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ORIGINAL ARTICLE

Assessment of Quality of Life and Determinants Among the Elderly Population in Rural Areas of Puducherry: A Mixed Method Study

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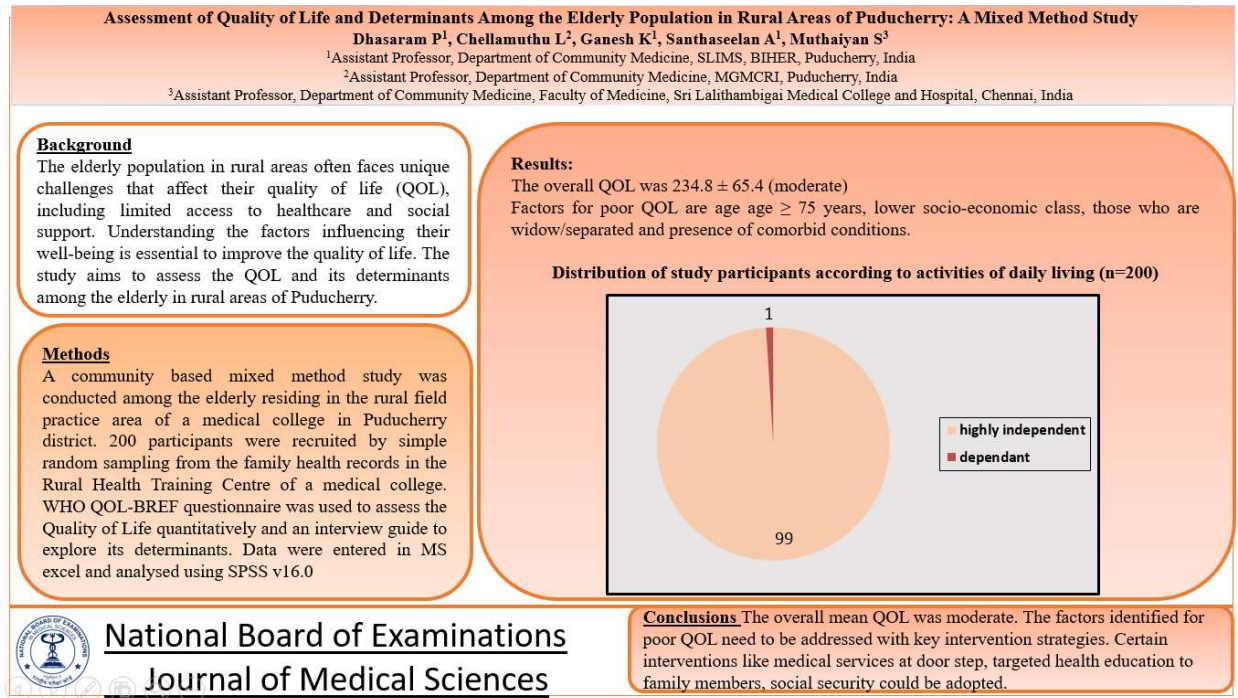
Abstract

Background: Elderly people living in rural areas often faces unique challenges that affect their quality of life (QOL), including limited access to healthcare and social support. Understanding the factors influencing their well-being is essential to improve the quality of life. The study aims to assess the QOL and its determinants among the elderly in rural areas of Puducherry. **Methods:** A community based sequential explanatory mixed method study was conducted among the elderly residing in the rural field practice area of a medical college in Puducherry district. 200 participants were recruited by simple random sampling from the family health records in the Rural Health Training Centre of a medical college. WHO QOL-BREF questionnaire was used to assess the Quality of Life quantitatively and an interview guide to explore its determinants. Data were entered in MS excel and analyzed using SPSS v16.0. **Results:** The mean age of the participants was 68.8± 2.5 years with majority being females. The environmental domain scored the highest mean QOL and psychological domain the lowest mean QOL. The overall mean QOL was 234.8 ± 65.4. The main determinants of poor QOL are age ≥ 75 years, lower socio-economic class, those who are widow/separated and presence of comorbid conditions. The binary logistic regression predicts the factor for poor QOL was age ≥ 75 years with OR (95% CI) as 6.23 (2.44-15.91). **Conclusion:** The overall mean QOL was moderate. The factors identified for poor QOL need to be addressed with key intervention strategies. Quality affordable medical services at door step to improve physical domain and targeted health education for family members and the community, who form the immediate environment around the elderly, can play a crucial role in enhancing the social domain.

Keywords: Quality of Life, Elderly, WHO QOL-BREF

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Graphical Abstract



Introduction

Ageing is normal and inevitable phenomenon. In India, as per Census 2011, people with age more than 60 years were 103 million (8.6% of total population) and is predicted to be 319 million (19.5%) in 2050 [1]. With increase in availability, accessibility, affordability of better medical facilities and effective control of infectious diseases the global life expectancy at birth of either gender has reached from 45.5, 48.5 years to 68.5, 73.3 years respectively between 1950 and 2015 [1]. In continuum the UN Population Division predicts that global life expectancy would reach 74.5 years and 79.1 years for males and females respectively by 2050. In addition to this demographic transition, there is also change in the epidemiological trend of overall increase in the prevalence of Non-Communicable Diseases (NCD) and number of NCD

Disability Adjusted Life Years with ageing of the population [2]. Almost half (47%) of older Indians have atleast one chronic disease such as arthritis, depression, angina, diabetes, hypertension [3].

The world Health Organization (WHO) has defined Quality of life (QOL) in the context of culture and value system in which he or she lives and in relation of his or her goals, expectation, standard and concerns [4]. QOL among elderly is an important area of concern which reflects the health status and well being of this vulnerable population. QOL is the broad concept covering the individuals physical health, mental health, level of independence, social relationship, spiritual beliefs and environment. In India, around three-fourth (73.3%) of the elderly resides in the rural area with overall literacy rate at 44% [5]. Disabilities such as locomotor and visual also commonly affects

these vulnerable group [6]. Literature review identifies that deterioration of physical health status, mental stress, poor housing conditions, unfriendly neighbors and various other factors affects the QOL of elderly. With this background we planned for quantitative component using WHO BREF tool and Katz activity scale to assess the QOL among elderly and in addition to get insight on perceived psychological and social factors that enhances and deteriorates the QOL we included a qualitative component to the study. The objectives of our study to assess the QOL and explore the factors influencing it among elderly in rural areas of Pondicherry.

Materials and Methods

A community-based sequential explanatory mixed method study was conducted to assess the quality of life among elderly people in rural areas. It was done in villages covered under Rural Health Training Centre (RHTC), attached to the Department of Community Medicine of a private college in Puducherry. The study was conducted for 3 months duration (Jan- March 2024). The participants of 60 years and above living in selected village for more than 6 months were included. Exclusion criteria were elderly participants not willing or not present in house after 2 consecutive visits. Considering from the study by Kumar et al. [7], the standard deviation (SD) of the QOL score in the elderly as 10.2, tolerable error as 1 the minimum sample size estimated was 169. A non-response rate of 20% was added and final sample size calculated was 200. The elderly participants list was collected from family health records maintained in RHTC of the medical college. Simple random

sampling using computer generated random number table was applied to select the participants to be included in the study. The data collection tool consists of socio-demographic details, WHO QOL-BREF questionnaire [4] (Tamil translated version) and KATZ ADL (Activities of Daily Living) scale [8]. WHO QOL-BREF questionnaire comprises of four domains, they are physical health, psychological, social and environment with the total of 26 questions. Each of the questions in the scale was rated in a 5 point like scale [4]. As per WHO, the score ranges from 0 to 100, where 0 was the lowest value and 100 was the highest. Katz Index of Independence comprising of 6 questions based on the daily activities was used to assess the ADL. The total score of the scale ranges from 0 to 6, where 6 was the highest score indicating independence in ADL, 0 was the lowest score indicating highly dependent for ADL [8]. In phase I, the data was collected by the principle investigator in the household of the participant after obtaining the written informed consent. Pre-tested semi-structured tool was used to record the information of the participants. All the information collected from the participants are kept confidential. In phase II for qualitative study, the participants with poor QOL were purposely selected. Informed written consent was obtained and the interview were audio recorded. These interviews are conducted by the principle investigator trained in qualitative research techniques using an interview guide in the local language. In-depth Interviews were conducted till the point of saturation in the participants convenient time and place. Each interview lasted for 30-40 minutes and at the

end of the interview the findings of the discussion were disclosed with the participants and validated. Data entry was done in MS excel 2019 and analysis was done using the Statistical Package for Social Sciences (SPSS) version 16.0 software, Chicago, USA. The outcome was represented as mean and SD for continuous variables and proportions for categorical variables. Tests that include Mann Whitney U test and Krushkal Wallis test were applied to find the statistical significance. Transcripts were written in tamil from audio recordings, translated to English and back translated. Inductive approach was applied to identify the codes; to form categories and finally themes were generated by manual content analysis.

Results

In our study of total 200 participants were interviewed and majority were in the age category of 60-74 years 170 (85%). The mean age of study participants was $68.8 \pm$

2.48 years. More than two-third were females 139 (69.5%). The distribution of education status among the study participants indicates around 130 (65.0%) were illiterates. Around half of the participants 95 (47.5%) belonged to middle and lower middle class according to modified BG Prasad scale 2023. (Table 1) The major comorbid conditions reported are diabetes, hypertension, osteoarthritis, cardiovascular diseases, asthma, and hemiparesis. The comorbid conditions were validated from medical records and only the chronic conditions were considered as comorbidity.

From Table 2 it was evident that QOL score in environmental domain was the highest $64.6 (\pm 19.3)$ and psychological domain was the lowest $54.2 (\pm 17.4)$. The minimum score in the social domain was 6 followed by psychological domain 13. The total QOL score of the study participants was $234.8 (\pm 65.4)$. In overall, the mean QOL of all the domains was average.

Table 1. Shows the socio-demographic characteristics of the study participants (n=200)

Socio-demographic variable		n (%)
Age (years)	60-74	170 (85.0)
	≥ 75	30 (15.0)
Gender	Male	61 (30.5)
	Female	139 (69.5)
Education	Literate	70 (35.0)
	Illiterate	130 (65.0)
Occupation	Working	40 (20.0)
	Not working	160 (80.0)

Socio-economic class*	Upper and upper middle	62 (31.0)
	Middle and Lower middle	95 (47.5)
	Lower	43 (21.5)
Marital status	Married	157 (78.5)
	Widow/separate	43 (21.5)
Family type	Nuclear	142 (71.0)
	Joint/ extended	58 (29.0)
Co-morbidity	Present	80 (40.0)
	Absent	120 (60.0)

*Modified BG Prasad scale 2023

On assessing the ADL, it was found that among 200 participants, 99 % of them were highly independent to carry the activities of daily living and only 1% was

dependent of their family members for activities pertaining to daily living based on Katz Index of Independence in Activities of Daily Living.

Table 2. Shows the Distribution of QOL Score of study participants (n=200)

Domain	Maximum possible score	Minimum score	Maximum score	Mean score	Standard Deviation
Physical	100	19	88	56.9	14.9
Psychological	100	13	94	54.2	17.4
Social	100	6	100	59.1	21.2
Environmental	100	25	100	64.6	19.3
Total QOL Score	400	94	363	234.8	65.4

The various socio-demographic factors that includes age, gender, education, occupation, socio-economic class, marital status, family type and comorbidity were compared across all the domains of Quality of Life. It was found that the participants in the age category of 60-74 years had higher mean QOL in all the domains when compared with the participants in the age band of ≥ 75 years (Table 3). On further exploration in qualitative study, the participants perception for this finding was

Respondent 4 (age 77) said, “*as age increases even the son consider us as burden and don’t share any information so we will be isolated, frustrated*”

Respondent 7 (age 79) conveyed, “*we will be alone in the house all the time and they never take us to any family functions because of my ill health*”

In socio-economic class the participants in the upper class had higher QOL compared to middle and lower social class. Also, the participants who are married and living with their spouse had higher mean QOL in all the QOL domains except in the psychological health when compared with the participants who are widow or separated. Participants with diagnosed comorbidity had lower QOL compared to those without any comorbid conditions. These differences are also statistically significant (Table 3)

Table 3. Significant socio-demographic factors associated with domains of QOL (n=200)

Socio-demographic Variable	QOL Domains (Mean \pm SD)				Total QOL score (Mean \pm SD)
	Physical	Psychological	Social	Environmental	
Age (yrs) [†]					
60-74	58.2 (13.9)	56.8 (16.2)	62.3 (20.1)	67.0 (18.7)	245.2 (60.7)
≥ 75	43.9 (13.7)	39.9 (17.4)	40.9 (18.2)	51.0 (16.8)	175.7 (60.1)
<u>pValue</u>	0.000*	0.000*	0.000*	0.000*	0.000*
Social class [†]					
Upper	60.5 (16.2)	59.4 (18.1)	64.8 (19.9)	69.7 (19.9)	254.4 (67.2)
Middle	57.2 (13.4)	53.2 (17.1)	59.8 (19.8)	63.6 (18.5)	233.9 (60.8)
Lower	51.2 (14.6)	49.1 (15.5)	49.3 (22.9)	59.5 (18.6)	209.1 (64.4)
<u>pValue</u>	0.008*	0.011*	0.001*	0.024*	0.003*
Marital status [#]					
Married	58.2 (14.8)	55.4 (17.3)	61.7 (20.7)	66.4 (19.2)	241.7 (64.3)
Widow	52.2 (14.5)	49.8 (17.2)	49.3 (20.4)	58.2 (18.3)	209.5 (63.7)
<u>pValue</u>	0.023*	0.051	0.001*	0.012*	0.005*

Comorbidity [#]					
Present	51.1 (14.4)	51.1 (16.3)	54.4 (20.2)	54.4 (20.2)	219.7 (62.8)
Absent	60.8 (13.9)	56.3 (17.9)	62.2 (21.4)	65.6 (20.3)	244.9 (65.4)
<u>pValue</u>	0.000*	0.029*	0.011*	0.316	0.012*

Mann-Whitney test, †Kruskal-Wallis test, *p Value <0.05 is the statistically significance

Table 4. Shows the Predictor variables of Quality of life using binary logistic regression

Variables	Total n=200	Poor QOL n (%)	B	S.E	Wald	p-Value	Adjusted Odds ratio (95% CI)
Age (yrs)							
60-74	170	42 (24.7)	1				
≥75	30	22 (73.3)	1.83	0.48	14.61	0.000*	6.23 (2.44-15.91)
Social Class							
Upper	62	16 (25.8)	1				
Middle	94	28 (29.8)	0.43	0.47	0.84	0.360	1.53 (0.61-3.82)
Lower	44	20 (45.5)	0.36	0.42	0.75	0.388	1.44 (0.63-3.29)
Marital status							
Married	157	41 (26.1)	1				
Widow	43	23 (53.5)	0.53	0.42	1.77	0.183	1.74 (0.77-3.93)
Co-morbidity							
Absent	120	37 (30.8)	1				
Present	80	27 (33.7)	0.09	0.34	0.08	0.772	1.10 (0.57-2.14)

*p-Value <0.05 is considered statistically significant

In Multiple Logistic Regression, the age was the predictor of quality of life and it was also statistically significant. The odds of poor quality of life among those who are aged greater than or equal to 75 years is 6.23 time compared to those who are less than 75 years of age (Table 4).

In Quantitative study, the persons belonging to lower socio-economic class had poor mean QOL in physical domain and to support this finding in qualitative interview

Respondent 3 (age 67) said, *“The only person to take care of me is spouse, Because of age either of us could not work and we are managing only with the old age pension (Rs*

4000). So, I could not afford for the good quality medical care of my chronic illness”

In phase I study, the participants with any of the comorbidity had lower mean QOL in all the domains. The inner perspective of the participants for this finding was

Respondent 7 (age 79) said, *“I was bed ridden for past 3 years, so I feel severe ache throughout my body. I am unaware of the things happening in external world”*

Respondent 8 (age 71), revealed *“my daughter in law will scold me, if I ask any money to my son for the treatment of my leg pain”*

Table 5. Participants perspective on factors influencing Quality of Life

Theme	Good QOL			
Category	Physical	Psychological	Social	Environmental
Code	Active, Diet restrictions, Sports	Affectionate, Faith Relaxation	Friendly, Hope, Social interaction, Preach, Helping, Dignity, Self-respect	Clean
Theme	Poor QOL			
Category	Physical	Psychological	Social	Environmental
Code	Cost of treatment, Tired, Pain, Disability	Memory, Boring, Hallucinations, Depression, Frustrated	Needy, Lonely	Dependable, Burden, Poor, Dirty

The Table 5 represents the themes, categories, and codes. Inductive approach was followed and the factors (codes) explored in the interview were grouped to a category then assigned in either of the appropriate theme good or poor QOL.

Discussion

We conducted a mixed method study among the elderly individuals residing in the rural areas of Puducherry. Totally 200 elderly people were interviewed. Study results shows that overall QOL score of elderly living in the rural setting was average. Similar finding was revealed from the study conducted by Kumar SG et al⁷ in the rural area of south India. This similarity is due to geographically near region and study done among geriatrics.

Our study shows higher environmental score shows that the geriatric populations are more satisfied about their environment. Similar findings were revealed from the study conducted by Praveen et al⁹ done in rural area. The stress free, pollution less, noise free and a more green environment spread in rural areas could be the reason for this higher mean QOL score in environmental domain comparing to other domains. In our study, conversely as age of the participants increases the QOL score decreases. Similar findings noted in a study on quality of life among the elderly residing in the urban area of thirumazhisai (Tamilnadu) which was done by Parasuraman et al. [10]. In our study nearly 99% of the participants scored full in the daily activity of Katz Index of Independence scale. This could be because, majority of our study population was less than 75 years (85%). Parasuraman et al. [10] study also revealed similar findings in the activities of

daily living. This similarity could be due to the comparable population characteristics and standardized assessment tools (WHO BREF scale and Katz scale). The educational status in our study population, 52% are illiterate whereas in Shah et al. [11] study conducted among elderly in urban area in Ahmedabad city, Gujarat shows that 35.6% are illiterate. This difference in literacy rate could be attributed to the locality, as our study was carried in rural area whereas shah et al study carried out in the urban area.

In our study age <75 yrs individual has better score in physical health domain. Similarly, Karmakar N Et al¹² conducted study in rural Tripura shows that individual age <70 yrs. have better score in physical domain. Another study by Thadathil et al. [13] in rural kerala showed that mean score of QOL domain was maximum in physical health domain (42.44) followed by the social relationship domain (42.16). Comparably in our study also physical domain has maximum score followed by social relationship domain, this may be due to the similar study population (elderly > 60years). From our study it was evident that physical domain, environmental domain, social relationship score are significantly better among those who are with their spouse than those who are separated, widowed. Barua et al. [14] also conducted a study on the elderly in Karnataka and found that the geriatric population those who are married and living with spouse currently had better quality of life compared to those who are divorced, widowed, separated. In the study by Mudey et al. [15] at Wardha, shows that there was a statistically significant difference in physical and psychological domain QOL score among

rural population with respect to age. This finding correlates with our study where the population in the age category between 60 to 74 has better physical and psychological domain.

The strength of the study is the mixed method design because the qualitative interviews help us to better understand the participant perspective that will help to design strategies to improve the QOL. The limitation of the study is the inclusion of only a small proportion of super senior citizens (80 years and above), which restricts the exploration of quality of life (QOL) in this group.

Conclusion

The overall QOL of the elderly was moderate. The present study revealed that environmental domain had higher mean QOL score in comparison to other domains, and contrastingly physical domain was affected more with low mean QOL score. Key intervention strategies need to be planned to improve all the domains of QOL and health holistically. Quality affordable medical facilities at their door steps could improve the physical health. The social domain can also be improved by collective efforts from family members and geriatric support groups in the community.

Conflicts of interest

The authors declare that they do not have conflict of interest.

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