects 60–65 yrs., male, the subjects those who are living in urban areas, those with a college education, subjects from a joint family, and those who belong to middle-income groups reported better memory self-efficacy compared to their counterparts. The sub-group differences in Everyday memory self-efficacy show that age, gender, education, family, and location-wise differences were significant compared to other sub-groups.

Further analysis was carried out to these relationship between memory self-efficacy and socio-demographic variables. Memory self-efficacy related to everyday activities show that district ($r = 0.159$), age ($r = 0.160$), gender ($r = 0.244$), education ($r = 0.449$) and self-reported health status ($r = 0.172$) were significantly associated with memory self-efficacy related to everyday memory performance. The other socio-demographic variables like family ($r = 0.075$); location ($r = 0.063$); source of income ($r = 0.078$); economic status ($r = 0.037$); Marital status ($r = 0.016$) and Living arrangements ($r = 0.048$) were not significantly associated with memory self efficacy.

Table 4
Correlation matrix related to Memory self-efficacy and socio-demographic variables

<i>S. No.</i>	<i>Socio-demographic variables</i>	<i>Memory Self-efficacy</i>
1.	District	0.159**
2.	Age	0.160**
3.	Gender	0.244**
4.	Education	0.449**
5.	Family	0.075
6.	Location	0.063
7.	Source of Income	0.078
8.	Economic status	0.037
9.	Marital status	0.016
10.	Living Arrangements	0.048

The association between Everyday memory self-efficacy with other socio-demographic variables shows that the subgroups like district, age, gender, and education of the subjects were significantly associated with everyday memory self-efficacy. The other subgroup like economic status was not significantly associated with everyday memory self-efficacy.

Finally, the results related to memory-self efficacy and health status were analyzed. The data on memory self-efficacy found that there are significant differences between memory self-efficacy related to everyday memory and self-reported physical health ($r = 0.247$) and psychological health ($r = 0.232$) respectively. .

Table 5
Correlation matrix related to Everyday memory and other Psychological variables

<i>S. No.</i>	<i>Psychological variables</i>	<i>Memory Self-efficacy</i>
1.	Self-reported Physical Health	0.358**
2.	Self-reported Psychological Health	0.432**

The present findings support Bandura's (1993, 1977) construct of self-efficacy, which needs to be measured as particularized beliefs. The other related general constructs namely self-esteem, self-concept, or general self-efficacy are affecting the individual performance (Schwarzer and Fuchs, 1996). Middle-aged people are expected to relax and organize things to support changes in memory. Rehabilitation experts are suggesting that without brain injury also people want to improve their memory function. It is a fact that Memory devices such as mnemonics, routines, visualization, linking new learning to something personally meaningful, and other strategies help boost memory. The memory skill training if combined with cognitive restructuring is helpful in normal age-related changes and actively compensating for them (Lalitha, 2015; Lalitha and Jamuna, 2015).

The above results demonstrate that age, gender, education, locality, family economic status are found to be important for good everyday memory self-efficacy. The majority of older adults certified at least two compensatory strategies, which they perceived to be more

helpful in normal routines. Compensatory strategies were related to higher education, more medications, having the concern, and self-efficacy to take medications. The results are on par with predictions in our culture. But higher the memory self-efficacy, the higher the everyday memory performance. Present results supported by the following studies. The findings also lend support to the view that perceived self-efficacy mediates anxiety arousal. Self-efficacy proved to be a superior predictor of the amount of behavioural improvement, and phobic gained from partial mastery of threats at different phases of treatment (Bandura, 1977). Many studies found that memory self-efficacy predicted the performance in everyday tasks (Berry *et al.*, 1989; Rebok and Balcerak, 1989). Seeman *et al.*, (1993) found that cognitive performance in men was associated with self-efficacy beliefs but not in women. Kim, *et al.*, (2005) identified several predictors of depression, including living arrangements (living alone versus living with family/spouse); having chronic conditions such as diabetes, arthritis, digestive disorders, or chronic bronchitis; years of education; and cognitive impairment. As memories amend older adults rely on multiple cues, and perceive reliance on multiple indications to be helpful. These data have implications for the design and successful implementation of medication reminder systems and intercession. (Boron, *et al.*, 2013). Apart from the above leading good lifestyle support the healthy functioning of the brain. Aerobic exercises are helpful to boosts the blood flow which helps to provide more oxygen to the brain. Many older people say that facing new intellectual challenges and having good social supports and network help them to stay cognitively intact. The day-to-day physical and mental activity leads to a good belief system which helps to lead a good, active and healthy life in later years

On the basis of present findings it may concluded that:

- The data concerning memory self-efficacy shows that the sub-groups namely gender, education, and family differed significantly in their memory self-efficacy related to everyday memory.
- The association between memory self-efficacy with other socio-demographic variables indicates that the subgroups like

district, age, gender, education, and self-reported health status are significantly associated compared to other subgroups.

- The data on memory self-efficacy shows that there is a significant association between memory self-efficacy and self-reported physical health, psychological health, and executive function performance.

Hypothesis 1: There are significant differences between age, gender, locality, marital status, educational status, and marital status in Memory self-efficacy.

The data about memory self-efficacy shows that the sub-groups namely gender, education, and family differed significantly in their memory self-efficacy related to everyday memory. *Hence, the Hypothesis is accepted.*

Hypothesis 2: There is a significant relationship between memory self-efficacy and socio-demographic factors among the Elderly.

- The association between memory self-efficacy with other socio-demographic variables indicates that subgroups like district, age, gender, education, and self-reported health status are significantly associated compared to other subgroups. *Hence, the Hypothesis is partially accepted.*

Hypothesis 3: There is a significant relationship between Memory Self-efficacy and trail-making test, self-reported physical health, self-reported psychological health among the Elderly.

- The data on memory self-efficacy related to everyday memory found that there is a significant relationship between memory self-efficacy related to everyday memory and self-reported physical health, psychological health, and executive function performance. *Hence, the Hypothesis is accepted.*

Implications

- Everyday memory functioning can take place only when there is a cognitive demand of a task and the environment are considered together. If environment task demands are high on cognitive resources, older people will function less efficiently than younger adults. Long-term everyday memory tasks are effectively managed by older people than short-term demands, e.g. long

medication, etc. whereas unfamiliar environmental tasks were performed less efficiently because they need long cognitive resource demands. Everyday memory research is a fertile area, which needs to be understood with an Interdisciplinary approach.

- The findings have important implications for a country like India, where seventy million elderly live, and where these types of studies so far have not been carried out. In sum, a full understanding of memory self-efficacy related to everyday memory functioning of older adults can occur only if the person, the cognitive demands of a task, and the environment are considered together. To the extent that environmental or task demands on cognitive resources are high; older adults will likely function less effectively than younger adults.

Acknowledgments: The authors are thankful to University Grants Commission, New Delhi for financial assistance to conduct this study.

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 375–389

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

Perceived Stress and Psychiatric Morbidity among Elderly People Living Separately in the Community Due to the Out-migration of their Adult Children

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ABSTRACT

The present cross-sectional comparative study was conducted to assess and compare the level of perceived stress and the risk of psychiatric morbidity in randomly selected elderly people (N=220), residing in areas in Varanasi district, (Uttar Pradesh), living with their adult children (N=110) and elderly people living separately (N=110) due to the migration of their adult children to other cities or foreign countries. These elderly persons were interviewed using a semi-structured questionnaire consisting of socio-demographic variables, and Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, Hindi Mini-Mental Status Examination scale, and Perceived Stress scale were also administered to them. The data were analyzed using SPSS software version 20. Descriptive data were compared using frequency, percentage, mean, and SD. The comparison between the groups (living alone and living with children) and the relative risk was assessed using the Chi-square test and Pearson's bivariate correlation test was used to assess the correlation between variables. There was a significant difference found in the level of perceived stress and the risk of

psychiatric morbidity between the study groups. The perceived stress was found positively correlated with psychiatric morbidity. The level of perceived stress and the risk of psychiatric morbidity was found comparatively high among elderly living separately from their adult children in the community.

Keywords: Migration, Older adults, Depression, Anxiety, Cognitive impairment

Geriatric mental health care has become an important issue because of the increase in the population of elderly people all over the world (United Nations 2017). This growth in the population of elderly people is the result of the decline in the death rate and an increase in life expectancy in recent decades. Several age-related health problems such as physical illness and psychiatric disorders and other psychosocial problems are being noticed in every country.

A rapid increase in the population of elderly people aged 60 years and above in India has been observed in recent decades. According to the census 2011, there are about 104 million people in India aged 60 years and above. It is about 8 per cent of the total population of India, and it is projected that this ratio will increase by 19 per cent (300 million) by the year 2050 (Siva Raju, S., 2011).

With this increase in the population of elderly people a dramatic change has been noticed in their living arrangement. Out-migration of the young adults towards the other cities, states, and countries for a better future and employment due to urbanization and industrialization has brought a negative effect on the living arrangement of elderly people (Rajan, 2013) with the result that some joint families are being broken into nuclear families, and elderly people are being left to live alone or separately from their adult children without any proper support and care. According to National Family Health Survey (NFHS) 2005–06 report, there are about three fourth of the total population of elderly people living either alone or with their spouse only in India (IIPS, 2007).

Living alone or separately from adult children in later life without any support affects the lifestyle and psychological wellbeing of elderly people. Previous studies have reported that living alone or separately from their adult children in old age for elderly people often

becomes a result of an undesirable state and as a risk for health and it required special attention (Iliffe *et al.*, 1992 and Kharicha *et al.*, 2007). Elderly people experience several types of stressors when they live alone or separately from their adult children such as loneliness or lack of social network, lack of emotional, social, and financial support, etc. Such types of psychosocial stressors may increase the level of perceived stress among them and it further may affect their mental health (WHO, 1977).

There is about 20 per cent of the older adult population aged 60 years and above suffering from a mental or neurological disorder and 6.6 per cent of all disability (disability-adjusted life years-DALY) this population is attributed to a mental and neurological disorder (WHO). Some Previous studies have stated that the prevalence rate of psychiatric disorders among older adults is about 33.9 per cent in India (Nair *et al.*, 2015). Studies conducted in other countries have reported that psychiatric disorders are more prevalent among elderly people living alone compared to elderly people living with their children and family member in the community (Louis *et al.*, 2019). But there are very few such types of studies that have been conducted in India. Hence, the present study was conducted to assess and compare the level of perceived stress and psychiatric morbidity among elderly people living separately from their adult children due to outmigration in the other cities and elderly people living with their adult children in the community in India.

Objectives

1. To assess and compare the level of perceived stress and prevalence of common psychiatric morbidity between elderly people living with their adult children and elderly living separately due to their adult children migration.
2. To assess the correlation between the level of perceived stress and prevalence of psychiatric morbidity.

Hypothesis

1. There will be no significant difference between the level of perceived stress and prevalence of common psychiatric morbidity

among elderly people living with their adult children and elderly living separately due to their adult children migration.

2. There will be no significant correlation between the level of perceived stress and the prevalence of common psychiatric morbidity.

Material and Methods

A community-based cross-sectional comparative study was conducted in a period between January 2017 to December 2019 in some randomly selected areas (5 wards out of the 90) of Varanasi district in Uttar Pradesh. This study was ethically approved by the Ethical Committee Institute of Medical Sciences, Banaras Hindu University, Varanasi.

Sample

A total of 220 respondents (110 elderly people living with their adult children and 110 elderly people living separately from their adult children and family in the community) fulfilling inclusion and exclusion criteria were selected through systematic random sampling.

Inclusion Criteria

1. Elderly living with their adult children and the elderly living separately due to their adult children migrating away from community.
2. Aged 60 years and above.
3. Both male and female.
4. Willing to participate in the study and giving consent.

Exclusion Criteria

1. Neither willing to participate in the study nor giving consent.
2. Having visual or hearing impairment and chronic physical illness.

Tools

Socio-demographic Questionnaire: A semi-structured questionnaire consisting of age, gender, marital status, education, residence, socio-economic status (assessed by Modified Kuppuswamy Socioeconomic Status Scale Year 2017) was prepared by the research scholar.

Hamilton Depression Rating Scale: It was developed by Hamilton M. (1967). It is also known as HAM-D. It is the most widely used scale to assess depression. The original version of this scale consists of 17 items including symptoms of depression over the past week. A score of ranged between 0–7 is taken as normal, while score 8–13 mild depression, score 14–18 moderate depression, 19–22 severe depression, and score =23 very severe depression. Its sensitivity is about 86.4 per cent and specificity about 92.2 per cent. It takes a minimum of 20 minutes to be administrated

Hamilton Anxiety Rating Scale: It was developed by Hamilton M. (1959). It is also known as HAM-A. This scale consists of 14 items; each of these items defined by symptoms of anxiety. Each item is rated a score of 0 (absent) to 4 (severe), having a total score range between 0 to 56. A score 0–13 is taken as normal, score 14–17 mild anxiety, 18–24 moderate anxiety, and 25–30 severe anxiety. It requires a minimum of 10 minutes to be administrated.

Hindi Mini-Mental Status Examination scale (HMSE): It is a Hindi translated version of the Mini-Mental Status Examination Scale which was developed by Folstein *et al.*, (1975). It's a Hindi translated version published by Ganguli M *et al.*, (1995). It is used to examine cognitive functions like attention, concentration, orientation, memory, literary, calculation, etc. The score obtained =24 is taken as normal while scoring 20–23 as mild cognitive impairment, score 10–19 as moderate cognitive impairment, and a score below 10 as severe cognitive impairment. Its reliability is about 0.89 and the validity of about 0.82. It requires approximately 10–15 minutes to be administrated.

Perceived Stress Scale: It was developed by Cohen *et al.*, (1988). It was developed to assess the perception of stress and to the degree to which situations in an individual's life are taken as stressful. It is a self-rated scale, consists of 10 items; 6 negatively stated items and 4 positively stated items. Each item is rated 0 (never) to 4 (very often) by the respondents. The total score is obtained by adding each item score rated by the respondents (where 4 positively stated items are reversely scored). An obtained score range 0–13 is taken as low perceived stress, 14–26 as moderate perceived stress, and 27–40 as high perceived stress.

Procedure

First, 5 wards out of the 90 wards of Varanasi District, Uttar Pradesh were randomly selected as the clusters. The research scholar visited every 5th of the house of the selected wards to interview respondents. The respondents who fulfill the inclusion and exclusion criteria were selected and they were informed about the purpose of the present study. All the selected respondents were interviewed by the research scholar using the prepared semi-structured interview schedule. Psychiatric disorders among the respondents were assessed using the ICD-10 criteria and the severity was assessed by scales such as HDRS, HAM-A, and HMSE. The respondents who left the interview before the interview finished were excluded from the study. Each Interview was in approximately 30–35 minutes.

Statistical Analysis

The data was entered, coded, and organized in MS Excel. Then it was exported to the IBM SPSS software version 20 for statistical analysis. The categorical data were analyzed using frequency and percentage while continuous data were analyzed using mean and standard deviation. The Association of socio-demographic variables was measured using the Chi-square test. The comparison between the study groups was assessed using the student's independent t-test.

Results

Table 1
Socio-demographic Characteristics

<i>Variables</i>	<i>Elderly living with their adult children (Group-1) N=110</i>	<i>Elderly living separately from their adult children (Group-2) N=110</i>	<i>Total N=220</i>	<i>Chi square Value</i>	<i>df</i>	<i>P-Value</i>
	<i>F</i>	<i>%</i>	<i>F</i>	<i>%</i>	<i>F</i>	<i>%</i>
Age (in years)						
60–69	84	76.4	78	70.9	162	73.6
70–79	18	16.4	26	23.6	44	20
80 and above	8	7.3	6	5.5	14	6.4
Mean and SD	66.33 ± 6.34		66.85 ± 4.90			

Cont'd...

Cont'd...

Gender									
Male	61	55.5	52	52.7	113	51.4	1.474	1	0.225
Female	49	44.5	58	47.3	107	48.6			
Marital Status									
Married	72	65.5	64	58.2	136	61.8	1.232	1	0.166
Widow/ widower	38	34.5	46	41.8	84	38.2			
Education									
Illiterate	30	27.3	21	19.1	51	23.2	2.068	1	0.15
Literate	80	72.7	89	80.9	169	76.8			
Residence									
Rural	20	18.2	24	20	44	20	0.776	2	0.678
Semi-Urban	37	33.6	39	34.5	76	34.5			
Urban	53	48.2	47	45.5	100	45.5			
Socioeconomic Status									
Lower	11	10	15	13.6	26	11.8	5.527	4	0.237
Lower middle	13	11.8	17	15.5	30	13.6			
Upper Lower	38	34.5	28	25.5	66	30			
Upper middle	30	27.3	39	35.5	69	31.4			

Table 1 shows that majority of the respondents in the present study were aged between the age group 60–69 years and the mean age of the respondents in group-1 was 66.33 ± 6.34 years and in group-2 was 66.85 ± 4.90 years. The majority of the respondents (55.5%) in group-1 are male, but in group-2 most of the respondents are female (52.7%). The percentage of married respondents (61.5%) was comparatively high than the widow/widower respondents (38.2%) in both study groups. The majority of the respondents in both study groups were literate (76.8%). Most of the respondents in the present study were from urban (45.5%) and semi-urban (34.5%) areas. Based on the modified Kuppuswamy socioeconomic status scale, the majority of the respondents belong to upper lower (30.0%) and upper-middle (31.4%) socioeconomic status in both study groups.

Table 2
Comparison of Perceived Stress between the study groups.

Variables	Elderly (Group-1) living with their adult children N=110		Elderly living (Group separately from their adult children N=110		Chi square Value	df	P- Value
	F	%	F	%			
Perceived Stress							
Low	22	20	8	7.3	7.881	2	0.019*
Moderate	82	74.5	97	88.2			
High	6	5.5	5	4.5			

* Significant at 0.05,

Table 2 shows that there was a significant difference ($p < 0.05$) in the level of perceived stress between both study groups. Perceived stress was found comparatively higher among elderly people living separately from their adult children than elderly people living with their adult children in the community. However, the majority of the respondents in both study groups (74.5% in group-1 and 88.2% in group-2) were found with a moderate level of perceived stress.

Table 3 shows that in the assessment of the common psychiatric morbidity; approximately half of the respondents (49.1%) in the group-1 were found without depression or normal, followed by mild depression (25%), moderate depression (17.3%), severe depression (5.5%), and very severe depression (2.7%). However, only one-third of the respondents (31.1) were found without depression or normal followed by mild depression (26.4%), moderate depression (22.7%), severe depression (14.5%), very severe depression (3.6%). Most of the respondents (78.1%) in group-1 were found without anxiety or normal followed by mild anxiety (8.2%), moderate anxiety (10%), severe anxiety (2.7%). Anxiety was found comparatively high in group-2; most of the respondents (60%) were found without anxiety followed by mild anxiety (23.6%), moderate anxiety (14.5%), and severe anxiety (1.8%). In the assessment of the cognitive impairment, most of the respondents (73.6%) were found without cognitive impairment or normal followed by mild cognitive impairment (18.2%), and severe cognitive impairment (8.2%) in group-1. But in group-2 approximately half of the respondents (45.5%; 39.1% mild and 6.4 per cent severe cognitive impairment) were found with cognitive impairment.

Table 3
Severity of Psychiatric Problems among the respondents

Variables	Elderly living with their adult children (Group-1) N=110		Elderly living separately from their adult children (Group-2) N=110		Total (N=220)	
	F	%	F	%	F	%
Depression						
Normal	54	49.1	35	31.8	89	40.5
Mild	28	25.5	29	26.4	57	25.9
Moderate	19	17.3	25	22.7	44	20
Severe	6	5.5	16	14.5	22	10
Very Severe	3	2.7	5	3.6	8	3.6
Anxiety						
Normal	87	79.1	66	60	153	69.5
Mild	9	8.2	26	23.6	35	15.9
Moderate	11	10	16	14.5	27	12.3
Severe	3	2.7	2	1.8	5	2.3
Cognitive Impairment						
Normal	81	73.6	60	54.5	141	64.1
Mild	20	18.2	43	39.1	43	28.6
Severe	9	8.2	7	6.4	16	7.3

Table 4
Compression of Psychiatric Morbidity between the study groups

Psychiatric Morbidity		Elderly living with their adult children (Group-1) N=110		Elderly living separately from their adult children (Group-2) N=110		χ^2 Value, (p-value)	Odds Ratio	95% Confidence Interval
		F	%	F	%			
Depression	Absent	54	49.1	35	31.8	6.812	2.066	1.194–3.576
	Present	56	50.9	75	68.2	(0.013)*		
Anxiety	Absent	87	79.1	66	60	9.464	2.522	1.388–4.582
	Present	23	20.9	44	44	(0.002)*		
Cognitive Impairment	Absent	81	73.6	60	54.5	8.71	2.328	1.321–4.101
	Present	29	26.4	50	45.5	(0.003)*		

* Significant at 0.05,

Depression Present (HDRS Score >7), Anxiety Present (HAM-A Score >13), Cognitive Impairment = (HMSE Score <24)

Table 4 shows that while comparing the common psychiatric disorder between both study groups, there was high significance difference found in common psychiatric morbidities such as depression ($p < 0.05$), anxiety disorder ($p < 0.05$), and cognitive impairment ($p < 0.05$). The risk of psychiatric morbidity was found two times high among elderly people living separately from their adult children compared to elderly people living with their adult children.

Table 5
Correlation between Perceived Stress and Psychiatric Morbidity

	<i>PSS Score</i>	<i>HAM-D Score</i>	<i>HAM-A Score</i>	<i>HMSE Score</i>
PSS Score	1	0.641**	0.568**	-0.400**
HAM-D Score	0.641**	1	0.828**	-0.593**
HAM-A Score	0.568**	0.828**	1	-0.542**
HMSE Score	-0.400**	-0.593**	-0.542**	1

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

Table 5 shows that on applying Pearson's Bivariate Correlation test, there was a high positive correlation ($p < 0.01$) found between perceived stress and psychiatric morbidities such as depression, anxiety, and cognitive impairment.

Discussion

The present study was conducted to achieve two objectives; The first was to assess and compare the level of perceived stress, the prevalence of common psychiatric morbidity (such as depression, anxiety, and cognitive impairment) among elderly people living separately from their adult children and elderly people living with their adult children in the community. And the second was to find out the correlation between the level of perceived stress and common psychiatric morbidity. To achieve these two objectives; there were a total of 220 respondents (divided into two groups; 110 elderly living with their adult children and 110 elderly living separately from their adult children) were interviewed. These study groups were matched on socio-demographic variables such as age, gender, marital status, education, socio-economic status, and residence.

There was a significant difference found in the level of perceived stress between study groups. Perceived stress was found comparatively

high among elderly living separately from their adult children compared to elderly living with their adult children in the community. A moderate level of perceived stress was found more common in both study groups. These findings are consistent with the finding of some previous studies conducted in India and other countries (Kim 2009 and Osmanovic-Thunström *et al.*, 2015).

In the assessment of psychiatric morbidity among the respondents in both study groups, the following results were found in the present study; there was a significant difference in the risk of psychiatric morbidity between both study groups. And it is two times higher among elderly people living separately without any proper care and support due to adult children's migration to other cities or states. Studies conducted by Antman (2010) and Adhikari *et al.*, (2011) had reported that out-migration of adult children affect the physical and mental health of elderly people. A study conducted by Jacob *et al.*, (2019) had reported that living alone had a significant association with common mental disorders. And the prevalence of these disorders was found comparatively high among elderly people living alone in the community.

The finding of the present study indicates that depression was found more common in both study groups but the risk of depression was found comparatively high among elderly people living separately compared to elderly living with their adult children in the community. Melanie *et al.*, (2012) had reported in their study that elderly living separately due to the migration of adult children are more prone to depression. A study conducted by Khamu and Langstieh (2015) had reported in their study elderly living alone experience a low level of life index and experience a high prevalence of depression. In contrast to the present findings, some other studies had found no significant association between elderly living alone or separately and depression (Marcus *et al.*, 2014 and Kim 2016).

In the present study anxiety disorder was found comparatively higher among elderly people living separately from their adult children than elderly people living with their adult children in the community. These findings are similar to previous studies conducted by Kirmizioglu *et al.*, (2009) and Dong *et al.*, (2014), in which they found anxiety disorder comparatively high among elderly living alone

than elderly living with their adult children and other family members in the community.

The cognitive impairment was found comparatively high among elderly people living separately from their adult children in the community. This might be the result of the level of perceived stress, depressive and anxiety symptoms among them. A study conducted by Potter *et al.*, (2009) had revealed that the level of perceived stress and psychiatric morbidities such as anxiety and depression influence the appraisal of cognitive ability among elderly people. Mazzuco *et al.*, (2017) found in their study that the living arrangement had a significant association with cognitive impairment among elderly people.

The findings of the present study revealed that there was a positive correlation between the level of perceived stress and psychiatric morbidities such as depression, anxiety disorder, and cognitive impairment. A study conducted by Home, R. (2016) and Suresh R. (2016) had reported that the perceived stress had a positive correlation with depression. Similarly, another study conducted by Tendolkar *et al.*, (2016) had reported their study that perceived stress had a positive correlation with mental illness such as depression, anxiety, alcohol dependence and cognitive impairment.

Limitations

The present study has some limitations such as; only depression, anxiety and cognitive impairment was assessed but other psychiatric morbidities were not assessed. Diagnostic and interview-based scales were used to assess the psychiatric disorders; however, a self-reported questionnaire may be used to reduce biases. A larger sample size, long duration of follow-up, and multiple assessments may be better for better outcomes.

Conclusion

The findings of the present study revealed that elderly living separately from their adult children without any proper care and support in the community had more perceived stress compared to elderly people living with their adult children. The risk of a common psychiatric disorder such as depression, anxiety, and cognitive impairment was found two times higher among elderly living

separately. There was a significantly high positive correlation found between the perceived stress and psychiatric morbidity. Based on these results; it can be concluded that elderly people living separately or alone due to the migration of their adult children in other cities or states face comparatively high perceived stress and the risk of psychiatric morbidity among them is also high.

Acknowledgments: The first author is thankful to UGC for the financial support provided for the research. The authors are also thankful to all the participants who participated in the study and to all those volunteers who supported and helped in the data collection for the present study.

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 390–406

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

The Condition of Elderly Inmates Living in the Old Age Homes of Mumbai: An Exploratory study

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ABSTRACT

The purpose of this study was to study the socio-economic background of the inmates and the reasons which lead the elderly to join old age homes and their relationship with their family members and relatives before and after joining old age homes. In this study, a total of 72 persons (45 elderly inmates, 12 management authorities, and 15 staff members) from 11 old age homes situated in various parts of Mumbai city were selected by purposive sampling method and were interviewed individually, using a questionnaire, by the researchers to find out the relevant information. It was found that lack of familial affection, support, and absence of close family members, poor health condition have become the major reasons to choose an old age institution for most of the elderly inmates considered living in old age homes is stress-free, gives peace of mind, and absence of conflicts with children as the major advantages. Elderly women inmates were feeling better and were able to cope with the emotional upheavals of familial living in old age homes. All basic needs are taken care of by the good and caring staff of homes. Some disadvantages reported by the elderly were: the feeling of isolation, living away from

family and friends and the outside world, the rules of the institute, lack of clean accommodation, and lack of food of their liking.

Keywords: Old Age Homes, Mumbai, Institutional Care, Family, Charitable Organizations, Paid Unpaid facilities.

The growing pace towards urbanization and modernization where people feel elderly as someone depriving them of their freedom has led to the inclination to the old-age home culture in India and because of such view there comes the utter need for the creation of the provisions for the elderly living in the society. Around 60 per cent of elderly people living with their family's face negligence, abuse and harassment, 66 per cent are either 'very poor' or below the poverty line, and 39 per cent have been either abandoned or live alone.

In India the government has lagged in giving care to the elderly, private services have mushroomed. For a price, lonely old people, their children and grandchildren far away, too busy or indifferent, can even rent young people to give them company, keep caretakers and nurses to take care of them at home or send them to live in old age homes (Datta, 2017). But particularly in big cities like Mumbai, Delhi, Chennai, Bangalore, Hyderabad, etc. where there are not enough old-age homes and only a few affordable facilities are available which are not up to the mark for elderly living. Most of the families who are capable, prefer luxury old age homes with three to five-star amenities. But such stories of luxury and self-sufficiency are rare. Most of the elderly homes are in filthy conditions and are mainly meant for the destitute elderly (Ara, 1997).

Traditional forms of care available to older generations are under threat. There is a failure to address the aging issues in developing societies. A disproportionate amount of resources is available for the elderly with long-term disabling conditions which often lead to high-cost technology. Families under pressure face the chronic and complex process of taking care of ailing elderly put pressure on the institutionalization of elderly who need extensive care due to extremely poor health situations (Kinsella, and Phillips, 2005). Social and geographical mobility lead to situations where children are unable to provide the necessary care and they believe that elderly care institutions are the better options to give proper attention and care to their

elderly family members. The utmost need of the elderly is thus often overlooked, which includes proper care and support in terms of health and nutrition, social, economic, and psychological needs. They are deprived of the comfort and support at the time of anxiety, loneliness, and helplessness, by listening and intervening appropriately and effectively in old age (Lalan, 2014).

In India, for the shelter, care, and support of ailing elderly, old age homes were established in urban and rural areas under the initiative of both governmental and non-governmental agencies. Such institutional care is a source of relief to many aged in our society who are either unwanted for their family or family is unable to take care of them due to chronic health conditions. The elderly are themselves choosing to be in these old age homes (Gupta, *et al.*, 2014). Studies conducted by Rajan (1999) and Dandekar (1996) in Maharashtra and Kerala respectively found that most of the inmates ended up in old age homes because of no one to take care at home and to live an independent peaceful free life.

But, comprehensive information on the living status of the elderly in general and institutionalized in particular concerning Maharashtra and especially Mumbai is scanty. There is a need to develop strong research information and data base on these lines to plan appropriate and timely intervention strategies to tackle the problems of the elderly and to ensure a better quality of life in the cities like Mumbai. Due to the lack of much-published information in this regard, it was considered necessary to do the research study on the status of the elderly, particularly those living in old age institutions in Mumbai city. Researchers have tried to make an attempt to understand the overall situation in which elderly residing in the selected old age homes of Mumbai, reasons to join old age homes, and the relationship of elderly with their family members and relatives before and after joining old age homes. Researchers also tried to understand the expectations and desires of the elderly in their lives while living in old age homes. There were many aspects that researchers have tried to cover keeping in mind the different limitations involved in the process of researching the elderly living in old age homes.

Objectives of the Study

1. To study the socio-economic background of the inmates and reasons which lead the elderly to join old age homes in Mumbai.
2. To understand the relationship of elderly with their family members and relatives before and after joining old age homes.

Methodology

Sample

In this study, a total of 72 persons (45 elderly inmates, 12 management authorities, and 15 staff members) from 11 old age homes situated in various parts of Mumbai city were selected by purposive sampling method and were interviewed by the researchers to find out the relevant information. Only those elderly, who have been living in old age homes for at least one year, were included in the study. The elderly who were unable to give a response to answer the questions and were suffering from any mental health or similar conditions were excluded.

A specially designed questionnaire, which contained open-ended, as well as, close-ended questions, was used while interviewing the respondents. Careful observation of the respondents at the time of the interview was also used as a technique.

The permission for conducting the study was taken by explaining all the major aspects involved in the research.

Data Collection

As a first step, the purpose of the study was explained to the participants in groups. Each respondent was interviewed individually using a questionnaire prepared for the purpose. It is interesting to note here that respondents were eager to talk a lot about themselves. But due to the paucity of time, the interviewer could not help them. At times collecting correct information was rather difficult for them. The investigator had to interrupt some of them in between as they wanted to talk and say many things about their lives. Sometimes it was hard for the investigator to make the elderly understand the questions. The questions were explained in very simple language. In some old age homes, the caretakers wanted to be with the respondents while

interviewing so that the actual picture of the old age home should not be revealed. This prevented the elderly from expressing freely what they wished to talk about. But on the other hand in some old age homes, the elderly were free to talk and the management staff was very supportive in giving answers. The respondents in some old age homes were open to sharing their difficulties and problems without any inhibition. In some old age homes, the elderly were not cooperative. They said that students visited them very frequently and asked them very sensitive questions. This reminded me of their past painful experiences which left them unhappy for days. Thus, along with the positive responses from the respondents, the researchers had many limitations also while conducting this survey.

Findings and Discussion

The responses of the elderly inmates were analysed in 9 categories given below:

(1) Socio-economic background of the inmates and reasons for elderly to join old age homes

The elderly from a mixed socio-economic background were living together in the old age homes of Mumbai. People from all the religions were present in the old age homes, Hindu, Muslim, Sikh, Christian, etc. but the majority of inmates belonged to either Hindu or Christian religion followed by Muslim and others. All sorts of elderly married, unmarried, widowed, divorced and separated or deserted were staying in old age homes. But widowed, separated and deserted elderly were more in comparison to others. They were involved in different employment activities in the past, some were private employees, government employees and getting pensions, businessmen or self-employed, daily wage earners, housewives. But some were completely unemployed and were dependent on their children and relatives. Most of them have reported that they have no current source of earnings either they were completely dependent on old age homes for their living or they used to get some money from their children as maintenance which was normally very little. Only in few cases, children used to come and spend some money on parents. Some of them had been working in old age homes like making handicrafts, envelopes, diaries, etc. and old age homes helped them to sell it,

some used to take tuition classes for children, some were completely dependent on their savings or getting pensions. Some NGOs were doing very noble work and they provided regularly the daily requirements or other required kinds of stuff for old age people. The elderlies were either completely illiterate or had primary, secondary or higher secondary education. A smaller number of them were graduate or post-graduate. Such elderlies were also found during the interview who were teachers, sportsman or sportswoman, writers, singers, policeman, social workers, college principal, bankers, etc. involved in other government or private jobs but were living in old age homes which was an eye-opener.

Changing familial values of Mumbai indicated the physical and psychological state of the elderly with lack of physical space and unfriendly city life living with children and grandchildren in a limited available space and becoming a financial burden on family members. They wanted to live a life of dignity and self-respect which they couldn't enjoy during their stay with married children. Almost two-fourths of the elderly reported that it was their own decision to live in an old age home. They chose to spend the rest of their lives in old-age institutions to avoid daily fights with family and to get a peaceful life. Others reported being forced to live in old age homes for they didn't have any option. Many of the elderly were getting pensions and have been retired from good posts and they either didn't want to be a burden on their families or their children were settled in the other cities of India or were living abroad. They could afford the amenities of a decent old age home by paying a good amount of money and getting twenty-four hours of facilities of medical care, food recreational activities, comfortable living, etc.

Many elderlies who had lost their spouses had been sent by their family members to stay in old age homes and some who had spouses but they were very old and couldn't take care of each other. Some who had got divorced at some point in life didn't remarry and have no one to take care of come to stay in old age homes. Some were deserted by their spouses in the older ages chose to stay in old age homes. Such people even though they were working didn't want to live alone due to mental health issues. They wanted to be surrounded by the company of people like them. Health-related problems faced by elders

led them to join old age homes. Families didn't want them or were not in a position to take care of such elderly.

Some respondents came to the old age home to lead an independent and peaceful life. Heavy stress inside their own homes has forced them to choose a newer place for them. There were so many couples who had married daughters and they didn't want to stay with them and their families, so they had chosen to stay in old age homes. Daughters were also many times supporting their parents in old age homes by sending them money, essentials and meeting them regularly.

(2) Relationship of elderly with their family members and relatives

These elderlies were normally brought to the old age institutions by son, daughter, daughter-in-law, son-in-law, relatives, and neighbours. There were many reasons due to which they had come to stay in old age home or were forced to go away from their own homes. These reasons were many but some of them found lack of people to take care of, lack of respect within the family, lack of adequate financial support in family, feeling of loneliness, lack of space, bad behavior of children and grandchildren, extremely poor health. These were the situations they used to face when they used to cohabit with their family members but when they had got shifted to the old age homes, they all had different experiences to share. Family members of some elderly used to come quite often almost every week, some once in a month or once in two months, some children or relatives who live in another city or live abroad came once or twice in a year and even never came to see their old parents.

Since there was a facility of having a conversation through mobile or landline phones in most of the old age homes, some families only talked through phone and felt they had performed their duty. There were a smaller number of families who were very much connected to the elderly. Otherwise destitute elderlies hardly got to see anyone asking about their whereabouts. Staff had reported even such incidents where people came to take elderly if they got to know that they were alive, to kill the elderly or to pressurize them for transferring the property to their names. So, the management had now become very careful about sending the elderly with anyone. This could bring a bad name to the old age home and many times it could become a criminal case.

When the elderly used to live in their own homes, family members hardly considered their opinion in any family matters. Often they were not even asked about their opinion. Some elderly said that earlier they had a say in the family matters but slowly it had gone. Children and grandchildren slowly started taking their own decisions and never bothered to inform them about their life decisions. Leaving only a few elderlies who shared a good bond with the family, most of them had a poor relationship with their family members or were completely neglected.

Some elderlies staying in old age homes when asked if they wanted to go back to their house responded positively and were willing to go back to their own houses. Only a few of them who had faced serious abuse at home were scared of going back and staying with the children, those who were destitute were hopeless about going back to their homes. Some due to mental health issues, memory loss, or very poor health never ask for family and didn't have any opinion about going back since old age home was their home and the staff were their family members. Even though their children used to come to see them, they many times couldn't recognize them. The main reasons which encouraged the elderly to go back to their homes were family's love, better facilities, comfort, food, and clothing.

Family members of the elderly living in elderly institutions sometimes took them to home for celebrating festivals but most of them remained in old age homes and became part of the celebrations organized by the members of old age homes. They miss their family members and the beautiful moments spent with the family and friends. Many elderlies miss their friends who were in contact with them for a long time or the relatives with which they were strongly connected. These relatives and friends were now not in contact with them. Families rarely took the elderlies living in the old age homes for the family functions like marriages, birthday celebrations, etc. Grandchildren who used to take blessings from them during their stay didn't bother to call now to them. Some exceptions were there where elderly still became a part of festivals and functions but such incidents were rare.

Female inmates had more bitter experiences to share. They had stayed and managed more with daughters-in-law during the household

works or they were widows. They faced an extremely tough time after the death of their spouse. Faced more abuse and exploitation in the family mainly by working daughters-in-law or relatives. Similar experiences had been shared by the male inmates whose condition in the houses worsened after the death of the spouse. The behavior of children and grandchildren had changed. Thus, for such elderly things have got better when they reached old age homes. The relationships with family have got better in some cases. They were away from daily fights and mistreatment. Thus, there was a mixed review in terms of the relationship of elderlies with their family members before and after joining old age homes. Many of them were in better condition and many of them still missed the love and comfort of home and togetherness of family members.

3. Reasons for joining an old age home?

Researchers also examined the most contributing factors that made it essential for these elderlies to enter old age homes. In other words what were the most contributing factors that made it essential for these elderlies to enter old age homes?. Was it their own decision or it was forced on them?

Important decisions in one's life usually involve a considerable amount of prior thought and consideration. A major decision has far-reaching consequences in the entire life. On asking these questions some of the respondents who were destitute or living alone and having no one to look after them, replied in the affirmative while most of them replied that they were not at all considering to join any old age home. The reasons for sending the elderly parents to old age homes were different for different families. Daily fight with family members, over interference of parents, stealing things from homes, saying bad words about the son and daughter in law to other relatives, married daughters, property issues, financial issues, childlessness, and so on. Some had run away due to the daily abuse and exploitation they were facing in their homes. Some were thrown out of the houses or forced to live in old age homes. Some had supportive family members but they were unable to care due to health issues. Having no children to support them during this vulnerable age had also been an important factor compelling these elderlies to reside in charitable old age homes.

Many of them did not care for the elderly as they viewed the elderly as a burden and family members perceived that the elderly were not contributing to the family in any way. Many of the elderly were residing in these old age homes due to working daughters and daughters-in-law who were unable to care for the elderly since the elderly depended mainly on these working daughters and daughters-in-law to care for them.

Respondents were asked whether their family members wholeheartedly supported them to join charitable old age homes. This was to examine the significant role played by the family in determining the decision to admit the elderly into old age homes. Interestingly half of the respondents' family members wholeheartedly supported the elderly to be admitted into old age homes. This indirectly points out the fact that the family members thought that they would be better cared for in old age homes or they have not much concern for the elderly or think that the family is not responsible to care for the elderly. But many of the respondents reported that their family members did not wholeheartedly support the admission of the elderly into the old age home but conditions made them take such steps. More respondents' family members wholeheartedly supported the elderly to join old age homes than those who did not support this.

(4) Living in old age homes

When asked about the feelings on the day of admission into old age homes, most of the elderly felt sad, depressed, lonely, disturbed, neglected, hardly some of them felt happy and peaceful while shifting to old age homes. The feelings that the respondent has on the day of his/her admission into the old age home disclosed their willingness at that time to enter the old age home and also their state of mind at that time. It was evident from the response of the elderly that shifting to an old age home was not a very happy process for their lives. It was a painful phenomenon that happened with them either willingly or unwillingly. For those who were living in a highly vulnerable situation, it was a moment of relief to reach old age home. Some of the respondents shifted to get relieved from loneliness.

(5) Relationship with other inmates

These elderlies find the staff and management of the old age home as their biggest support and consider them as their family members.

Since the respondents used to spend a considerable amount of time in the company of other residents in the old age home it was another interesting aspect in the study to understand how each inmate perceives their relationship with other inmates on the whole. Since these elderlies spend their whole day and night in the company of their fellow inmates most of the respondents stated that their relationship with their co-residents was excellent. These respondents were generally very socially oriented and claimed to be fond of being in the company of people. Only some of them said that their relationship is a poor or mediocre relationship with other inmates. So, it was understood that even though individuals lived together nearby there were various grounds for differences to develop. Since the respondents who lived together were not members of the same family. Most of the respondents stated they tolerated the other inmates a lot for the sake of peace or they adjusted with each other to a great extent to live in harmony. Those who shared good bonds loved to share their feelings, eat together, go out for some small outings, used to play some games, watch TV, etc. The main topics of discussion among the elderly were family matters, politics, religion, past life, casual talk.

(6) Relationship with the members of Staff

The role of caretakers in old age homes is very important in the lives of the inmates in old age homes as they provided plenty of assistance and service to the elderly. It was found that a large number of them described their relationship with the caretakers to be fair. Many of the respondents estimated their relationship with the caretakers to be excellent. They described the caretakers as helpful, friendly, and very responsive to their needs. Many of the respondents described their relationship with the caretakers to be very good as their son and daughter. They found caretakers and staff to be very helpful and had a good rapport with them. It was found that the availability of the warden denotes the type of service provided to the elderly in these old age homes.

The availability of the services of the warden makes the life of the elderly easier and more convenient in the old age home. This gave elderly a sense of being cared for and also having a helping hand whenever the need for help is felt. Most of the respondents considered the availability of the warden to be important to them. They stated that since their family members were not in the vicinity to help them nor were the other inmates capable, the wardens were the ones on whom they depended the most. In a few old age homes, it was got to know that sometimes they are used to the non-availability of the warden because the warden were preoccupied some other work, disinterest, and negligence of the warden or he may be too far away to hear the cry for help. Next to the warden in the old age home, the respondents were most exposed to contact of the caretakers. The caretakers were available for the service and help of the elderly all through the day and even at night who are full-time caretakers. Ideally, a caretaker should be courteous and helpful to the inmates in old age homes to contribute to the satisfaction and contentedness of the elderly in these homes. Most of the respondents claimed that the caretakers were courteous towards them, while only some of them stated that the caretakers were not courteous and very supportive. Non-courteous behaviour on the part of the caretakers included rudeness, indifference to the needs of the respondents, and unwillingness to serve. But it was relieving and pleasant to learn that most of the respondents in all the old age homes considered the caretakers to be courteous.

(7) Recreational and other activities in old age home

Recreation formed an important aspect in the lives of the elderly mainly because the elderly pursued less work and more free time. All these old age homes had provided the elderly with different types of entertainment to keep them interestedly occupied. Recreation has proved to be an important aspect in the living condition of the elderly in old age homes. Apart from recreation in the old age home, the elderly have also stretched their domain of entertainment outside the aged home by going on outings and visiting restaurants, parks, etc. occasionally. Leisure time activities mostly preferred by the elderly were making handicrafts, letter writing, listening to music, gardening, talking and discussing with fellow inmates or caretakers, watching TV, reading, indulging in religious practices regularly or occasionally.

gardening, cooking, hobby classes, physical activities, yoga, evening walk, meditation, kirtan/bhajans, organizing management committees. Some elderlies were involved in social services for the benefit of the local community near old age homes like providing tuition classes, hobby classes like painting, handicrafts making, music, etc.

(8) Health condition and health Care

Researchers also had focused on the health conditions, diseases, and ailments the elderly were suffering from. The major health problem found in the elderly were the problem in vision, the problem with hearing, the problem with walking, dental problems, difficulty in swallowing, Cataract, Diabetes, blood pressure, asthma, etc. The minor ailments which they were suffering from Insomnia (a problem in sleeping), fatigue (feeling of tiredness or lack of energy), indigestion (pain or discomfort in the stomach due to difficulty in digesting food, constipation (infrequent or difficulty in passing stool), allergies (hypersensitivity of the immune system to different substances causing nose, lung or throat infection). Major mental health illnesses found among the elderly were: Depression (persistently depressed mood or loss of interest in activities, causing significant impairment in daily life), Anxiety (a feeling of worry, nervousness, or unease about something with an uncertain outcome), Bipolar disorder (severe high and low moods and changes in sleep, energy, thinking, and behavior), Dementia (symptoms of impairment in memory, communication, and thinking, impairment in daily functioning), Schizophrenia (people interpret reality abnormally may result in a combination of hallucinations, delusions, and the disordered thinking, impairs daily functioning, disabling). The personal habits which were found among the elderly were smoking, alcohol consumption, pan chewing, snuff, and others. Some elderly didn't have such habits, some did it occasionally and some were involved regularly in such habits.

Many elderly living in old age homes were not mentally stable so they didn't remember their children and other family members. For them, the staff and management of the old age home was their family. Even if their children came to visit them, they couldn't recognize them. But those elderly who were in stable health conditions used to

miss their family and many times wanted to go back to live with their family. They wish that their family should support and interact with them more. Old age homes had given facilities to the elderly to talk with their family members through phones whenever they wish. Some old age homes had even separate rooms for telephone conversations. The staff became the family and support for them. But if any staff left the job or any inmate died or went back home, it had an intense effect on the other elderly inmates living in the old age homes. The elderly felt insecure because these caretakers, staffs, and other management persons are those with whom they play, sing, eat, and do other activities. It is painful for them to get away from them.

(9) Inmates awareness of Governments' schemes for senior citizens

For most of them, old age home had given another life keeping them away from the sufferings of home. But some still miss the comfort and love of their own house and family members. Most of the elderly were not aware of the schemes and programs of the government for them. They didn't know about the benefits given by the government for the elderly in India. But some of them were aware of a few pension plans and other schemes, etc. They were in the opinion that the government is not doing anything for their benefit. No one bothers about them since they are in the last stage of their lives and are considered useless for society. Old age by itself is generally associated with loneliness and sadness. Added to this, if the elderly reside in old age homes apart from their families, loneliness, and sadness in their lives are likely to be present. Most of the elderly felt lonely and sad while living in old age homes. The various ways of overcoming loneliness and sadness included taking up some activity, speaking to someone about their feelings, rationalise about their loneliness and sadness to get out of it, prayer and religion, and getting involved to some work of old age home.

(10) Inmates dreams

All the individuals had certain aspirations, hopes, and plans for the future. Different areas of life in which their aspirations were not fulfilled included the respondents' marriage, the respondents' jobs,

their children's or grandchildren's marriages, children's jobs, and house finances and property making, etc. It was interesting to consider and examine why the elderly view old age to be a problem. Respondents thought of old age to be a problem for reasons such as their dependency on others, their weakness, and sicknesses, lack of finances, uselessness or no aim in life, no respect from others, insecurity, no joy in life, etc. The respondents considered old age to be a problem because they had to be dependent on others for so many reasons, even including their own basic needs. Many of them regarded their weakness and sickness to be a problem to them as it made life difficult for them. For many of the respondents old age posed to be a problem due to lack of finances. Many said they have a sense of uselessness and no aim and they felt poorly about themselves because of having done such a lot in their previous life. Not being recipients of respect from family members and those around them made old age to be a problem to them. Insecurity posed old age to be a problem for the respondents as they felt insecure living in an old age home.

Regarding the desires and aspirations of the elderly respondents in old age homes, when questioned many of the respondents stated that all their joy in life fled after reaching old age but for some, peaceful life in old age was something to welcome. Most of them expressed their desire for a peaceful life. They felt that after living a life of problems, ups, and downs, and a busy schedule a happy life was desirable. The respondent aspired to more love and care from their children. Settlement of marriage of their children or grandchildren was desired by many of the respondents. Some respondents aspired for better finances for themselves. A few respondents hoped for more activity for themselves. And only two respondents desired that their children would take him abroad so that he could live with their grand children. Many of the respondents had no idea about this question and said they had no desires left.

It was evident that the elderly in these old age homes very rarely had a good self-image and regarded themselves useful. It was understood that today's elderly lived in quite a different society from the one existing in the past. Most of the elderlies when asked about what they think about the changing society and is it comfortable for the

elderly to live, a greater number of respondents agreed that society deteriorated in every respect, family structure, respect for elders, support for the elderly has reduced and it is not a worthy place for the comfortable living. A small number of respondents held the view that society has not deteriorated and people are still there to show mercy and help towards the old age people. Those who did not view society to have deteriorated were happier and more optimistic than those who considered society to have deteriorated.

Suggestions

Problems of elderly living in institutional setup or old age homes should be studied on larger levels as needs and problems of these elderly will be different from those who live in family settings and have supportive families. Further researches should be concentrated on the problems of the elderly from low-income groups as well as from rich and high middle-income groups. Since the elderly are not considered useful contributors to the community their issues are often overlooked by society and the government. Government corporates and individuals should work on the overall development of the elderly in our country.

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 407–418

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

Mini Nutritional Assessment among the Khasi Elders

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ABSTRACT

This paper aims to assess the nutritional status of the Khasi elders of Meghalaya, (India), using the Mini Nutritional Assessment (MNA). For the study, a total of 110 elders comprising of 34 males and 76 females in the age group of 60 to 88 years were selected. From the study, a negative correlation was observed between age and total MNA score, while, significant positive correlations were observed between total MNA score and stature, weight, Mid-arm Circumference, Calf Circumference, BMI, and Standard of Living Index. As per the MNA scale, it was found that majority of the elders, i.e. 83.6 per cent had normal nutritional status, 14.5 per cent were at the risk of malnutrition while 1.8 per cent were malnourished. Overall, increasing age, low economic status, being illiterate, unemployed, separated from the spouse, and living alone were the variables that contributed to poorer nutritional status among the Khasi elders.

Keywords: Mini Nutritional Assessment (MNA), Khasi, Elders, Nutritional Status.

Ageing is a triumph of development. Increasing longevity is one of humanity's greatest achievements. People live longer because of improved nutrition, sanitation, medical advances, health care,

education, and economic well-being (UNFPA and HelpAge International, 2012). The global population aged 60 years or over numbered 962 million in 2017, more than twice as large as in 1980 when there were 382 million older persons worldwide. The number of older persons is expected to double again by 2050 when it is projected to reach nearly 2.1 billion (UNDESA, 2017).

With the increasing longevity, nutritional status is increasingly playing a substantial role in the quality of life of the elderly. It is generally accepted that the elderly are more likely to suffer from nutritional deficiencies than any other population group (Mathur, 2010; Wason and Jain, 2011) and increasing age is seen to be strongly and independently correlated with poor nutritional status (Chilima, 2000; Forster and Gariballa, 2005). Nutritional deficiency or malnutrition per se includes undernutrition, overnutrition as well as dietary imbalance due to disproportionate food intake. The problem of undernutrition among the elderly is mostly a problem for low-income and frail elders (Xaverius *et al.*, 2000). The reasons for the nutritional decline in the elderly are complex and multi-factorial. They include various diseases/disorders, psychological and social problems, relative immobility, malabsorption, the decline in senses of taste and smell, chewing difficulties due to poor dentition as well as SES (Knight, 2004). Furthermore, cultural and psychological issues such as living alone, bereavement, situational depression, and religious beliefs may reduce nutrients intake and affect elderly nutritional status (Mathur, 2010). As such, nutrition as a component of health and of treatment of disease in the elderly is dependent not only on knowledge of the nutrient requirements but also on the ability to effectively assess the nutritional needs of the elderly (Ibid.).

It was in the year 1991 that the French, Swiss, and US researchers developed the MNA as a “rapid and simple evaluation of the elderly at risk for malnutrition to facilitate early nutrition intervention” (Guigoz *et al.*, 1994). Today it is one of the best tools for assessing nutritional status in older adults (DiMaria-Ghalili and Guenter, 2008). The MNA is a simple, practical, non-invasive, and reliable method and has been validated in successive studies (Vellas *et al.*, 1999; Guigoz *et al.*, 2002; Wason and Jain, 2011). The MNA consists of 18 questions derived from four parameters of assessment: anthropometric, general,

dietary, and subjective (DiMaria-Ghalili and Guenter, 2008). According to Guigoz (2006), the MNA demonstrates good sensitivity compared to a variety of nutritional parameters such as anthropometry, biochemistry, or dietary intake.

Materials and Methods

The inhabitants of Meghalaya belong to the Scheduled Tribe category and they are well known for their institution of matriliney. For the study, a total of 110 Khasi elders comprising of 34 males and 76 females in the age group of 60 to 88 years were selected. The study was conducted in Sohra town among Khliehshnong, Nongrim, Nongthymmai, and Saitsohpen localities under East Khasi Hills district in the state of Meghalaya, India. Purposive sampling was taken into consideration to include those elders who were 60 years and above, who were mentally receptive and willing to participate in the study.

The MNA is an 18 item schedule comprising of (i) Anthropometric measurements (weight, height, Mid-arm Circumference, Calf Circumference, and weight loss); (ii) Dietary assessment (number of meals consumed, food and fluid intake, and feeding autonomy); (iii) General assessment (lifestyle, mobility, medication, psychological); and (iv) Subjective assessment (self-perception of health and nutrition). Results are trichotomised into three categories: <17=Malnourished; 17–23.5=at risk of Malnutrition and 24–30=Normal Nutritional Status.

Socio-economic status is an important determinant of health and nutritional status. For the present study, a household measure called the Standard of Living Index (SLI) developed by the National Health Family Survey–2 (NFHS–2) has been used to assess the Socioeconomic status. Altogether, 11 factors have been considered such as house type, toilet facility, source of lighting, the main fuel for cooking, source of drinking water, separate room for cooking, ownership of a house, ownership of agricultural land, ownership of irrigated land, ownership of livestock and ownership of durable goods. Accordingly, the scores are summed up. The index scores range from 0–14 for a low SLI, 15–24 for a medium SLI, and 25–67 for a high SLI.

Data Analysis

The data were summarised using frequency and percentages across the various variables. The data was then managed and analysed using MS Excel and SPSS (Statistical Package for Social Sciences) 16.0 version. Chi-square test, Correlation, One-way ANOVA, and T-test were used to compare data. P-value of < 0.05 was considered significant.

Results and Discussion

Table 1
Socio-demographic characteristics of the subjects (N= 110)

<i>Characteristics</i>	<i>Number (%)</i>
Age group	
60–69	86 (78.2)
70–79	18 (16.4)
80–89	6 (5.5)
Educational status	
Illiterate	8 (7.3)
Literate	102 (92.7)
Occupational status	
Unemployed	32 (29.1)
Self-employed	44 (40.0)
Active employees and retirees	34 (30.9)
Marital Status	
Unmarried	5 (4.5)
Widowed	34 (30.9)
Married	66 (60.0)
Separated	5 (4.5)
Living arrangement	
Living alone	11 (10.0)
Living with family	87 (79.1)
Living with spouse	7 (6.4)
Living with relatives	5 (4.5)
Economic Status (SLI)	
Low	10 (9.1)
Medium	100 (90.9)
High	0 (0)

Table 1 presents the socio-demographic characteristics of the subjects. The majority of the subjects (78.2%) belonged to the 60–69 age group. Most of them (92.7%) were literate and self-employed

(40%). The majority of the subjects were married (60.0%), while 30.9 per cent were widowed; 79.1 per cent were living with their families. According to the Standard of Living Index (SLI), 90.9 per cent of the subjects belonged to the medium category and 9.1 per cent belonged to the low category.

Table 2
Mini Nutritional Assessment (MNA)

<i>MNA</i>	<i>Male (%) (N=34)</i>	<i>Female (%) (N=76)</i>	<i>Total (%) (N=110)</i>
Malnourished (<17)	2 (5.9)	0 (0)	2 (1.8)
at Risk of Malnutrition (17–23.5)	4 (11.8)	12 (15.8)	16 (14.5)
Normal Nutritional Status (24–30)	28 (82.4)	64 (84.2)	92 (83.6)

Source: 2011, Merck Sharp and Dohme Corp., a subsidiary of Merck and Co., Inc, Whitehouse Station, N.J. USA.

As per the MNA scale, it was found that the majority of the subjects, i.e. 83.6 per cent had normal nutritional status, 14.5 per cent of the subjects were at the risk of malnutrition while 1.8 per cent were malnourished. The mean MNA score was 25.77 ± 2.91 , where the mean MNA score among the male was 25.87 ± 3.61 and among the female, it was 25.72 ± 2.57 . The difference in mean MNA score ($t=0.210$; $p<0.05$) and level of association ($\chi^2=4.742$; $p<0.05$) between the males and females were found to be statistically insignificant. Thus, males and females have similar nutritional status as per the MNA scale among the Khasi elders.

Table 3
Correlation between total MNA score and Age, Stature, Weight, MAC, CC, BMI, and Standard of Living Index

<i>Variables</i>	<i>Correlation coefficient</i>
Age	-0.248*
Stature	0.311*
Weight	0.505**
Mid-arm Circumference	0.323*
Calf Circumference	0.364**
BMI	0.417**
Standard of Living Index	0.790**

** Correlation is significant at the 0.001 level (2-tailed)

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

From table 3, it is evident that a negative correlation is observed between age and total MNA score, i.e. deterioration in MNA score with an increase in age. While, significant positive correlations are observed between total MNA score and stature, weight, Mid-arm Circumferences, Calf Circumference, BMI, and Standard of Living Index.

Table 4
Independent Samples T-test and One-way ANOVA between total MNA scores and socioeconomic variables

<i>Variables</i>	<i>Independent Samples T-test</i>	<i>P-value</i>
SLI	-13.541	p < 0.001
Educational status	-7.174	p < 0.001
Variables	One-way ANOVA	P-value
Age	3.344	p < 0.05
Employment status	7.516	p < 0.01
Marital status	8.750	p < 0.001
Living arrangements	31.017	p < 0.001

The elders belonging to Low SLI (18.500 ± 2.4) compared to medium SLI (26.495 ± 1.7) demonstrated significantly lower MNA scores ($t(2,210) = -13.541$, $p < 0.001$). Concerning the educational status, the illiterate elders had lower mean MNA scores (19.0 ± 4.0) than the literate elders (26.4 ± 2.2), and the difference was found to be significant ($t(2,528) = -7.174$, $p < 0.001$).

There was a significant difference between the age groups in MNA scores ($F(2,107) = 3.344$, $p < 0.05$), such that the mean MNA scores was highest among the 60–69 age groups (26.0 ± 2.7) and gradually decreased in the 70–79 (25.4 ± 2.6) and 80–89 (23.0 ± 5.5) age groups. Tukey posthoc tests revealed that a significant difference in MNA score was observed between the 60–69 and 80–89 age groups ($p < 0.05$). However, no significant difference in MNA score was observed between the 60–69 and 70–79 age groups and 70–79 and 80–89 age groups (both $p < 0.05$).

A significant difference in MNA score was also observed between the various categories of employment status ($F(2,107)=7.516$, $p<0.01$). Post-hoc comparisons using the Tukey test indicated that the MNA scores of the 'unemployed' (24.2 ± 3.9) differed significantly with the 'self-employed' (26.3 ± 2.2 , $p<0.01$) and the 'employed and retirees' (26.5 ± 2.0 , $p<0.01$). However, no such significant difference in MNA scores was observed between the 'self-employed' and the 'employed and retirees' ($p<0.05$).

The mean scores of MNA significantly differed between the various categories of marital status as determined by one-way ANOVA ($F(3,106) = 8.750$, $p<0.001$). The elders who were separated (21.4 ± 4.7) had the lowest MNA scores followed by those widowed (24.8 ± 3.4), unmarried (25.1 ± 2.3), and married (26.7 ± 2.0). Tukey posthoc tests revealed that a significant difference was observed between the MNA scores of those elders who were married with those of the widowed ($p<0.01$) and the separated ($p<0.001$). However, no significant differences were observed between the unmarried and the other categories ($p<0.05$).

There was a statistically significant difference between total MNA scores and various categories of living arrangement ($F(3,106)=31.017$, $p<0.001$). The mean MNA score was highest among those elders living with a spouse (26.5 ± 2.1), followed by those living with their family (26.4 ± 1.9), living with relatives (25.4 ± 1.5) and those living alone had the lowest mean MNA score (19.9 ± 3.7). A statistically significant difference in MNA score was observed between those elders who were living alone and all the other types of living arrangements (all <0.001) through the Tukey post-hoc test. However, MNA scores did not show any significant difference between the other groups of living arrangements ($p<0.05$).

Thus, increasing age, low economic status, being illiterate, unemployed, separated from the spouse, and living alone were the variables that contributed to poorer nutritional status among the Khasi elders.

Table 5
A Comparison of the present study with the earlier studies

Mini Nutritional Assessment (MNA)		Reference
Malnourished (%)	At the risk of Malnutrition (%)	
1.8	14.5	Present study
1.3	25	Ribeiro et al., 2011
1.6	66.7	Khamu and Langstieh, 2015
10.4	50.8	Slavíková et al., 2018
15	55	Agarwalla et al., 2015
28.3	62.4	Hailemariam et al., 2016
20.8	49.2	Joymati et al., 2018
6.7	49.7	Devi and Singh, 2018
23.5	49	Patil and Shindhe, 2019
92	8	Meena and Varma, 2020

In the present study, a decent percentage of the elders (83.6%) were found to have normal nutritional status. A comparatively small percentage of the subjects, i.e. 1.8 per cent were found to be malnourished. The percentage of malnourished elders is comparable to the study carried out among the Chakhesang elders where the percentage was 1.6 (Khamu and Langstieh, 2015). Ribeiro *et al.* (2011) reported 1.3 per cent malnourished subjects in a study on the elderly population of Circiúma. Several other studies have reported a high prevalence of malnourished elders, some as much as 92 per cent (Meena and Varma, 2020). It was also found that 14.5 per cent of the Khasi elders were at the risk of malnutrition, which is comparatively lower than most other studies who have reported higher prevalence of the 'at risk' category, some even above 50 per cent (Agarwalla *et al.*, 2015; Khamu and Langstieh, 2015; Hailemariam *et al.*, 2016). Thus, in comparison to other studies, the Khasi elders seem to be well nourished as per the MNA scores. Sharma (2012) also found that majority of the elders (74% males and 76% females) were classified as well-nourished and only 2 per cent and 4 per cent were malnourished.

A negative correlation was observed between age and MNA score ($r = -0.248$, $p < 0.01$), i.e. with an increase in age, a deterioration in MNA score was observed. Such findings were also reported in several other studies where advancing age is associated with vulnerability

towards malnutrition among the elderly (Sharma, 2012; Hailemariam *et al.*, 2016). Similar findings were also reported by Agarwalla *et al.*, 2015; Joymati *et al.*, 2018 and Patil and Shindhe, 2019.

In the present study, significant positive correlations were observed between total MNA score with anthropometric characteristics such as stature, weight, Mid-arm Circumference, Calf Circumference, BMI, and Standard of Living Index. A study by Slavíková *et al.* (2018) reported that MNA categories correlated positively with Calf Circumference and BMI. Other studies also reported associations between MNA and Weight and BMI (Torres *et al.*, 2014), Mid-arm Circumference, and Calf Circumference (Chavarro-Caevajal *et al.*, 2015).

In the present study, it was revealed that males and females have similar nutritional status as per the MNA scale among the Khasi elders. The results conform to the study carried out by Patil and Shindhe (2019) which showed no significant association between gender and MNA score. The findings are in contrast to other studies where the relation of gender and nutritional status are found to be statistically significant (Meena and Varma, 2020). Studies have revealed women to be more malnourished than men (Devi and Singh, 2018; Joymati, 2018).

The present study also found that older age group, low economic status, being illiterate, unemployed, separated from the spouse, and living alone were the variables that contributed to poorer nutritional status among the Khasi elders. The present study has found a significant association between economic status and nutritional status. Studies have also reported that elders who have low income are at a greater risk of malnutrition (Devi and Singh, 2018; Joymati *et al.*, 2018; Patil and Shindhe, 2019). In the present study, elders who were illiterate and who were living alone were found to have a negative influence on the nutritional status. Similar results were also reported by Aliabadi *et al.*, 2008; Devi and Singh, 2018; Patil and Shindhe, 2019).

Conclusion

A good nutritional status is crucial for active ageing, as malnutrition increases the risk of morbidity and mortality among the elders.

The present study revealed that the majority of the Khasi elders are well-nourished. In addition to dietary factors, other factors such as belonging to an older age group, low economic status, being illiterate, unemployed, separated from the spouse, and living alone were the variables that contributed to lower MNA scores among the Khasi elders. Thus, approaches towards facilitating elderly nutritional status should focus on the older age group, economically dependent, illiterate, and those living alone. Early detection and prompt interventions are pertinent for the prevention of malnutrition and associated complications among the elderly.

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 419–432

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

Social Isolation among Single Elderly Persons Living Alone

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ABSTRACT

The present paper focuses on the single elderly who are living alone for less than 10 years to more than 20 years, without any family member or relatives. 180 single elderly, age varying from 60 years to 80 years and above, living alone in Chandigarh were selected with the help of snowball method. The single elderly belonged to three different categories, i.e. widowed, divorced, and never married. The number of respondents in each category was 60, i.e. 30 males and 30 females. Interview Schedule was used to collect information. To measure social isolation a scale inspired by Lubben et al., (2006) Social Network Scale (LSNS) consisting of 14 statements was constructed. It was found that most of the respondents felt moderate isolation (49.4%), and no significant difference in the feeling of isolation was found in widowed, divorced, and never married subjects. Age also does not play its role in social isolation, but a significant difference in social isolation was found in the elderly belonging to different social classes. The majority of respondents (49.1%) belonging to the lower social class felt completely isolated. Similarly, the majority of respondents (85.7%) having non-cordial relations with children reported complete

isolation. A significant difference was also found between social isolation and the duration of living alone of the respondents.

Keywords: Social Isolation, Single, Elderly, Living alone.

In today's world, individuals are becoming more self-centered. Due to urbanization, migration in most of the places, the elderly are left behind by their children. The traditional system of joint family in India is also showing remarkable changes in its structure and functions. While living alone elderly persons face different types of challenges in their day-to-day activities. Social isolation thus emerges as an important issue as the elderly lack adequate support and care which they need in old age.

The problem of the single elderly persons in India is assuming a new dimension because of the changing age pyramids, value system and withdrawal of family support system, and migration of children in search of a job, etc. forcing these elderly persons to be on their own. It is argued that an increasing number of elderly may be at risk of being socially isolated. This may be due to several factors such as the increased likelihood of living alone, death of family members or friends, retirement, or poor health.

According to Cohen and Syme (1985), "Social isolation can be defined structurally as the absence of social interactions, contacts, and relationships with family and friends, with neighbours on an individual level, and with 'society at large on a broader level" (p. 247). Day (1992) has defined it as "The absence of satisfying relationships and a low level of involvement in community life" (p. 7). According to Gardner *et al.*, (1998) "An elderly is said to be socially isolated if they experience low levels of social participation and social activity" (p 6).

Elderly persons with many losses to physical and psychological health, social roles, mobility, economic status, and physical living arrangement can contribute to decreasing social networks which also increase social isolation (Creedy *et al.*, 1985; Ryan and Patterson, 1987; Victor *et al.*, 2002; Howat *et al.*, 2004). According to Fowles and Greenberg (2003), in the next two decades, social isolation will become a more concerning issue because the number of elderly persons is expected to increase. According to Delisle (2005), social isolation occurs on three levels, at the micro (individual level), the meso

(community level), and the macro-level (level of greater society). Social isolation can be experienced by individuals in four typical ways: (a) in comparison with their contemporaries, (b) in comparison with younger people, (c) in comparison with themselves at a younger age, or (d) in comparison with earlier generations of older people (Townsend, 1968). Townsend (1957) identified 3 per cent of those over 65 as being extremely isolated and 29 per cent as partly isolated.

According to Agewell Foundation (2010), elderly persons in the age group of 80 years and above face more isolation in comparison to elderly persons in the younger age groups of the elderly. Gender, widowhood or divorce, culture, education, income, and health have all been found to influence the experience of social isolation (Adams *et al.*, 1976; De Jong Gierveld and Van Tilburg, 1995; Mullins *et al.*, 1996). According to Gardner *et al.*, (1998) elderly males were much more likely to be isolated than elderly females. Edelbrock *et al.*, (2001) have also identified being male as a risk factor for social isolation. There are some other factors also which include changes in life events such as retirement and widowhood, living alone, lack of participation in social activities, and transportation problems (Ryan, 1998;; Woodward and Queen, 1988; Hicks, 2000).

Objectives

1. To measure social isolation among single elderly.
2. To find out the relationship between the socioeconomic profile of the single elderly and social isolation.

Method

Sample

180 single elderly, age varying from 60 years to 80 years and above, living alone in Chandigarh were selected with the help of the snowball method. The single elderly belonged to three different categories, i.e. widowed, divorced, and never married. The number of respondents in each category was 60, i.e. 30 males and 30 females.

Tools Used

An elderly person is considered to be socially isolated when he/she perceives a lack of social support, absence of social contacts,

and has independent living arrangements without family and kin around. To measure social isolation, a scale inspired by the Lubben Social Network Scale (LSNS) consisting of 14 statements was constructed. An interview Schedule was also used to collect information from the respondents.

The Social Network Scale was administered individually to all the respondents and they were asked to give their views on these statements on a five-point scale ranging from very low to very high. There were 9 positive and 5 negative statements. Depending on the statement the scores of the respondents ranged from 14–70 and quartiles were calculated that were further grouped into three main categories, i.e. complete isolation, moderate isolation, and no isolation. Based on distribution, respondents with a score of 18–32 were included in the complete social isolation, those with a score between 33–47 were included in the moderate level of social isolation, and those who acquired the score between 48–62 were having no isolation.

Results and Discussion

Table 1
Distribution showing social isolation of the respondents.

<i>Social isolation</i>	<i>Scores</i>	<i>%</i>
Complete isolation	54	30.0
Moderate isolation	89	49.4
No isolation	37	20.6
Total	180	100.0

Table 1 shows that 30 per cent of respondents reported complete isolation. 49.4 per cent of respondents reported a moderate level of isolation and 20.6 per cent of respondents were not found to be isolated in any form. The results of the present study show that a large number of the respondents showed a moderate level of isolation.

Marital Status and Social Isolation

According to Wenger and Burholt (2004), the results show that most of the respondents were not socially isolated (60%). Small proportions were very isolated (6%) a third (34%) were moderately

isolated. According to Kivett (1979), gender is a risk factor to women as being more at risk for isolation than men. An attempt was made to find out which category of single elderly was more socially isolated.

Table 2
Marital status-wise distribution showing social isolation among the respondents

<i>Social isolation</i>	<i>Widowed</i>	<i>Divorced</i>	<i>Never married</i>	<i>Total</i>
Complete isolation	16(26.7%)	26(43.3%)	12(20.0%)	54(30.0%)
Moderate isolation	30(50.0%)	22(36.7%)	37(61.7%)	89(49.4%)
No isolation	14(23.3%)	12(20.0%)	11(18.3%)	37(20.6%)
Total	60(100%)	60(100%)	60(100%)	180(100%)

$\chi^2 = 11.8$, $df = 10$, $p > 0.05$, not significant.

Table 2 shows an association between social isolation and the marital status of the respondents. 30 per cent of respondents showed complete isolation, highest was divorced respondents. 49.4 per cent of respondents showed a moderate level of social isolation and a majority of them were never married respondents. 20.6 per cent of respondents showed no isolation, i.e. they were completely integrated. The more respondents were from the widowed category. The data show that a large number of the respondents showed a moderate level of social isolation. Statistically, there is no significant association between social isolation and the marital status of the respondents. The results don't endorse the findings by Wenger and Burholt (2004) but support the findings of Kivett (1979).

Social Isolation and Age

Ageing process impacts the health of elderly persons and sometimes due to ill health elderly persons have to face isolation. Thus, social isolation increases as the person grows. They have limited access to mobility and social connectivity. The age groups were divided into three main categories, i.e. 60–70 years, 70–80 years, and 80 years and above. An attempt has been made to find out whether the age factor effects social isolation or not.

Table 3
Distribution showing association between social isolation and age of the respondents

<i>Social isolation</i>	<i>60–70 years</i>	<i>70–80 years</i>	<i>80+ years</i>	<i>Total</i>
Complete isolation	36(33.6%)	11(22%)	7(30.4%)	54(30%)
Moderate isolation	46(43%)	30(60%)	13(56.5%)	89(49.4%)
No isolation	25(23.4%)	9(18%)	3(13.04%)	37(20.6%)
Total	107(100%)	50(100%)	23(100%)	180(100%)

$\chi^2=5.004$, $df=4$, $p > 0.05$, not significant.

Table 3 shows an association between social isolation and age. 33.6 per cent of respondents were in the age group of 60–70 years followed by 30.4 per cent in the age group of 80 years and above and 22 per cent in the age group of 70–80 years who showed complete isolation. There was 60 per cent were in the age group of 70–80 years followed by 56.5 per cent in the age group of 80 years and above and 43 per cent in the age group of 60–70 per cent who showed a moderate level of isolation. There were 23.4 per cent were in the age group of 60–70 years, 18 per cent in the age group of 70–80 years, and 13.04 per cent were in the age group of 80 years and above who showed no isolation. Results did not indicate very drastic differences in age groups. Results show that most of the respondents who showed complete isolation, were falling in the age group of 60–70 years. The sudden change in life from an active lifestyle to a dormant one might have made them isolated. Similarly more respondents who reported no isolation were from the age group of 60–70 years. Statistically also no significant association was found between social isolation and the age of the respondents.

Social Isolation and Social Class

Studies show that there is a link between social class and social isolation (Massey and Denton, 1993; Steele and Sherman, 1999; Rankin and Quane, 2000; Briggs, 2005; Wilson, 2009; Smith, 2010). Elderly persons from the upper class stay connected with others through different means and technology. According to (Murphy 1982), working-class elderly persons were more likely than others to become isolated. For analysis social classes have been categorized as,

lower, lower-middle, middle, and upper. An attempt has been made to find out the association between social class and social isolation.

Table 4
Distribution showing association between social isolation and social class of the respondents

<i>Social isolation</i>	<i>Lower</i>	<i>Lower middle</i>	<i>Middle</i>	<i>High</i>	<i>Total</i>
Complete isolation	26(49.1%)	10(21.7%)	8(16.3%)	10(28.6%)	54(30%)
Moderate isolation	12(22.6%)	22(47.8%)	36(73.5%)	19(54.3%)	89(49.4%)
No isolation	15(28.3%)	11(23.9%)	5(10.2%)	6(17.1%)	37(20.6%)
Total	53(100%)	46(100%)	49(100%)	35(100%)	180(100%)

$\chi^2=28.5$, $df=6$, $p < 0.05$, significant.

Table 4 shows an association between social isolation and social class background. There were 49.1 per cent respondents belonged to lower-class background followed by 28.6 per cent respondents belonged to the high-class background, 21.7 per cent respondents belonged to the lower-middle-class background and 16.3 per cent belonged to middle-class background who showed complete isolation. There were 73.5 per cent respondents belonged to middle-class background followed by 54.3 per cent from high class, 47.8 per cent from the lower middle class, and 22.6 per cent from lower class who showed a moderate level of isolation. There were 28.3 per cent respondents belonged to lower class background followed by 23.9 per cent respondents belonged to lower middle class, 17.1 per cent respondents belonged to the high-class background and 10.2 per cent respondents belonged to middle-class background who showed no isolation. The results show that more respondents from the lower class background showed complete isolation whereas respondents from other class backgrounds showed a moderate level of isolation. Chi-square value is significant indicating an association between social isolation and the class background of the respondents. The present study supports the findings of Briggs, (2005); Massey and Denton, (1993); Rankin and Quane, (2000); Smith, (2010); Steele and Sherman, (1999); Wilson, (2009).

Social Isolation and Relations with Children

The family institution is changing. So are the relations between elderly parents and children. The elderly are losing their status, power, and prestige. As people age and become less physically and mentally able to meet the standard of productivity and power, they often become marginalized and neglected. Various studies have suggested that the affective bonds with their adult children play an important role in the well-being of elderly parents (Brody, 1970; Cottrell, 1974). Many studies focus on the negative outcomes of conflicting relations between children and their elderly parents (Kaufman and Uhlenberg, 1998; Hossain, 2004;). The conflicting relations between the children and elderly persons can attribute to the social isolation for single elderly persons. Keeping in view the above studies an attempt was made to find out the association between social isolation and relations with elderly persons and their children.

Table 5
Distribution showing association between social isolation and relations with the children of the respondents

<i>Social isolation</i>	<i>Un-cordial</i>	<i>Normal</i>	<i>Cordial</i>	<i>N.A.*</i>	<i>Total</i>
Complete isolation	12(85.7%)	8(38.1%)	6(11.1%)	28(30.7%)	54(30%)
Moderate isolation	1(7.1%)	8(38.1%)	38(70.4%)	42(46.2%)	89(49.4%)
No isolation	1(7.1%)	5(23.8%)	10(18.5%)	21(23.1%)	37(20.6%)
Total	14(100%)	21(100%)	54(100%)	91(100%)	180(100)

* those respondents who were unmarried and those who didn't have any child were kept in the category of not applicable.

$\chi^2=33.7$, $df=6$, $p < 0.05$, significant.

Table. 5 shows an association between social isolation and relations with children. 85.7 per cent of respondents reported un-cordial relations, followed by 38.1 per cent respondents who reported normal relations, and 11.1 per cent respondents who reported cordial relations with their children showed complete isolation. 70.4 per cent of respondents reported cordial relations followed by 38.1 per cent respondents who reported normal relations and 7.1 per cent respondents who reported un-cordial relations with their children showed a moderate level of isolation. 23.8 per cent of

respondents reported normal relations followed by 18.5 per cent of respondents who reported cordial relations and 7.1 per cent who reported un-cordial relations with their children reported no isolation. Such findings indicate that healthy relations with children integrate the elderly with family and they won't feel isolated. Statistically, there is a highly significant association between social isolation and relations with children of the respondents. The results support the findings by Brody, (1970); Cottrell, (1974), and Johnson and Bursk (1977).

Social Isolation and Duration of Living Alone

Research studies indicate that the longer the duration of staying alone lesser the impact it has on the social isolation of elderly persons. According to HelpAge India (2008) on average, the elderly were living alone for the past 10 years. There were 39 per cent elderly who were living alone for 1–5 years and 23 per cent were staying alone for more than 16 years. For analysis duration of living alone has been categorized as less than 10 years, 10–20 years, and more than 20 years. In the present study, an attempt has been made to find out the association between social isolation and the duration of living alone.

Table 6
Distribution showing association between social isolation and duration of living alone of the respondents

<i>Social isolation</i>	<i>< 10 years</i>	<i>10–20 years</i>	<i>20 > years</i>	<i>Total</i>
Completely isolated	4(13.8%)	18(30%)	32(35.2%)	54(30%)
Moderately isolated	20(69%)	23(38.3%)	46(50.5%)	89(49.4%)
Not isolated	5(17.2%)	19(31.7%)	13(14.3%)	37(20.6%)
Total	29(100%)	60(100%)	91(100%)	180(100%)

$\chi^2 = 12.6$, $df=6$, $p < 0.05$, significant.

Table 6 indicates an association between social isolation duration of living alone of the respondents. Most of the respondents were living alone for more than 20 years. Those who were living alone for more than 20 years showed moderate isolation, i.e. 50.5 per cent, followed by 35.2 per cent with complete isolation and 14.3 per cent with no isolation. Among those who were living alone for 10 to 20 years, 38.3 per cent of respondents had a moderate level of isolation, followed by

31.7 per cent respondents with no isolation and 30 per cent respondents with complete isolation. Similarly, for respondents, who were living alone for less than 10 years, 69 per cent of respondents had a moderate level of isolation, 17.2 per cent respondents had no isolation and 13.8 per cent had complete isolation. It was also found that more respondents in all three categories of duration of living alone were moderately isolated. Results show that as the period of living alone increases isolation enhances. The findings show that the longer the duration of staying alone more impact it has on the social isolation of the single elderly persons. Statistically, there is a significant association between social isolation and the duration of living alone of the respondents.

The results of the present study show that a large number of the respondents felt a moderate level of isolation. There was no significant association between social isolation and the marital status of the respondents. The results were not in line with the findings of Wenger and Burholt, (2004) but coincide with the findings of Kivett, (1979).

The results did not indicate very drastic differences concerning age groups. They revealed that those respondents, who showed complete isolation, the majority of them were in the age group of 60–70 years. A sudden change in the lifestyle from active to sedentary might have made them isolated. Similarly more respondents who reported no isolation were in the age group of 60–70 years. These respondents fall in the category of young aged. They were mobile and didn't face isolation. There was no significant relationship between social isolation and the age of the respondents.

The results revealed that more respondents from the lower class background showed complete isolation as compared to respondents from other class backgrounds that showed a moderate level of isolation. As the majority of these respondents had lived in large families they could not cope with the idea of living alone in old age. For them, family remained the main institution of support.

Conclusion

In the modern era, the issues of single elderly living alone need special attention. The population of elderly living alone is increasing. The vulnerability of single elderly has gone higher due to the

transition in the family structure and individualism. Family no more strongly acts as a support system for the elderly because of the changed value system of the younger generation. The value orientation among the younger generation is more materialism than filial piety. On the other hand, the elderly in India, who have a traditional orientation, have very high investments in the ideals of family. The changing social relations and breakdown of traditional systems are resulting in a more individualistic society leading to the social isolation of the elderly. This social isolation affects the living pattern of the aged. The problem will be aggravated in the future as the system undergoes rapid modernization and transformation. Government interventions are required for this section of the society who has given productive years of their life for the society

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 433–440

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

Socioeconomic Status and Mental Health among Elderly Adults Residing in Jaipur City

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ABSTRACT

The present study aimed to assess the mental health of 150 elderly (75 women and 75 men), age varying from 60 to 75 years, belonging to different economic groups. A scale for the assessment of socio-economic status by Tiwari et al., (2012) and the Mental Health Inventory (MHI-38) by Viet and Ware (1983) to assess mental health were administered on the subjects. The results showed that depression, anxiety, and loss of behavioral control were high in elderly females of this study, while emotional ties, the general positive affect, and life satisfaction were high in elderly males as compared to their female counterparts. Among different economic groups, high-income group elderly adults were found to have the highest emotional ties, general positive effect, and life satisfaction while the elderly belonging to the low-income group were found to have the highest depression, anxiety, and loss of behavioural control.

Keywords: Elderly adults, Mental Health, Anxiety, Depression, Life Satisfaction, Economic status.

The present global scenario following ageing individuals depicts the worldwide rise in their numbers over the previous few decades. Urbanization, modernization, and globalization have led to change in

the financial structure of the families, erosion and weakening of social group values and social establishments leading to the breaking of joint families. During this dynamic economic and social milieu, the ageing adults are experiencing the absence of adequate social support that results in mental state issues.

Mental health (or behavioural health) is a level of psychological well-being. An absence of a mental disorder may be defined as the “psychological state of someone who is functioning at a satisfactory level of emotional and behavioural adjustment”(About.com, 2006). According to World Health Organization (WHO), mental health includes “subjective well-being, perceived self-efficacy, autonomy, competence, intergenerational dependence and self-actualization of one’s intellectual and emotional potential among others.” (The World Health Report, 2001).

WHO calculated that globally over 450 million ageing individuals suffer from psychological problems. Presently mental health and behavioural disorders account for about 12 per cent of the world’s burden of diseases which is expected to extend to 15 per cent by end of 2020.

Income is a very noticeable variable for decent life. This study indicates that occupied elderly people have positive perspectives about life which builds the confidence to move forward in a challenging old age. Studies have shown the influence of finances on psychological health (Chi and Chou, 2000). The work by Cheng and colleagues (Cheng *et al.*, 2002) specified that perceived economic sufficiency is the strongest predictor of elderly mental health.

Objectives of the Study

1. To examine the mental health among the elderly adults across the gender.
2. To study the mental health of elderly males among different Socio-Economic Statuses.
3. To observe the mental health of elderly females among different Socio-Economic groups.

Materials and Methods

For this study, 150 elderly adults in the range of 60–75 years from different socio-economic statuses and across gender were selected from Jaipur city. The socioeconomic status was determined based on the prescribed norms such as – the High Income Group, Middle Income Group, and Low Income Group. 50 subjects (25 men and 25 women) belonging to each socio-economic status, were selected.

Study Tool

To measure the selected variables, the following standardized tests were used in this study:

1. Socio-Economic Status Scale (SESS) (Tiwari, S.C. and Kumar, Ambrish 2012): This scale has seven domains to assess socio-economic status namely House, Material possession, Education, Occupation, Monthly income, Land, Social participation and Understanding.
2. Mental Health Inventory (MHI-38) by Viet and Ware (1983): is a consumer self-report tool designed to measure general psychological distress and well-being. The measure includes positive aspects of well-being (such as cheerfulness, interest in and enjoyment of life) as well as negative aspects of mental health (e.g. anxiety and depression). The MHI can be completed either as a self-report measure or as part of an interview.

Results

Table 1
Gender Wise Comparison of Mental Health among Elderly Adults (N=150)

<i>Mental Health</i>	<i>Male (n = 75)</i>		<i>Female (n = 75)</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Anxiety	21.34	7.04	23.25	7.00
Life Satisfaction	2.97	1.38	2.61	1.29
General Positive Effect	29.08	8.96	27.50	7.90
Loss of Behavioural Control	22.73	6.46	23.56	7.00
Depression	10.02	3.86	10.69	3.84
Emotional Ties	6.08	2.54	5.72	2.01

Table 1 depicts the gender wise comparison of mental health among elderly adults. This result shows that anxiety, loss of behavioural control and depression were found higher in ageing females ($M = 23.25$, $SD = 7.009$) ($M = 23.56$, $SD = 7.00$) ($M = 10.69$, $SD = 3.84$) as compared to the ageing males ($M = 21.34$, $SD = 7.04$) ($M = 22.73$, $SD = 6.46$) ($M = 10.02$, $SD = 3.86$). Life satisfaction, general positive effect and emotional ties were reported higher in ageing males ($M = 2.97$, $SD = 1.38$) ($M = 29.08$, $SD = 8.96$) ($M = 6.08$, $SD = 2.54$) as compared to the ageing females ($M = 2.61$, $SD = 1.29$) ($M = 27.50$, $SD = 7.90$) ($M = 5.72$, $SD = 2.01$).

So it can be concluded that mental health problems were found more in elderly females as compared to elderly males. Age, education, occupation, and marital status were significantly correlated with mental health, and also being single or widowed and divorced or separated were important factors for mental health among elderly adults.

A cross-sectional study in South India has revealed 21.7 per cent of total elderly aged 60 years and above with depressive systems (36.0% were elderly males and 64.0% were elderly females). (Barua A *et al.*, 2010).

The study by Sidhu and Bargoti (2003) aimed to assess the mental health and adjustment of the aged, also the relationship between mental health and adjustment of the elderly adults was ascertained. Out of 100 aged people selected randomly, 50 were males and the remaining 50 were females. Results indicated better mental health of the elderly males than elderly females. Mental health is significantly related to health, home, social; emotional, and financial adjustment among elderly males.

Table 2
The mental health of Elderly Males among Different Socio-Economic Status (N=75)

<i>Mental Health</i>	<i>High Income Group (n=25)</i>		<i>Middle Income Group (n=25)</i>		<i>Low Income Group (n=25)</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Anxiety	19.84	6.74	22.32	6.176	21.88	8.11
Life Satisfaction	3.36	1.35	2.92	1.35	2.64	1.41

Cont'd...

Cont'd...

General Positive Effect	31.64	8.74	28.92	8.78	26.68	9.00
Loss of Behavioural	21.56	6.13	22.8	6.62	23.84	6.68
Depression	9.2	3.81	9.92	3.06	10.96	4.51
Emotional Ties	6.96	2.74	5.72	2.31	5.56	2.39

Table 2 describes that ageing males who belonged to the low income group were reported higher on negative mental components such as anxiety, loss of behavioural effect and depression ($M = 21.88$, $SD = 8.1$) ($M = 23.84$, $SD = 6.68$) ($M = 10.96$, $SD = 4.51$). Positive mental health elements such as life satisfaction, general positive effect and emotional ties ($M = 3.36$, $SD = 1.35$) ($M = 31.64$, $SD = 8.74$) ($M = 6.96$, $SD = 2.74$) were found higher in ageing males who belonged to the higher income groups.

So according to the socioeconomic status, those males who belong to lower and middle-income groups were found more prone to mental illness than the males of higher-income groups.

Table 3
Mental Health of Elderly Females among Different Socio-Economic Status (N=75)

<i>Mental Health</i>	<i>High Income Group (n=25)</i>		<i>Middle Income Group (n=25)</i>		<i>Low Income Group (n=25)</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
Anxiety	20.88	1.57	23.84	6.73	25.04	8.00
Life satisfaction	2.84	1.57	2.72	0.73	2.28	1.4
General Positive Effect	29.76	8.12	27.44	6.97	25.32	8.22
Loss of Behavioural Control	22.52	6.78	23.68	7.02	24.48	7.33
Depression	9.76	3.17	10.76	3.76	11.56	4.43
Emotional Ties	6.52	2.21	5.52	1.63	5.12	1.94

Table 3 depicts that elderly females who belong to the higher income group possess better mental health as compared to the females of the middle and low-income group. Negative mental components such as anxiety were found high in females of lower-income group (M

= 25.04, SD = 8.00) as compared to the high-income group (M = 20.88, SD = 1.57). Females of the lower-income group had high scores in loss of behavioural effect and depression as compared to the other income groups. Females who belong to higher income group scored higher on life satisfaction, general positive affect and emotional ties (M = 2.84, SD = 1.57) (M = 29.76, SD = 8.12) (M = 6.52, SD = 2.21). So according to the socioeconomic status, those females who belonged to lower and middle-income groups were found to have more mental health issues than the females of higher-income groups.

Individuals of age 60 years or older with low SES (e.g. household income, net worth, etc.) who self-reported feeling lonely were found to be at a greater risk of functional decline (e.g. activities of daily living; developing difficulties with upper extremities, mobility, climbing stairs, etc.) and death.

A study from South India reported about 15.1 per cent prevalence of mental health with higher prevalence among ageing population, females, individual with lower socio-economic status. (Poongothai *et al.*, 2009).

The social gradient in the effect of homeownership on mental health, which is evident at baseline, diminishes as people get older, whereas housing quality and financial problems become relatively more important in explaining older people's mental health. Inequalities in housing quality and ability to deal with household financial problems become increasingly important to mental health issues as the population ages. (Philippa *et al.*, 2011).

As one of the important parts of successful aging, mental health could be improved by increasing the integrity of the elderly and integrity could be achieved through continued personal growth, the development of satisfaction, or having a purpose in life. According to a study, seniors who accept themselves, have good family relationships and embrace the concept that they are never too old to learn are more likely to experience positive mental health (Chiang, *et al.*, 2013).

Conclusion

Mental well-being is an integral and essential component of ageing adult's health. The prevalence of mental illness is increasing among the elderly population in India. The data of the present study suggest that gender-wise differences occur in the mental health of an individual. The results reflected a higher level of depression, anxiety, and loss of behavioural control among ageing females while emotional ties, general positive affect, and life satisfaction were observed high among ageing males. Ageing population belonging to a lower economic group was found more prone to mental health-related issues as compared to the ageing adults belonging to higher economic groups.

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 441–455

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

Leisure Activities and Life Satisfaction in Late Adults

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ABSTRACT

The aim of this study was to find out leisure activities and life satisfaction of 140 urban, middle class elderly participants, age ranging from 50–60 ($n=68$) and 60 plus years ($n=72$) of both males ($N=73$) and females ($N=67$), from Vadodara city (Gujarat). The subjects were administered the Satisfaction with Life Scale (Diener, et al., 1985), and Leisure Time Activity Schedule (van Willigen & Chadha, 1989 cited in Naseem, 2010) individually. Results revealed that eighty per cent of the participants were very satisfied with their life. Overall life satisfaction was significantly positively correlated with a number of leisure activities, especially physical activities that participants engaged in. Interestingly, low-moderate life satisfaction was significantly positively correlated with a number of leisure activities, but high life satisfaction was not. More women participated in fitness activities, preferred gardening, assisting in household chores and reading religious books whereas men liked sharing past experiences, visiting places of worship, and attending community events. Compared to other groups, younger women and older men were more involved in grandparenting. Women in nuclear families were engaged in more leisure activities whereas men were better informed about local clubs and activities

for older persons. Majority of the participants did not perceive any barriers in pursuing leisure activities.

Keywords: Leisure Activities, Life Satisfaction, India, Elderly.

Ageing and Leisure Activities

Kelly *et al.* (1987) observed that the pattern of leisure activities making the greatest contribution to life satisfaction differs with age. For instance, for those between 55–64 years social, cultural, and travel activities contributed most to life satisfaction whereas for 65–74 years, social and travel activities with opportunity for doing things together contributed the most. For 75 years and older, home-based and family activities had the strongest correlation with subjective well-being. Globally, people in middle adulthood often have the pressure of juggling work and family, but the experience of fun peaks in retirement, after individuals experience release from stress, obligations, work pressure and greater freedom to engage in leisure activities (Merrill Lynch 2016). With changing roles post-retirement, engaging in constructive leisure activities brings meaning to one's life. For instance while pursuing a hobby, retired older adults may meet like-minded people and make new friends to expand their social network. Longitudinal analyses showed that regardless of changes in work and age, people tend to continue engagement in intellectual, social, and physical leisure activities across the phase of transition to retirement (Scherger *et al.*, 2011). People who were more socially or physically active before retirement showed stronger decreases in depressive symptoms over first three years of retirement (Henning *et al.*, 2020). People who were retired but still working were more likely to have a hobby and participate significantly more in cultural activities (Scherger *et al.*, 2011). Tadic *et al.* (2012) found that working older adults derived more happiness from relaxing activities in their leisure time, whereas non-working older adults derived more happiness from effortful activities in their leisure time. Recent retirees who frequently met their children and grandchildren experienced a sense of essentiality (Nimrod, 2007). Much of this evidence comes from the Euro-American context, and there are very few Indian studies

exploring the relationship between leisure activities and life satisfaction in late adulthood.

Leisure and Life Satisfaction

To understand the relation between leisure activities and life satisfaction, it is important to know what engagement in leisure activities means for individuals. Turlapati (2011) pointed out that physical and psychological health, loneliness, social support and spirituality were some important factors influencing life satisfaction of older adults. Ryu and Heo (2017) suggested that engaging in cultural activities developed optimism whereas volunteering activities added to one's life satisfaction. Rodriguez *et al.* (2008) found that exercising and walking contributed to life satisfaction but not weight lifting or swimming although they were all physical activities. Also, participating in physical activities accompanied by socializing opportunities contributed to wellbeing in older adults. Greater the engagement in outdoor leisure activities, higher was the life satisfaction (Cha, 2018). Thus, meaning derived from engagement in leisure was an important factor for life satisfaction and not merely the number of activities one engaged in (Hawkins *et al.*, 2004).

Other factors like companionships during leisure activities also contributed to wellbeing. Ku *et al.* (2016) found that higher frequencies of leisure-time physical activity like walking, gardening, group exercise and sedentary behaviors like watching television, social chatting and reading, were related to higher levels of wellbeing whereas solitary exercise, listening to radio and playing chess/cards were not. Significant others played an important role in leisure participation. Toepoel (2013) found that partners in cultural activities and sports; parents in voluntary work and holidays; siblings in voluntary work and sports; and children in cultural activities, reading books, and shopping with friends were stimulators in leisure participation. In a comparative study with Indian and British older adults, Bedi and Case (2014) found that familial relationships, respect, involvement with significant others, social outings, religion, and cultural values were central to Indian participants while friends, finance, social outings, cultural values and being independent were important sources of life

satisfaction, contentment and wellbeing to the British counterparts. Thus, engaging in physical activities in a group, especially with significant others contributed to wellbeing in late adulthood.

Everyday activities of older adults have remained under-explored in India with most studies focusing only on physical activities. The present study aimed to investigate participation of older adults in leisure activities and its relation to life satisfaction along with meanings they perceived, barriers they faced and how they would like to spend their leisure time.

Objectives of the Study

1. To describe the leisure time activities of older adults from 50–60 and 60 plus age group.
2. To examine the relationship between participation in leisure activities and life satisfaction of older adults.
3. To describe meanings attributed to leisure activities and barriers in pursuing preferred leisure activities.

Method

Sample

A total of 140 older adults, both men and women, between 50–60 years ($n=68$) and more than 60 years ($n=72$), belonging to middle income group of Vadodara city were selected from Vadodara city by using snowball technique.

Tools Used

Satisfaction with Life Scale (Diener *et al.*, 1985) and a Leisure Time Activity Schedule (van Willigen & Chadha, 1989 cited in Naseem, 2010), along with a questionnaire were administered individually to all the respondents.

In the Satisfaction with Life Scale (Diener, *et al.* 1985), participants rated the extent of their agreement for each item, using a 7-point scale ranging from ‘strongly disagree’ to ‘strongly agree’. For instance, ‘In most ways my life is close to my ideal.’

In the Leisure Time Activity Schedule, participants indicated leisure activities they engaged in. For instance, 'Watch movies, visit places of worship, morning and evening walks and visit friends, relatives.' During analysis, some activities were grouped in broader categories of physical, socio-cultural and sedentary activities. Lastly, open-ended questions were asked to understand the meanings participants attached to their leisure activities, barriers faced in pursuing them and wishful activities they would want to engage in.

Data Analysis

Participation in leisure activities was represented using frequencies and percentages. Mean scores were computed and non-parametric Mann-Whitney U test was used to ascertain group differences, if any. Spearman's correlation was computed between type and number of leisure activities and scores on life satisfaction. Spearman's rank order correlation was computed between and within groups. The responses to open-ended questions were analyzed using open coding method to document patterns, commonalities and differences in the themes that emerged. Gender differences were examined wherever possible.

Results

Socio-demographic Characteristics of the Participants

Among the 140 participants, 33 women and 35 men were in 50–60 years age group and 34 women and 38 men were in 60 plus age group. Majority of them were graduates, employed, married, and lived in nuclear families. Around 47.76 per cent women and 54.79 per cent were graduate, and 16.42 per cent women and 17.81 per cent men were post graduate with 22.39 per cent women and 72.6 per cent men still employed. Around 79.1 per cent women and 87.67 per cent men were married and 58.21 per cent women and 69.86 per cent men lived in nuclear families.

Types of Leisure Activities

Table 1 indicates participation in different kinds of leisure activities. The activities are categorized as follows: 1. *Physical Activities* – Household chores, Exercise (Morning-evening walks,

Exercise/Yoga/Play games to keep fit and Dancing/Singing) and Gardening. 2. *Socio-Cultural Activities* – Spending time with friends and family (Play cards/Board games, Visit friends/relatives, Speak over phone, Outings with family members, Share past experiences, Spend time with pets), Visiting places (Visit places of worship, Visit local mess or club, Attendance at Community events) and Voluntary Acts. 3. *Sedentary Activities* -Watch TV/listen Music (Watch Movies/videos, Listen to radio/Watch TV, Listen to music), Reading and Writing (Read religious books, Read other books/magazines/newspapers, Write letters/Poetry) and Use of Social Media. 4. *Nap or Rest* 5. *Pursue education*. Overall, participants engaged in watching television and listening to radio (82%) the most, followed by doing household chores and using social media (69%), nap/rest (65%), spending time with friends and family (63%), reading and writing (56%), exercising (53%), visiting places (50%), gardening (39%), voluntary acts (37%), and pursuing education (8%). During leisure time, both men and women reported almost equal engagement in volunteering. Women engaged more in household chores and men spent more time visiting places. Younger women participants preferred watching TV/videos while both younger women and younger men engaged in dancing and using social media. Younger women and older men engaged more in gardening, exercise and spent more time with friends and family. Older men engaged in reading and writing, pursuing education and reported more time spent in nap/rest.

The engagement in number of activities reported by women were higher than that of men. Mann-Whitney U test revealed significant age and gender differences in specific activities like engagement in household chores, which was significantly higher for women ($M = 0.87$, $SD = 0.34$) than men ($M = 0.53$, $SD = 0.50$) at 0.001 level of significance. Older participants ($M = 0.76$, $SD = 0.43$) spent significantly more time in nap/rest than younger ones ($M = 0.53$, $SD = 0.50$) at 0.004 level of significance. Lastly, younger participants ($M = 0.79$, $SD = 0.41$) used social media significantly more than older participants ($M = 0.60$, $SD = 0.49$) at 0.01 level of significance.

Table 1
Participation in Leisure Activities (N=140)

<i>Activities</i>	<i>Gender</i>							
	<i>Women</i>				<i>Men</i>			
	<i>50–60</i>	<i>Per cent</i>	<i>60 above</i>	<i>Per cent</i>	<i>50–60</i>	<i>Per cent</i>	<i>60 above</i>	<i>Per cent</i>
Physical Activities								
Household chores	30	90.91	28	82.35	19	54.29	20	52.63
Gardening	16	48.49	13	38.24	9	25.71	17	44.74
Exercise	18	54.55	18	52.94	16	46.67	22	57.89
Dancing	17	51.51	16	47.06	17	48.57	14	36.84
Socio-Cultural Activities								
Spending time with friends and family	22	66.16	20/1	59.31	21	60.95	25	65.35
Visiting places	15	44.44	17	49.02	17	48.57	21	56.14
Volunteering	13	39.39	12	35.29	14	40.00	13	34.21
Sedentary Activities								
Watch TV/listen Music	29	87.88	26	76.47	29	83.81	31	80.70
Reading and writing	19	57.58	18	53.92	18	50.48	23	60.53
Use of Social Media	27	81.82	19	55.88	27	77.14	24	63.16
Nap or rest	20	60.61	23	67.65	16	45.71	32	84.21
Pursue education	1	3.03	2	5.88	2	5.71	6	15.79

Solitary and Group Activities

As evident in Table 2, men and women preferred solitary activities like reading, listening to music and using of social media whereas watching movies/videos, visiting friends/relatives, outings with family members and sharing past experiences were preferred in the company of others. Older men preferred morning-evening walks alone whereas watching movies/videos and visiting places of worship were often carried out in the company of others. Interestingly, while women often engaged in household chores alone, men preferred doing chores with others. Although less frequently, both men and women preferred certain activities like exercise, gardening, volunteering and dancing/singing alone. However, if these activities are taken up collectively, they may be expected to have better impact on psychosocial wellbeing. Thus older adults must have opportunities to create social

groups for leisure activities like fitness or volunteering in the community. More qualitative studies will be helpful in understanding these activity preferences among the elderly.

Table 2
Percentage of Participation in Solitary and Group Leisure Activities (N= 140)

Activities	Gender							
	Women				Men			
	50-60		60 above		50-60		60 above	
	Alone	Others	Alone	Others	Alone	Others	Alone	Others
Read religious books	66.67		50.00		54.29		57.89	
Read other books	84.85		85.29		85.71		84.21	
Use of Social Media	81.82		52.94		71.43		57.89	
Listen to music	78.79		70.59		80.00		76.32	
Speak over phone	51.52		50.00			51.43		52.63
Outings with Family		84.85		67.65		77.14		81.58
Share past experiences		57.58		58.82		62.86		76.32
Visit friends, relatives		69.70		58.82		74.29		60.53
Exercise/Yoga/play games to keep fit	27.27		44.12		45.71		39.47	
Gardening	42.42		35.29		22.86		26.32	
Voluntary acts	27.27		23.53		25.71		21.05	
Dancing/Singing/any other hobbies	36.36		44.12		34.29		28.95	
Household chores, odd jobs	69.70		67.65			37.14		26.32

Spearman's rank order correlation was computed between and within age and gender groups. Significantly high positive correlation ($r = > 0.80^{***}$) was found across groups, indicating that irrespective of age and gender, older adults not only chose similar leisure activities, but also prioritized them in a similar same manner. The next two sections explain the relationship between life satisfaction and leisure activities.

Life Satisfaction

Table 3 indicates the Life Satisfaction scores of the participants. Out of 140 participants, 45.71 per cent were extremely satisfied,

followed by 35 per cent who were moderately satisfied. Few participants were slightly satisfied, neutral and dissatisfied. No significant differences were found in Life Satisfaction with reference to gender (women $M = 28.85$, $SD = 4.82$ and men $M = 29.01$, $SD = 4.72$) or age (50–60 years $M = 28.84$, $SD = 4.33$ and Above 60 $M = 29.03$, $SD = 5.17$).

Table 3
Life Satisfaction (N=140)

Life Satisfaction	Gender							
	N=33		N=34		N=35		N=38	
	Women				Men			
	50-60	Per cent	60 Plus	Per cent	50-60	Per cent	60 Plus	Per cent
< 20 Dissatisfied	1	3.03	2	5.88	0	0	4	10.53
20 Neutral	0	0	0	0	1	2.86	2	5.26
21- 25 Slightly satisfied	4	12.12	5	14.71	6	17.14	2	5.26
26-30 Moderately satisfied	16	48.48	10	29.41	13	37.14	10	26.32
31-35 Extremely satisfied	12	36.36	17	50.00	15	42.86	20	52.63

Although not significant, men reported being more satisfied than women. Younger men and women reported moderate Life Satisfaction, whereas more number of older participants reported being extremely satisfied. Perhaps, continuing engagement in work life in the last few years before retirement among younger participants may have contributed to this trend.

Leisure Activities and Life Satisfaction

Table 4 indicates the correlation between Life Satisfaction and Leisure Activities. Overall for older adults, engaging in leisure activities ($\tilde{r}=.18^*$), especially physical activities ($\tilde{r}=.36^{***}$) was significantly positively correlated with Life Satisfaction. The trend was stronger for women ($\tilde{r}=.43^{***}$) than men ($\tilde{r}=.30^{**}$). Thus, with advancing age, physical activities significantly contributed to Life Satisfaction for both men and women. But even among physical activities, more number of women participants (both younger and older) were involved in household chores, indicating that their Life

Satisfaction may be intrinsically linked to fulfilling culturally prescribed gender roles within the household. This finding requires further investigation with reference to changing gender roles in Indian society.

Table 4
Relationship between Leisure Activities and Life Satisfaction (N=140)

		<i>Leisure Activities</i>	<i>Physical Activities</i>	<i>Physical Activities (Women)</i>	<i>Physical Activities (Men)</i>
Life Satisfaction	Spearman's rho	.18*	.36***	.43***	.30**
	p-value	0.04	< .001	< .001	0.01

* $p < .05$, ** $p < .01$, *** $p < .001$

Further, based on the median score (30) on the Life Satisfaction scale, the participants were distributed in two groups: Low-moderate Life Satisfaction (≤ 30 score) and High Life Satisfaction (> 30 score). No correlation was found between number of leisure activities and high life satisfaction. But interestingly, a significant but weak positive correlation ($r=0.29^*$) emerged between Low-moderate Life Satisfaction and number of leisure activities. Participants with Low-moderate Life Satisfaction engaged on an average in 10–12 basic leisure activities (reading, walking, watching TV etc.). But beyond these, either saturation, repeated or routine engagement or lack of interesting choices may have left leisure activities unrelated to Life Satisfaction. Mixed methods studies can further examine this by studying motivation in pursuing leisure activities and their contribution to wellbeing.

Table 5
Relationship between Leisure Activities and Low-Moderate Life Satisfaction (N=76)

		<i>Leisure Activities</i>
Low-Moderate Life Satisfaction	Spearman's rho	.29*
	p-value	0.01

* $p < .05$, ** $p < .01$, *** $p < .001$

Next, subjective meanings associated with specific leisure activities are described.

Locating Meaning: Older adults engaged in leisure activities to feel: a) happy and satisfied, b) for fun, entertainment and enjoyment, c) for personal interest and learning new things, d) to pass time, e) to cope with daily stressors, for relaxation and peace of mind, f) to remain active and healthy g) to remain busy and for better utilization of time, h) for spiritual progress, and i) for paying back to society. Engaging in leisure for passing time and remaining active or healthy were reported more by older men while pursuing personal interests or learning new skills were reported more by older women and younger men.

Grandparenting: Men and women reported equal engagement in taking care of their grandchildren. Interestingly younger women and older men reported more involvement with grandchildren. While women were involved in daily activities of the grandchild like playing, teaching and caregiving, men were more involved in providing psychological support, career advice or taking children to school, nearby gardens or for shopping. Grandchildren of many participants were staying abroad and visited them only during holidays.

Barriers: It was heartening to know that most of the older adults, 61.19 per cent women and 64.38 per cent men reported no barriers for indulging in preferred leisure activity. Barriers like health problems, poor eyesight, mobility issues, household and/or family responsibilities and spouse's health were reported by both men and women participants. Only one woman reported restriction from senior-in-laws as a barrier. Younger men, who were still employed, reported lack of time and busy schedules as a major barrier in pursuing leisure activities.

Dream Activities: Listing out dream activities can be helpful in designing new leisure activities according to preferences of older adults. About 47.76 per cent women and 58.90 per cent men did not report any dream activity they wished to engage in, indicating that perhaps they were already satisfied with their leisure activities. Other participants wished to pursue hobbies like embroidery, dancing, singing, or learning to play a new instrument or sports. Travelling and

visiting places of pilgrimage, volunteering with economically deprived or underprivileged children and helping senior citizens living alone were also reported.

Discussion

In Indian society, older persons were perceived as imparters of wisdom who provided direction to the young. This intergenerational exchange between the young and the old provided meaning to the lives of both and could leave behind valuable lessons for others in society (Sharma, 2002). As people age in India, they continue to adapt to new roles of grandparenting, help with household chores, pass on cultural values and maintain family solidarity (Gangopadhyay & Samanta, 2017). It was interesting to note that younger women participants living in joint families ($M = 15.18$) and older women living in nuclear families ($M = 14.47$) were more engaged in leisure activities. In contrast, younger women living in nuclear families ($M = 14.72$) or older women from joint families ($M = 13.22$) reported lesser engagement in leisure activities. So, it may be inferred that in typical urban middle-class Indian families, senior women in joint families and younger women in nuclear families were unable to spare more time for leisure activities perhaps because they were more involved in household chores and equitable support was lacking.

Tadic *et al.* (2012) found that older adults' involvement in work as a daily activity was related to higher levels of momentary happiness. In the present study, around 22.39 per cent women and 72.6 per cent men were still employed. Younger women and men reported engagement in part-time productive work with very few participants reporting involvement in a full-time job. Women were more involved in part-time teaching, embroidery, baking, and share trading while men were more involved in family business, accounting and stock exchange. Many converted their hobbies or interests (which they could not pursue due to employment obligations like embroidery or event management) into productive work. Compared to women participants, men knew about a greater number of clubs and centers for older adults around the city like – Lions' club, Friends society, Retired Members Association, Circle of Care, Polo Club, etc. Still,

about 82.08 per cent women and 69.86 per cent men were not aware of clubs and centers around the city for older adults. Contrary to findings of Mayr and Freund's study (2020) that older people contributed more through donations and volunteering, the present study found less involvement of older adults in volunteering.

Conclusion

The present study throws light on an under-explored relationship between leisure and life satisfaction in the Indian context understanding which can be helpful in designing leisure programmes, policies, and leisure infrastructure for the elderly. There is a need to create awareness about the importance of leisure in overall wellbeing in the later years. Similarly, awareness about existing leisure opportunities around the city for the elderly needs to be amplified. The study encourages the design of innovative and developmentally appropriate leisure time interventions for the elderly to enhance their wellbeing.

Acknowledgements: Authors would like to acknowledge Masters' students (Batch 2019–2021) of the Department of Human Development and Family Studies, The Maharaja Sayajirao University of Baroda for their valuable support in collecting data for this study.

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 456–469

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

A Systematic Review and Meta-Analysis of the Prevalence of Falls Among Community-dwelling Older Adults in India

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ABSTRACT

Falls in the elderly is a complex multifactorial phenomenon. However, very little is known about the prevalence of falls in the community-dwelling older adults in India. This paper is a systematic review and meta-analysis of studies (published between 2000 to 2020) that have estimated the prevalence of falls in community-dwelling older adults in India. The analysis revealed that the pooled prevalence of falls among the Community-dwelling older adults in India was 25.53 per cent (95% CI 19.91 – 32.75). Stratified analysis showed that the prevalence of falls among older adults residing in rural areas was 24.84 per cent (95% CI 17.00 – 36.29). No significant difference was observed in the percentage of prevalence between males 12.09 per cent (95% CI 8.17–20.65) and females 12.08 per cent (95% CI 9.93 – 14.70). No other stratified analysis on age and risk factors was obtained. It may be concluded that the sparse data limit our understanding of falls among the community-dwelling older adults in India. However, a prevalence of 25 per cent in absolute numbers (26 million) is alarming. Thus, further research is needed to explore

the factors which influence falls among community-dwelling older adults in India.

Keywords: Prevalence, Falls, Meta-analysis, Older adults, India.

Falls are one of the main causes of morbidity and disability in the elderly. More than one-third of persons age 65 years or older fall each year, and half of them experience recurrent falls (Zhang *et al.*, 2019). Falls have a significant impact on the life of fallers and their family members. The primary sequelae of a fall can be minor such as bruises, injuries, or fractures, but falls can also have major sequelae such as reduced functioning, loss of autonomy, depression, long term hospitalization, and even disability (Hartholt *et al.*, 2010; Chang *et al.*, 2016; Park 2018). Falls have a strong impact on the health and quality of life of older people.

India will have 173 million people above 60 years of age by 2026 from the current 104 million and thus likely to have a huge burden of falls and related morbidities and disabilities (Subaiya and Bansod 2014). In recent years, several studies from India have investigated the prevalence and risk factors for falls. The prevalence of fall reported in these studies ranges between 14–53 per cent and the risk factors include socio-demographic factors, previous falls, visual impairment, reduced functionality, chronic illness or pain, cognitive impairment, environmental hazards, gait or balance impairment, and many more (Johnson 2006; Ravindran and Kutty 2016; Dhargave and Sendhilkumar 2016). Except for one or two studies no attempts have been made to review (Krishnaswamy and Usha 2006) the prevalence and risk factors for falls among older adults in India, however, these studies have not used standard meta-analytic techniques to summarize the evidence.

Therefore, the objective of the current study was to determine the prevalence of falls among community-dwelling older adults through a systematic review and meta-analysis and explore the variation in prevalence by age, sex, geographical region, and the criteria used for defining falls.

Methodology

Search Strategy

Literature search was performed from January 2019 to February 2020. Data was searched in 3 scientific data bases: PubMed, Scopus and Google Scholar. The key words and phrases searched were (“epidemiology” [MeSH Terms] OR “epidemiology” [All Fields] OR “prevalence”[All Fields] OR “prevalence”[MeSH Terms]) AND (“accidental falls” [MeSH Terms] OR (“accidental”[All Fields] AND “falls”[All Fields]) OR “accidental falls” [All Fields] OR “falls”[All Fields])) AND (older[All Fields] AND (“adult” [MeSH Terms] OR “adult”[All Fields] OR “adults”[All Fields])) OR (“aged” [MeSH Terms] OR “aged”[All Fields] OR “elderly”[All Fields])) AND (“india” [MeSH Terms] OR “india” [All Fields]). The articles published between 2000–2020 were included in the review. Further searches were carried out among the reference lists of eligible articles.

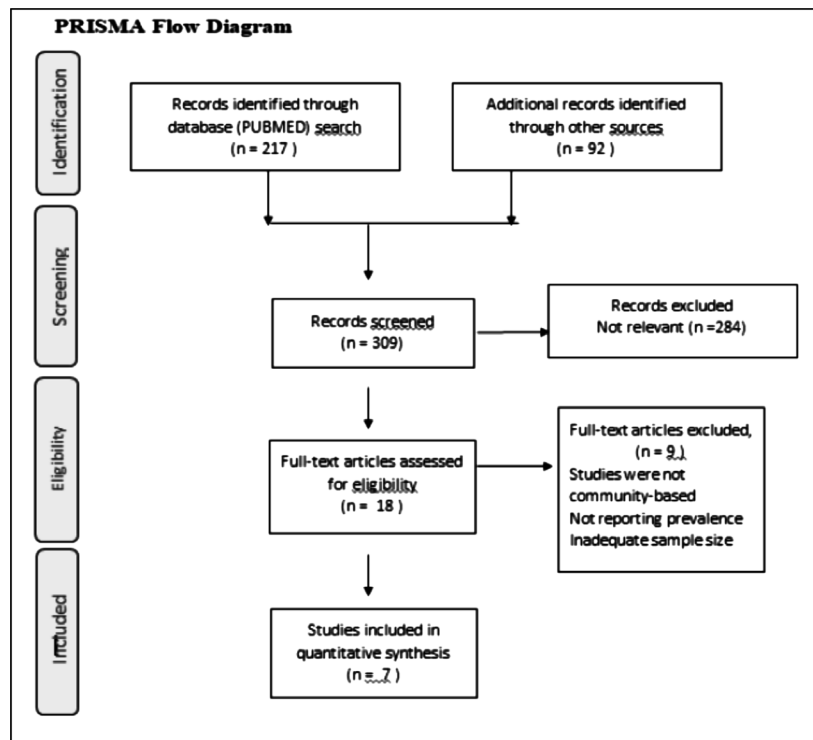
Screening

All titles and abstracts identified in the search were screened for the possibility of extracting the prevalence of falls among community-dwelling older adults. The studies were screened based on the following criteria (a) studies that were original articles and published in English; (b) studies estimating the prevalence of fall in older adults (c) studies conducted in India (e) time frame for literature selection was restricted to articles published between 2000 - 2020.

A total of 309 articles were obtained from the search. The PubMed search identified 217 articles, and an additional search through Scopus and Google Scholar yielded 92 articles. After the screening, duplicate records, studies based on secondary data, and studies not conducted in India were excluded. Thus a total of 18 articles were selected after reviewing the title and abstract. After screening, the selected articles were checked for eligibility for inclusion in the review. The following eligibility criteria were used: a) Studies involving only community-dwelling older adults b) Studies that reported prevalence of fall, and not prevalence related to disease conditions or fear of falling c) Sample size was more than 250.

Out of the 18 articles which were selected after the screening, 9 articles did not fulfill the eligibility criteria (given in the flow chart). Finally, 7 articles fulfilling the inclusion criteria were included in the review. A systematic process of study selection is presented according to the PRISMA flow diagram below (Figure 1). Full-text articles that were unavailable were requested and obtained from the authors. All the papers were screened and verified by two researchers independently. Unpublished data and conference abstracts were not included in the current review.

Figure 1
PRISMA Flow Diagram



Data Extraction

Each selected article was evaluated using a standardized data extraction sheet. The outcome of interest was the prevalence of falls among community-dwelling older adults in India. For this, we extracted the prevalent estimate of fall among older adults from the selected individual studies. In addition, associated variables that described the study characteristics such as study design, study setting, socio-demographic variables, stated in the studies were used. The numerator and denominator were verified and the prevalence was recalculated.

Statistical Analysis of Data/Studies

Data were synthesised and reported according to the preferred reporting items for systematic reviews and meta-analyses (PRISMA) statement (Figure 1). The pooled prevalence of falls was estimated using RevMan 5.3. A random-effect meta-analysis using a 95 per cent confidence interval was used to calculate the pooled prevalence. Additional random-effect analysis was conducted on the data stratified to estimate the pooled prevalence of falls according to gender and study area.

Results

Description of Selected Studies

Description of studies selected for the review is provided in Table 1. Seven studies provided prevalence data for falls in community-dwelling elderly. The age of the participants in the study ranged between 60 to 95 years. Of the seven selected studies, three studies were conducted in the southern states of India: Telangana, Kerala, and Pondicherry (Sharma *et al.*, 2017; Chacko *et al.*, 2017; Padmavathy and Dongre 2018), 2 studies were conducted in central India: Madhya Pradesh and Maharashtra (Pitchai *et al.*, 2019; Jindal *et al.*, 2019) and 2 in the northern part of India (Tripathy *et al.*, 2015; Sirohi *et al.*, 2017). The sample size ranged between 300 to 2049, with a total sample of 5059 older adults.

Table 1
Description of Selected Studies

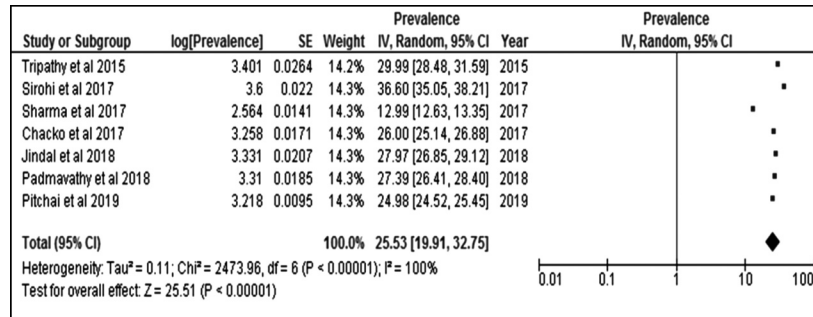
<i>Study</i>	<i>Study setting/</i>	<i>Study design</i>	<i>Sampling methods</i>	<i>Sample size</i>	<i>Prevalence</i>	<i>Gender</i>	<i>Recall period</i>
Tripathy et al., 2015	urban, rural and slums Chandigarh	Cross-sectional	Multistage cluster sampling	300	31%	Males 160 Female 140	12 months
Sharma et al., 2017	Rural Telangana	Cross-sectional	Populations sampling	561	13%	Males 280 Females 281	12 months
Sirohi et al., 2017	Rural Faridabad UP	Cross-sectional	Systematic random sampling	495	36.6%	Males 200 Females 256	12 months
Chacko et al., 2017	Rural Coimbatore	Cross-sectional	Two stage sampling method	655	25.9%	Males 276 Females 379	6 months
Padmavathy et al., 2018	Rural: Puducherry	Cross-sectional	Systematic random sampling	570	27.4%	Males 198 Females 372	12 months
Jindal et al., 2018	Rural Ambala Haryana	Cross-sectional	Systematic random sampling	468	28.7%	Males- 195 Females- 273	12 months
Pitchai et al., 2019	Mumbai. Thane and Raigad	Cross-sectional	One stage cluster sampling	2049	24.98 %	Males 1103 Females 946	12 months

The study design across the articles was cross-sectional. All the studies included both males and females and the distribution was fairly equal. Six studies assessed fall using a recall of the past 12 months, while 1 study used a recall of the past 6 months.

The description of the selected studies and the reported prevalence in the studies has been provided in Table 1.

The proportions of all the studies pooled together yielded a 25.53 per cent (95% CI; 19.91 – 32.75) prevalence of fall among the community-dwelling older adults. The random-effects combined estimate was used for calculating the pooled prevalence. The Q statistic was large ($Q = 2473.96$; $df = 6$; $p < 0.00001$; $I^2 = 100.0\%$), indicating that there was variation among the included studies. A forest plot demonstrating the heterogeneity among study estimates and the pooled prevalence estimate is displayed in Figure 2.

Figure 2
Pooled prevalence of fall in India



Exploration of Variation

Possible sources of variation were explored using stratified analysis of the included studies. Differences in prevalence were estimated by gender and study setting. As the studies included in the

Figure 3a
Pooled prevalence in rural setting

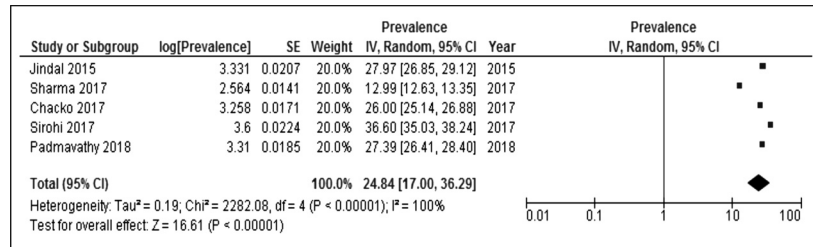
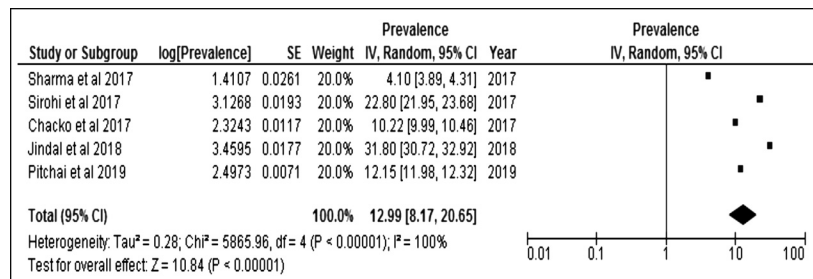
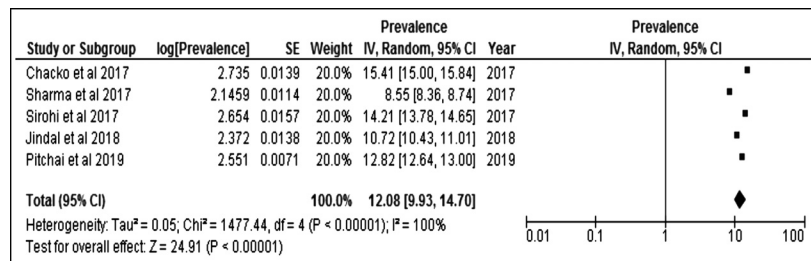


Figure 4a
Pooled prevalence in males



review did not report the distribution of prevalence according to age, the variation could not be shown in the current review. The estimates of pooled prevalence according to a study area and gender have been given in Figures 3a and 4a and 4b.

Figure 4b
Pooled prevalence in females



Proportion of Fall According to Geographical Location

Five studies conducted in rural locations were included in stratified analysis. Figure 3a displays the pooled prevalence of fall in a rural area only. The analysis estimated a prevalence of 24.84 per cent (95% CI, 17.00 – 36.29) with a Q statistic of 2282.08; $df = 4$; $p < 0.00001$; $I^2 = 100.0\%$). The difference between the prevalence of falls among older adults residing in rural areas and among older adults residing in urban areas could be not estimated as there was only 1 study which was conducted in the urban area.

Proportion of Fall According to Gender

Figures 4a and 4b represent the pooled prevalence of falls according to gender. Out of the 7 studies, five studies had reported prevalence disaggregated according to gender and 2 studies had reported the prevalence together. The forest plot (4a) indicates the pooled prevalence of fall to be 12.99 per cent (95% CI, 8.17–20.65) among the males, and figure 4b indicates the pooled prevalence among women to be 12.08 per cent (95% CI, 9.93 – 14.70). Thus, there was no difference in the prevalence of falls according to gender.

All the studies reported risk factors associated with falls and the results showed that age, gender, presence of chronic conditions; poor vision, depression, balance and gait impairment, physical activity, and

functional impairment were associated with falls. Functional impairment appeared repeatedly in 3 different studies (Sharma *et al.*, 2017, Sirohi *et al.*, 2017, Pitchai, *et al.*, 2019) while environmental hazards, place of fall, time of the day when fall occurred was reported in 5 studies (Tripathy, *et al.*, 2015, Chacko, *et al.*, 2017, Jindal, *et al.*, 2018, Padmavathy, and Dongre, 2018, Pitchai 2019). Chacko, *et al.*, (2017) reported that 31 per cent of falls took place within the household, and Padmavaty (2018) and Pitchai' *et al.*, (2019) study observed more than 60 per cent of the falls occurred inside the house. Behavioural and personal attributes such as hurrying, sedentary life, multiple medications; income; educational level; housing; and access to health care services; were also reported by the studies and these increased the risk of fall among the participants.

Consequences of falls were not reported systematically in the included studies. The percentage of having sustained minor injuries after fall: bruises, abrasions, cuts, and contusions ranged approximately between 50 per cent to 85 per cent (Tripathy, *et al.*, 2015, Sirohi, *et al.*, 2017, Chacko, *et al.*, 2017, Padmavathy, *et al.*, 2018 and Pitchai, *et al.*, 2019). Nearly 76 per cent of the falls needed medical attention (Sirohi, *et al.*, 2017) and 10–24.52 per cent needed hospital admission (Chacko, *et al.*, 2017, Pitchai, *et al.*, 2019).

Discussion

The estimated pooled prevalence of falls in India was 25.53 per cent. This equates that around 26 million people out of the 104 million people above the age of 60 years (2011 census) experience fall. In the current study, the fall prevalence in rural areas was estimated to be 24.84 per cent, affecting up to 12 million of the population in rural areas over the age of 60 years. Since 51 per cent of the elderly in India reside in rural areas, these numbers are alarming which suggests that the burden of fall may increase further in the rural population, if falls are not prevented. The study reports no significant difference in the prevalence of falls among the male and the female population.

In comparison to other Asian countries such as Japan (15.8%), and China (11.1%), (Yeong *et al.*, 2016) the pooled prevalence in the current review India appears to be higher, indicating a huge burden of fall in the elderly. Interestingly, a multi-ethnic study (Alex, *et al.*, 2018)

conducted in Malaysia, reports 23.8 per cent, prevalence among participants of Indian origin as compared to Malays (12.6%) and Chinese (19.4%).

Six studies included in the review had been conducted in rural parts of India. The estimated pooled prevalence in the current shows a prevalence of 24.84 per cent (95% CI, 17.00 – 36.29) in the rural area. The SAGE study conducted in the 6 LMICs reported that the proportion of falls was greater in the residents of rural areas as compared to an urban area (Stewart Williams, *et al.*, 2015). Similar results were obtained in a study conducted in Jamaica, where a larger proportion of rural (28.6%) residents reported falling compared with urban residents (19.4%) (Mitchell-Fearon, *et al.*, 2014). Since there was no comparison of studies conducted in urban settings, the current study cannot comment on this.

Further division of analysis according to gender showed no difference in the prevalence of falls among men and women. Surprisingly this finding was not consistent with the findings of numerous studies outside India (Gale, *et al.*, 2016) (Almada, *et al.*, 2020). Hence, there is a need to understand this phenomenon further.

All the studies used retrospective fall data. One study defined fall in the past 6 months and others were dependent on a recall of the past 12 months. All the studies ascertained fall by asking the participants 'Did you fall in the past 6/12 months?'. A study, conducted by Peel, (2000) assessed fall recall 12 months retrospectively and 12 months prospectively. The results showed that falling was more likely to be remembered if an injury had occurred (87%), than those without any injury. Studies conducted by Cummings, *et al.*, (1988) and Sander, *et al.*, (2015), demonstrated that the time frame of 12 months for fall recall was more reliable than a time frame of 3 months, as the number of episodes of fall covered in the past 12 months would be more. Thus, for the better ascertainment of falls, defining a uniform period could be beneficial (Sanders, *et al.*, 2015) (Cummings, *et al.*, 1988).

We are well aware that only prevalence data is not sufficient to draw inferences for immediate need for action but such evidence will be useful to draw the attention of the policymakers. As India will experience population ageing in the coming years, there will be a corresponding increase in the number of elderly falling and getting

injured. In the absence of any guidelines for fall prevention programme, this evidence will be critical for planning constructive strategies.

To the best of our knowledge, this is the first study which attempted to synthesise the pooled prevalence of fall in the community-dwelling elderly in India. To support our findings, the selection criteria used for the inclusion of studies in the meta-analysis were fairly strict. There was limited opportunity to investigate variability due to the small number of studies included and the lack of comparable data between studies. Since the number of studies included in the review was limited, the variations shown by stratified analysis of gender and place of residence showed no definite and robust comparisons. No other stratified analyses by the study were possible, but we can speculate that data on age and risk factors could have contributed to our understanding of the issue.

Another limitation of our review was the quality of the studies available for synthesis. Only 7 included studies were primarily designed to produce prevalence data, and this has contributed to the small population denominator. A few studies were excluded from the review because the studies lacked participant demographics, occasional numerical discrepancies were observed, and the data was collected in a specific setting (eg. hospital) and group (eg. residing in assistive homes). We used quality appraisal before including the studies in our review.

Conclusion

The current systematic review and meta-analysis found that the community-dwelling older adults in India had a high prevalence of falls (25.53%), stating that falls among older adults is a public health issue. Though falls among older adults are considered a public health issue in the developed country, it is not prioritized as a public health problem among low- middle-income countries like India. As India will have a large number of elderly soon, further research is needed to explore the factors which influence falls among community-dwelling older adults in India.

Acknowledgment: This project was funded by the Department of Science and Technology – Women Scientist B scheme

(DST-WOS-B) under the project number- DST/WOS-B/2017/68/HFN (G). The authors extend their thanks for their financial support.

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Indian Journal of Gerontology

2021, Vol. 35, No. 3, pp. 470–480

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

Does Education Change Elderly's Attitude Towards Old Age and Decision-Making?

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ABSTRACT

The present study aimed to see the relationship between the educational levels of the elderly in their attitude towards their age and their household decision-making. 300 elderly participants, ages varying from 60 to 80 years, were selected by stratified random sampling technique from Paschim Vihar, Vikas Puri, and Janakpuri areas of Delhi. The participants were classified into three groups: less educated (N=49), moderately educated (N=65), and highly educated (N=186). These participants were administered Attitude towards old age schedule (Palmore, E. 1977) and Household decision-making scale (VanWilligen and Chadha in 1989) individually. It was found that in terms of household decision-making, a significant difference was found in the purchase of home appliances, furniture and in deciding children's schooling. In terms of overall decision-making, no difference was found between groups one and two, but there were differences between groups one and three, and groups two and three. Secondly, it was found that the attitude of the elderly didn't vary with education levels, i.e. no statistically significant difference was found between the three groups. The research can be further used to create

meaningful interventions for the elderly to improve their quality of life.

Keywords: Educational qualifications, Elderly, Attitude towards old age, Household decision-making.

Many different factors influence how the elderly make decisions. These may include cognitive, psychological, social, cultural, and societal factors. Since decision-making processes mature with age and experience, it is expected that decisions made by the elderly in the house are knowledgeable, mature, correct, and taken after many deliberations and not rashly or hastily. However, at the same time, some people view the elderly as economically unproductive, cognitively obsolete, and old-fashioned according to present standards of life and thus avoid giving any household decision-making powers in their hands.

In India, household decision-making is a variable of the power equation in the social-familial milieu (VanWilligen and Chadha 1999). Household decision-making decides whether or not an elderly is still regarded as the head of the household. There is a clear-cut demarcation of decision-making in different areas of the household. The elderly ladies have an edge over their male counterparts in the areas of meal planning, purchase of clothes, and negotiating marriage arrangements. While the male elderly have more say in the purchase of furniture, home appliances, cars, investing family money, and purchase of the property.

Kumar and Kumar (2017) studied the tribal elderly people of Western UP, to understand their decision-making while living with the family and found that they had little say in the process. The younger generation's thoughts and choices were different from those of the elderly, and hence negotiations were hard for them.

In this context, Joshi (2020) has argued that to ensure improved quality of life for the elderly, their autonomy in household decision-making must not be compromised as the hampered sense of agency can have negative consequences on their emotional and mental health.

Hirkawa, *et al.*, (2017) studied the Japanese elderly's decision-making to find that they focus more on the immediate future

when deciding things as compared to the long-term future and they tend not to think too seriously about the same. Most importantly, they place agency in taking these decisions at the top of their list of needs.

Ambler (2015) has highlighted that having a pension or any kind of income for women significantly increases their chances of having more agency in the household to make decisions. In absence of financial security, they mostly have to listen to their husband or compromise on their wishes and demands.

Attitudes can generally be defined as a set of beliefs held by people. They can be positive or negative and are formed because of multiple factors like conditioning, media exposure, socialization, etc. Elderly and the attitude they have towards old age are also impacted by similar factors.

Negative attitudes rise from a variety of sources, most importantly, the views that individuals have towards the elderly which are shaped by the ideas of the culture they live in. A more explicit denigration of the elderly is found in various forms of humor. In an analysis of jokes, Palmore (1985) found that a majority of them dealing with the aged reflected a negative attitude (especially of elderly females). Another source of the negative stereotypes is the image of the elderly in literature, movies, television, and advertisements. Research, which analyzed 2741 characters in prime time network television, found that ageing in prime time drama is associated with increasing evil, failure, and unhappiness. In a world of generally positive portrayals and happy endings, only 40 per cent of older males and even females characters are seen as successful, happy, and good. Another reason is the lack of motivation by the governmental organizations, community, and the media to use their persuasive powers to correct all-pervasive negative beliefs and attitudes.

Perception towards old age is varied. Some people may see old age as a time for approaching one's expiration date; others may find great peace and a sense of satisfaction for having lived a fulfilling life. Research has shown that most older people had, over the years, developed patterns of thinking and acting that continued to evolve and that were used continuously in adapting to changing needs and circumstances.

Andrade, *et al.*, (2018) found that people with higher education tended to have relatively more positive attitudes towards old age. However, this too was accompanied by several factors, i.e. the elderly's marital status, age, etc. can be influential factors.

Kisvetrová, *et al.*, (2020) also argued that the more positive the attitude towards old age is, the better the quality of life of these elderly people tends to be- implying that a positive attitude is almost essential for a better quality of life.

Similarly, it can be argued that lack of education can be one of the factors that give rise to ageist attitudes in the youth, as argued by Smith, *et al.*, (2017). Moreover, increased interaction with the elderly can also help improve attitudes.

Cuddy, *et al.*, (2005) found that Americans stereotype elderly people as warm and incompetent, following from perceptions of them as non-competitive and low status, respectively. Data was also collected from six non-US. countries, including three collectivist cultures. It was found that elderly stereotypes are consistent across varied cultures and also that the elderly stereotypes are relatively persistent and the elderly suffer discrimination and social exclusion as a result of these.

Method

Sample

A total of 300 people were chosen, ranging between 60–80 years. Three localities of West Delhi were selected for data collection, these are Paschim Vihar, Vikas Puri, and Janakpuri. The voter's list was collected from the concerned constituency office and a systematic random sampling technique was followed whereby according to the voter's list every 5th house with the elderly occupant(s) was selected. The respondents were further grouped in three categories, viz. 1) L.E.-less educated, who have studied up to class 8th (N=49), 2) M.E.-moderately educated, educated up to 12th standard (N=65), and 3) H.E.-Highly Educated, graduates and above (N=185).

Tools Used

Attitude towards old age schedule: “The facts on aging schedule” developed by Palmore, E. in 1977, contains 24 statements designed to assess the perception, attitudes, and knowledge that the aged possess about ageing. True and false are written against each statement. The subjects are asked to give their responses either as true or false. Statement numbers 1,2,3,4,5,6,7,8,9,11,12,13,14,15,19,20 and 22 are given 1 point when marked ‘false’ and statement numbers 8,10,16,17,18,21,23 and 24 are given 1 point when marked ‘true’. The total of these scores gives attitude towards old age. Higher the score, the better the attitude towards old age.

Household decision-making scale: Developed by VanWilligen and Chadha (1989). This scale attempts to measure the respondent’s involvement in seven areas of household decision-making. The respondent is required to tick mark the most applicable option on a 5-point response scale ranging from ‘normally makes decisions alone’ to ‘others’. The seven household decision-making areas are :

Purchase of home appliances like refrigerators, television, and cars:

- Purchase of furniture
- Selecting children’s school
- Investing family money
- Negotiating marriage arrangements
- Planning meals and food preparations
- Purchase of clothes

5 marks are given to the option ‘normally makes the decision alone and it follows in descending order of giving 4,3,2 marks to the five-point response scale. Finally, 1 mark is given to the ‘others’ option. The scores are totaled to give a final score. Higher the score, the more the decision-making power.

The Demographic Information from each participant was collected through face-to-face interaction sessions. After filling up the questionnaire, an interaction session of half an hour to one hour was held with each respondent. In a few exceptional cases, the researcher

had to leave behind the schedule for completion but this was done only after the interaction.

Analysis of data: Inferential statistics were used and an F ratio was calculated using the SPSS software to know if a statistically significant difference exists between these groups or not.

Results and Discussion

Table 1
Comparison between GP1 (Less educated), GP2 (Moderately educated), and GP3 (Highly educated) concerning

Variables	Educational Qualification Groups									
	GP1, N=49		GP2, N=65		GP3, N=186		GP1	GP2	GP3	f value
	Mean	S.D.	Mean	S.D.	Mean	S.D.				
Household Decision-Making in										
Purchase of home appliances	2.59	0.73	2.6	0.61	3.01	0.8		*	*	10.42*
Purchase of furniture	2.65	0.93	2.65	0.57	3.04	0.77		*	*	9.28**
Selecting children's school	2.57	0.98	2.15	0.59	2.46	0.71	*		*	5.59**
Investing family money	2.53	0.84	2.31	0.64	2.96	0.86		*	*	17.71*
Negotiating marriage	3.06	0.63	2.92	0.67	3.09	0.82				1.19
Arrangements										
Planning meals	2.53	0.82	2.75	0.79	2.73	0.82				1.34
Purchase of clothes	2.45	0.98	2.74	0.89	2.68	0.82				1.76**
Total household Decision-making	18.39	3.72	18.12	2.59	19.97	3.93		*	*	8.03**

** .01 level of significance

* .05 level of significance

Table 2
Comparison between GP1 (Less educated), GP2 (Moderately educated), and GP3 (Highly educated) concerning attitude towards old age

Variable	Educational Qualification Groups									<i>f</i> value
	GP1, N=49		GP2, N=65		GP3, N=186		GP1	GP1	GP2	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	GP2	GP3	GP3	
Attitude Towards Old Age	9.06	2.89	9.18	2.56	8.75	3.43				0.52

** .01 level of significance

* .05 level of significance

Household Decision-Making

The table shows the comparison between the three groups on the various aspects of household decision-making.

Purchase of Home Appliances and Car

A look at the table shows that GP3 (H.E.) differs significantly from GP2 (M.E.) as well as GP1 (L.E.) decisions regarding the purchase of home appliances and cars. However no statistically significant difference can be seen between GP1 (L.E.) and GP2 (M.E.). The mean scores show that GP3 (H.E.) has the highest score followed by GP2 (M.E.) and then by GP1 (L.E.) indicating that the GP3 (H.E.) has the highest say regarding decisions related to buying household appliances. GP1 (L.E.) seems to exercise the lowest power in decisions regarding the purchase of home appliances.

Purchase of Home Furniture

A look at the table shows that GP3 (H.E.) differs significantly from GP2 (M.E.) as well as GP1 (L.E.) on the variable of decision regarding the purchase of home furniture. However no statistically significant difference can be seen between GP1 (L.E.) and GP2 (M.E.) on this variable. A look at the mean scores shows that GP3 (H.E.) has the highest score whereas GP2 (M.E.) and GP1 (L.E.) have similar scores. This goes to show that the highly educated group (GP3) has more say in decisions regarding the purchase of home furniture as compared to the other two groups.

Selecting School for Children

The table shows that GP2 (M.E.) differs statistically and significantly from GP1 (L.E.) as well as GP3 (H.E.) on the variable of household decision regarding selecting a school for children. However no statistically significant difference is seen between GP1 (L.E.) and GP3 (H.E.) on this variable. The mean scores show that GP3 (H.E.) has the highest score followed by GP1 (L.E.) and then by GP2 (M.E.). This indicates that the highly educated group has more say when it comes to deciding to select school for children as compared to the other two groups.

Investing Family Money

The table shows that GP3 (H.E.) differs statistically and significantly from GP2 (M.E.) as well as GP1 (L.E.) on the variable of decision regarding investing family money. However no statistically significant difference can be seen between GP1 (L.E.) and GP2 (M.E.) on this variable. The mean scores show that GP3 (H.E.) had the highest score followed by GP1 (L.E.) and then by GP2 (M.E.). This indicates that the highly educated group has more decision-making power in the field of investing family money as compared to the other two groups.

Negotiating Marriage Arrangements

The table shows that none of the three group's, viz. GP1 (L.E.), GP2 (M.E.), and GP3 (H.E.) differ significantly from each other on the variable of the decision in the field of negotiating marriage arrangements. This means that all three groups have a more or less similar say in this area. The mean scores show that the GP3 (H.E.) has the highest score followed by GP1 (L.E.) and GP2 (M.E.).

Planning Meals and Food Preparation

The table shows that none of the three groups, viz. GP1 (L.E.), GP2 (M.E.), and GP3 (H.E.) differ significantly from each other on the variable of decision-making in the area of planning meals and food preparations. The mean score shows that the GP3 (H.E.) group has the highest score followed by GP2 (M.E.) and then by GP1 (L.E.).

Purchasing of Clothes

The table shows that none of the three groups, viz. GP1 (L.E.), GP2 (M.E.), and GP3 (H.E.) differ significantly from each other on the variable of decision-making in the area of purchasing clothes. The mean scores show that the GP2 (M.E.) has the highest score followed by GP3 (H.E.) and then by GP1 (L.E.).

Total Household Decision-Making

The table shows that GP3 (H.E.) differs significantly from GP2 (M.E.) as well as GP1 (L.E.) as total household decision-making. However no statistically significant difference can be seen between GP1 (L.E.) and GP2 (M.E.) on this variable. The mean scores show that the GP3 (H.E.) has the highest score followed by GP1 (L.E.) and then by GP2 (M.E.). This shows that the highly educated group has overall more say in most of the areas of household decision-making as compared to the other two groups. Therefore, it can be said that education has a pivotal role in determining one's status and say in the household.

Attitude Towards Old Age

The table compares the three groups on the variable of attitude towards old age. It can be seen that none of the three groups differ significantly from each other on this variable. However, the mean scores show that the GP2 (M.E.) has the highest score followed by GP1 (L.E.) and then by GP3 (H.E.). This indicates that the GP3 (H.E.) has the best attitude towards old age as compared to the other two groups. Education seems to play a role in defining the type of attitude the aged have towards old age.

Attitude towards old age is also influenced by education, though significant differences are not observed between the less educated and highly educated groups. The scores indicate that the highly educated group has the best attitude towards old age. Chadha (2004) reported that there is a common stereotype that, intelligence decreases with age, and education and learning are not possible for the aged. This leads to a poor attitude towards aging experienced both by the elderly as well as the others. Moreover, a higher level of education can prepare people for the adversities of old age, making them better prepared. Therefore,

given that they are better prepared to deal with it, their attitude remains rather positive.

In household decision-making, the less educated group differs significantly from the highly educated group in the areas of household decision-making in the purchase of home appliances, furniture, and making money investments. In the rest of the areas, differences are seen which are not significant. However, education plays a role in giving the elderly household decision-making powers. Pechchioni (2001), reported that elderly mothers wanted to involve their daughters in decision-making processes, however, they failed to do so because of a lack of explicit discussions. Calhoun and Hutchison (1981) studied decision-making in old age and reported that the elderly avoided making decisions when the outcome was directed at the lives of the young individuals. It can be argued that with education, the understanding of the world around oneself changes, and hence the levels of education can perhaps determine the kind of decisions one makes.

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