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Development and Standardization of Scale to Assess the Satisfaction and Expectation of Older Adults in Old Age Homes

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Abstract: ***Objective: To develop a scale to assess the satisfaction and expectation of older adults in Old Age Home. Methods: This study was a cross-sectional study design. The initial draft of the questionnaire had 5 domains viz. physical structure, services provided, life style, financial and social relationship comprising a total of 33 questions. After peer review by experts, final draft of this instrument contains a total of 26 questions. Each questions were on 5-point Likert scale (lowest being 1 and highest being 5). Cronbach's alpha intra-class correlation coefficient (ICC) was measured for reliability analysis. Results: The questionnaire had good repeatability. The Cronbach's Alpha was >0.50 for all the items indicating the better reproducibility of the questionnaire with significant intra-class correlation coefficient (0.67, 95%CI=0.42-0.81, p=0.001). Majority of the domains were significantly correlated with each others, although the correlation coefficient was not high indicating better understanding of the questions as well as scores to be responded. The Cronbach's Alpha was >0.60 for all the domains when scores were added within each domain's questions with significant intra-class correlation coefficient (0.74, 95%CI=0.42-0.88, p=0.0001). Qualitatively, most of the respondents perceived about the availability of Old Age Home. Conclusions: The new scale appears to be valid and reliable for assessment of satisfaction and expectation of the residents in Old Age homes.***

Keywords: Satisfaction and expectation, older adults, Old Age homes

1. Introduction

Population ageing is one of the most discussed global phenomena in the 21st century. The population over the age of 60 years has tripled in last 50 years in India and will relentlessly increase in the near future. According to census 2001, the older people in India constituted 7.7% of the total population, which increased to 8.14% in census 2011. The projection for population aged 60 years and above in next four decades is: 133.32 million (2021), 178.59 (2031), 236.01 million (2041) and 300.96 million (2051). The increase in the elderly population are the result of changing fertility and mortality regimes over the last 40-50 years (Ministry of Health and Family Welfare, 2011 & Central Statistics Office, New Delhi, 2011).

With the rapidly increasing number of aged, the care of elderly has emerged as an important issue in India. Providing care for the aged has never been a problem in India where a value based joint family system was dominant. This family structure has been the socio-economic backbone of the average Indian (Shah, 1998). In our culture the elderly are adequately supported and respected in exchange of their advice and affection to the young generation. However in recent time, with the increasing of modernization of life styles resulting in transitional changes in value system, the joint family is breaking down into several scattered nuclear families (Shah, 1998). Change in family structure and contemporary changes in the psycho-social matrix and values often compel the elderly to live alone or to shift from their own homes to some institutions or old age homes (Dotty, 1992, Hegde et al, 2012, Kumar et al, 2012, Mishra, 2008 & Mudey et al, 2011). When more elderly are opting to stay in Old Age Homes (OAHs), it would be interesting to study their adjustment patterns in the new environment, levels of satisfaction or dissatisfaction and expectations from OAHs. Do they feel satisfied with the services of OAHs? In our best knowledge, there is no such questionnaire exists in India which measures the satisfaction and expectation of older adults residing in OAHs. Therefore, the present study was conducted to develop a scale to assess the satisfaction and expectation of older adults in Old Age Homes.

2. Material and Methods

This study is a part of the Ph.D. study titled "a study of psychiatric morbidity, quality of life and expectations of inmates of Old Age Homes in Northern India". The study is being carried out in the Department of Geriatric Mental Health, King George's Medical University, Lucknow. This is a cross-sectional study design to develop and to standardize an instrument to assess the satisfaction and expectation of older adults in Old Age Home. The study was approved by the ethical committee of the Institute and consent was taken from each of the participants.

3. Significance of the Study

Although there are number of scales/questionnaires for assessment of psychological well-being, quality of life and financial satisfaction etc. of elderly. In our best knowledge, there is no reliable scale to assess the satisfaction and expectation of older adults in old age homes in Indian population. Therefore this scale will be helpful to assess the satisfaction and expectation of older adults in India.

3.1 Questionnaire Design

The questionnaire was developed with following steps:

a) Formation of domains

For formulating the instrument at initial stage, three Old Age Homes in Bareilly and five in Lucknow district were visited and type of services and facilities provided by these OAHs were observed. The authors have listed 11 domains viz. physical structure, food availability, daily living activity, safety, health, religious activity, financial, social activity, rules & regulations, life style and transportation. The prepared list of domains was submitted to three experts. After detailed discussions with experts, these 11 minor domains were pooled in to 5 major domains viz. Physical structure, (food availability, safety, health, religious activity, rules & regulations, transportation) are merge in services provided, life style, financial and social relationship.

b) Formation of questions

Initially, 33 item were framed which can assess the satisfaction and expectation of OAHs residents, were submitted to the experts. Out of these 33 questions, 30 questions, measuring the level of satisfaction, were assigned a 5-point Likert scale (lowest being 1 and highest being 5) while the remaining three questions, explore the expectations of elderly, were qualitative in nature and approved without any rating criteria by experts. Among the 30 questions measuring the level of satisfaction, there was a general agreement between the experts for 18 questions, which were considered relevant for the purpose. They also suggested adding a column for recording the reasons for dissatisfaction (if there is any) below each question. In second version, The 15 questions, which were not approved by the experts or found to be insignificant in assessing the satisfaction and expectation, were subsequently discarded, one more question in every domain was added, the extra column for recording the reason for dissatisfaction, was created and then resubmitted to experts. All the 23 questions of the second draft were approved by experts. Thus, the final version has arrived with a total of 23 quantitative and 3 qualitative questions. The physical structure domain consisted 5 questions (1-5), services provided had 12 questions (6-16, 23), life style (17, 22), financial (18, 19) and social relationship (20, 21) consisted 2 questions each.

c) Categorization of scores for 5 domains

Domain Scores

a) Physical structure : Min = 5 Max = 25
b) Services provide : Min = 12 Max = 60
c) Life style : Min = 2 Max =10
d) Financial : Min = 2 Max =10
e) Social Relationship : Min = 2 Max =10
f) Total : Min=23 Max= 115

d) Field-trial of the scale

The questionnaire was administered at an Old Age Home living in Bareilly district of Uttar Pradesh. A total of 27 older adults were interviewed and the same were again interviewed to assess the reliability of the questionnaire.

e) Data Analysis

Internal consistency and temporal stability were used to assess reliability. Internal consistency of the scales was analyzed with Cronbach's alpha and alpha values $\geq$ 0.50 were considered adequate. Temporal stability or reproducibility was analyzed according to the intra-class correlation coefficient (ICC) between scores of scales obtained. Reproducibility was considered adequate when ICC $\geq$ 0.50. The paired t-test was used to compare the pre and post data. The p-value<0.05 was considered significant. All the analysis was carried out by using SPSS 16.0 version (Chicago, Inc. USA).

4. Results

4.1 Reliability Analysis

The comparison of mean scores between pre and post interview is presented in the Table-1. There was no significant (p>0.05) difference in scores between pre and post for all the items which indicated the better repeatability of the questionnaire.

The Cronbach's Alpha was calculated for test retest reliability (table 2)All items had a value of >0.50 (0.67, 95%CI=0.42-0.81, p=0.001). The split half analysis showed that there was high score when considered both parts of the items (95.07±7.99) indicating good validity of the questionnaire (Table-3).

Table-4 presents the inter-item correlations. The inter-item correlation matrix indicated that most of the item did not correlate to each other.

Table-5 depicts the domain-wise inter-item correlations. Majority of the domains were significantly correlated with each others, although the correlation coefficient was not high indicating better understanding of the questions as well as scores to be responded.

The Cronbach's Alpha was >0.60 for all the domains when scores were added within each domain's questions with significant intra-class correlation coefficient (0.74, 95%CI=0.42-0.88, p=0.0001) (Table-6).

Most of the domains were significantly correlated to each others (Table-7).

Qualitatively, most of the respondents perceived about the availability of Old Age Home. Majority of the respondents opined that there should be facility for at least minimum required materials for a happy old age life. Most of the respondents were in view that Old Age Home should have basic requirements and should be maintained time to time.

5. Discussion

In our best knowledge, there is no scale to assess the satisfaction and expectation of older adults in old age homes in Indian population. This (SE-26) is a new questionnaire to measure the satisfaction and expectations of older adults residing in OAHs. This scale has demonstrated adequate internal consistency reliability and had evidence of content and construct validity. The average time required to administer the scale is 20 minutes. The item-level missing data rates were low. These findings suggest that the SE-26 successfully captures a newly identified construct and may be useful to investigators wishing to measure the satisfaction and expectations regarding living condition of older adults in other studies, specifically of those residing at OAHs.

In the present evaluation, all 5 domains viz physical structure, service provide, life style, financial and social relationship had good level of Cronbach's Alpha as well as intra-class correlation coefficient indicating better test-retest reliability. The individual questions had also moderately correlated in this evaluation. The repeatability of the questionnaire was tested by interviewing again the same individual and tested for repeatability by using paired t-test. An insignificant p-value indicated good repeatability of the questionnaire.

There are differences as well as similarities between our scale dimensions and those found in other international studies. Reeder and Chen's confirmatory factor analysis lumped together three previously documented scales - namely professional/technical, interpersonal/trust and educational- into one unique dimension. Using the same instrument, Laferriere found four dimensions of client satisfaction with home nursing care: technical quality of care, communication, personal relationships between client and provider, and service delivery. However, Bear.M *et al.* reported two factors such as service delivery and service sufficiency. Geron.S.M *et al.* classified items into the categories homemaker/health aide, care management service, home-delivered meal service and grocery service. The reasons for the observed differences between the number and content of scales in the home care satisfaction literature have not been studied.

Okamoto (2010) developed a Social Activities-Related Daily Life Satisfaction Scale specifically applicable to elderly people in communities and to evaluate its reliability and validity. Exploratory factor analyses indicated that four factors, "satisfaction with learning" (four items), "satisfaction with usefulness to others and society" (four items), "satisfaction with health and physical strength" (three items), and "satisfaction with friends" (three items) should be extracted. Confirmatory factor analysis for assessing the 14-item four-factor model showed high goodness of fit indices (GFI = 0.943, AGFI = 0.915, RMSEA = 0.068). Concurrent validity was established by comparing the score of the scale with five external variables (Activity and Daily Life Satisfaction Scale for the Elderly, Life Satisfaction Index K, etc). Student's t-tests revealed that each score of the subscale was positively associated with activity variable. The overall Cronbach's coefficient alpha for the scale was 0.919 and for its four subscales values ranged from 0.814 to 0.887.

6. Conclusion

The developed scale was found to be a valid, reliable and culture free instrument which could be used for assessment of satisfaction and expectation of elderly in Old Age Homes. In addition, the availability and dissemination of the information gathered through this scale will help the development and effectiveness of interventions that promote the satisfaction and expectation of elderly.

Table 1: Comparison of mean scores between pre and post

Variables	*Pre*	*Post*	*t-value*	*p-value*[1]
PH1	4.63±0.68	4.93±0.26	0.94	0.45
PH2	4.59±0.93	4.48±0.84	0.87	0.67
PH3	4.96±0.19	4.81±0.55	1.03	0.19
PH4	4.37±0.79	4.59±0.69	0.77	0.36
PH5a	0.59±1.01	0.56±0.50	0.02	0.99
PH5b	2.07±2.48	2.70±2.47	1.14	0.09
FD_6	3.44±1.25	3.19±1.33	1.16	0.08
DL_7	3.37±0.79	3.41±0.74	1.01	0.10
DL_8	3.78±1.01	3.74±0.94	0.98	0.23
DL_9	4.11±1.12	4.44±0.80	0.99	0.24
SFT_10	4.81±0.78	4.96±0.19	0.97	0.23
TRNS_11	2.30±0.66	2.33±0.67	1.02	0.19
HlT_12	3.67±0.92	3.37±1.04	1.15	0.08
HlT_13	3.41±1.08	3.26±0.98	1.02	0.19
HlT_14	4.00±1.07	3.70±1.10	1.17	0.07
RELG15	4.74±0.71	4.78±0.57	0.98	0.25
RUL_16	4.15±1.19	4.15±1.02	0.01	0.99
LF S17	4.78±0.69	4.63±0.83	0.93	0.45
FIN_18	4.67±1.03	4.85±0.36	0.99	0.16
FIN_19	4.70±0.66	4.52±0.89	0.99	0.15
SOC_20	4.33±0.87	4.26±0.94	1.01	0.18
SOC21	4.33±0.96	4.19±1.03	1.02	0.17
LF22	4.74±0.71	4.67±0.73	1.02	0.11
REL_23	4.52±0.50	4.52±0.75	0.02	0.98
Total average score	3.96±0.33	3.95±0.32	0.76	0.82

[1]Paired t-test

PH-physical structure , FD- food, DL-daily living, SFT-safety, TRNS-transportation, HLT-health, RELG-religious, RUL-rules regulation, LF-life style, FIN-financial, SOC-social relationship,

Table 2: Test re-test reliability

	Test re-	*Cronbach's*
PH1	-0.11	0.66
PH2	-0.17	0.67
PH3	-0.17	0.65
PH4	0.33	0.63
PH5a	-0.37	0.69
PH5b	-0.38	0.79
FD 6	0.27	0.63
DL 7	0.12	0.65
DL 8	0.40	0.62
DL 9	0.38	0.62
SFT 10	0.18	0.64
TRANS 11	0.33	0.63
HLT 12	0.58	0.60

HLT 13	0.57	0.60
HLT 14	0.37	0.62
RELG15	0.48	0.62
RUL 16	0.56	0.59
LF17	0.28	0.63
FIN 18	0.22	0.64
FIN 19	0.75	0.60
SOC 20	0.49	0.61
SOC21	0.42	0.62
LF22	0.70	0.60
REL 23	0.67	0.62

Intra-class Correlation (95%CI)=0.67 (0.42-0.81), p=0.001

Table 3: Split half distribution

	Mean	*Std. Deviation*
Part 1	43.04	3.36
Part 2	52.04	6.62
Both Parts	95.07	7.99

Part I: Ph1, Ph2, Ph3, Ph4, Ph5A, Ph5B, Food_6, DL_7, DL_8, DL_9, Saft_10, Trans_11 (Cronbach's Alpha=-0.32).

Table 4: Inter-Item Correlation Matrix

	Ph1	Ph2	Ph3	Ph4	P5A	P5B	FD_6	DL_7	DL_8	DL_9	SAFT_10	TRANS_11	HLT_12	HLTT_13	HLT_14	RELg15	RUl_16	LF17	FIN_18	FIN_19	SOC_20	SOC21	LF22	RELG_23
PH1	1.00																							
PH2	0.30	1.00																						
PH3	0.47	0.34	1.00																					
PH4	-0.02	-0.10	-0.16	1.00																				
PH5a	0.22	0.19	0.12	0.00	1.00																			
PH5b	0.24	0.21	0.17	-0.29	0.66	1.00																		
FD_6	-0.38	-0.17	-0.25	0.45	-0.40	-0.48	1.00																	
DL_7	-0.37	-0.26	-0.41	0.08	-0.19	-0.21	-0.02	1.00																
DL_8	-0.40	-0.22	-0.24	0.25	-0.39	-0.21	0.35	0.39	1.00															
DL_9	0.11	-0.25	-0.16	0.17	-0.50	-0.43	0.32	0.21	0.26	1.00														
SFT_10	-0.13	-0.11	-0.05	0.18	-0.10	-0.29	0.24	0.11	0.19	0.42	1.00													
TRANS_11	-0.17	-0.17	-0.21	0.22	-0.50	-0.39	0.57	0.15	0.50	0.26	0.11	1.00												
HLT_12	-0.32	-0.34	-0.29	0.33	-0.32	-0.44	0.54	0.23	0.33	0.37	0.18	0.60	1.00											
HLT_13	-0.25	-0.13	-0.29	0.18	-0.37	-0.33	0.43	0.18	0.19	0.37	0.27	0.36	0.72	1.00										
HLT_14	-0.42	-0.27	-0.19	0.32	-0.36	-0.49	0.60	0.23	0.28	0.22	0.41	0.59	0.82	0.66	1.00									
RELG15	0.35	-0.17	-0.07	0.25	0.06	0.08	-0.08	-0.03	0.08	0.38	-0.09	0.01	0.33	0.24	-0.05	1.00								

RUL_16	0.07	-0.15	-0.14	0.18	-0.39	-0.29	0.21	0.22	0.31	0.59	0.15	0.33	0.43	0.46	0.21	0.45	1.00						
LF17	0.14	-0.03	-0.06	-0.05	-0.79	-0.39	0.29	-0.05	0.25	0.57	-0.08	0.39	0.24	0.23	0.10	0.19	0.50	1.00					
FIN_18	-0.18	0.25	-0.06	0.02	-0.36	-0.24	0.30	-0.08	0.15	-0.03	-0.08	0.15	0.16	0.30	0.17	-0.12	0.13	0.48	1.00				
FIN_19	0.00	-0.08	-0.09	0.29	-0.13	0.04	0.12	0.14	0.35	0.15	0.18	0.12	0.40	0.39	0.27	0.56	0.44	0.18	0.35	1.00			
SOC_20	0.15	-0.06	0.30	0.37	-0.10	-0.14	-0.04	0.15	0.39	0.16	0.09	0.02	0.29	0.09	0.16	0.39	0.32	0.13	0.17	0.63	1.00		
SOC21	-0.10	-0.19	-0.14	0.03	-0.01	0.10	-0.13	0.19	0.20	0.14	0.03	-0.34	0.17	0.42	-0.04	0.47	0.29	0.00	0.19	0.64	0.55	1.00	
LF22	0.03	-0.05	-0.07	0.18	-0.37	-0.01	0.05	0.18	0.40	0.18	-0.09	0.25	0.39	0.39	0.25	0.55	0.50	0.42	0.40	0.88	0.64	0.58	1.00
REL_23	-0.09	-0.02	-0.19	0.27	-0.25	-0.12	0.41	0.17	0.23	0.57	0.15	0.10	0.38	0.51	0.14	0.39	0.56	0.34	0.34	0.47	0.29	0.50	0.39	1.00

Table 5: Comparison of Domain-wise mean total scores between pre and post

Variables	*Pre (n=27)*	*Post (n=27)*	*t-value*	*p-value*[1]
Physical structure	19.14±2.03	19.37±1.39	0.73	0.47
Service provide	46.29±6.91	45.85±5.84	0.45	0.65
Life style	9.51±1.18	9.29±1.40	0.88	0.38
Financial	9.37±1.41	9.37±1.14	0.00	1.00
Social relationship	8.67±1.62	8.44±1.76	0.84	0.40
Total	93.00±8.60	92.33±8.84	0.47	0.63

[1]Paired t-test

Table 6: Test re-test reliability

	Test re-test reliability	*Cronbach's Alpha*
Physical	0.344	0.68
Service Provide	0.222	0.72
Life style	0.595	0.71
Financial	0.507	0.69
Social	0.431	0.73

Intra-class Correlation (95%CI)=0.74 (0.42-0.88), p=0.0001

Table 7: Domain wise inter-item correlations

		Physical	*Service_Provide*	*Life_style*	*Financial*	*Social*	*Total*
Physical	r	1.000					
	p-value	.					
Service_Provide	r	-0.262	1.000				
	p-value	0.187	.				
Life_style	r	0.056	0.471*	1.000			
	p-value	0.782	0.013	.			
Financial	r	-0.017	0.406*	0.724**	1.000		
	p-value	0.932	0.036	0.000	.		
Social	r	0.004	0.288	0.494**	0.551**	1.000	
	p-value	0.983	0.145	0.009	0.003	.	
Total	r	-0.043	.0923**	0.621**	0.582**	0.447*	1.00
	p-value	0.830	.000	0.001	0.001	0.019	.

*. Correlation is significant at the 0.05 level (2-tailed), **. Correlation is significant at the 0.01 level (2-tailed)

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