Research article

Demographic and socio-economic differentials of quality of life of elderly people in rural Nepal

Mahendra Raj Joshi

Abstract

Background: Quality of life (QOL) is one of the central concepts in ageing research with an increasing elderly population worldwide. **Objective:** The main objective of this research paper is to assess the different levels of QOL of elderly population in different sociodemographic strata in the rural areas of Nepal. **Methods:** This is a cross-sectional study carried out in 2017 in Kailali district, Far West Province of Nepal involving 547 elderly. QOL was assessed by World Health Organization Quality of Life – BREF. **Results:** The mean score of overall QOL index for all respondents was 12.93. On disaggregation of data by selected background variables showed that the mean score of overall QOL index was observed to be highest for the respondents (14.13) who were frequently involved in social activities with low variability [Coefficient of variance (CV) ±0.12]; and the lowest (9.93) for those respondents who were living with other family members (i.e., nephew/niece in law) with the highest variability (CV± 0.18). Variables such as sex, marital status, involvement in social activities, involvement of decision making in the family, living arrangement, caste/ethnicity, educational status, medical care and land property ownership were positively correlated with QOL. On the other hand age, household size, elderly abuse, stress in life and old age security allowance was negatively correlated with QOL. **Conclusions:** Policy makers and programme managers need to prioritize investments in healthcare and dealing with the stress of elderly people to improve their QOL.

Key words

Aged, Elder abuse, Living arrangement, Psychological Stress, Quality of life

Introduction

Population ageing is a global issue. It is not only a social issue in developed countries where it is most prevalent, but also recognized as a challenge in developing countries.[1] The cut-off age for the elderly population varies across the countries and over time. According to the World Assembly on Ageing held at Vienna (Austria) in 1982 and the United Nations International Conferences on Ageing and Urbanization in 1991, age is 60 years and above has been defined as the old age .[2] In the context of Nepal, Senior Citizen Act, 2006 also uses the age 60 years and above as elderly.[3] Based on above, in this study, people whose age is 60 years and above were included as the elderly.

There is no commonly accepted definition of quality of life (QOL). It is a multi-dimensional concept, which cannot be explained in medical terms alone. The World Health Organization's Quality of Life Group has defined QOL as: 'an individual's perception of their position in life, in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.' It is a broad concept affected in a complex way by the person's physical health, psychological state, personal beliefs, social relationships and their relationship to the salient features of their environment.[4]

Current interest in QOL of elderly research can be attributed to a number of factors. Firstly, there are increasing proportions of elderly people, presenting challenges in terms of meeting health and social care needs in a time of fiscal constraints. Secondly, medical technological advances have added years to life but not necessarily QOL. Thirdly, there has been a decisive shift in medical ethos away from a focus on secondary and tertiary implementation to primary intervention and prevention. Lastly, globalization has created more international competitiveness, and thus, a need for nations to improve the QOL of their citizens in the hope of improving their country's social, economic and political profile

In Nepal, issues related to aged people who are largely marginal, have not obtained proper attention. There are very few studies carried out concerning the QOL in Nepal. In the past, the studies has mainly focused on self-reported health,[1] functional disability,[1] loneliness,[1,5] depression,[6] sleep quality,[7] elderly abuse,[8] perceived QOL,[9] living arrangement and QOL,[10] physical and mental health status,[11] socio-economic status of elderly people,[12] factors determining QOL of elderly people,[13] and health and social care need assessment.[14]

The main objective of this study was to examine the different levels of QOL of elderly population residing in community level in the rural Nepal. Specifically, the relationship of demographic variables (such as: age, sex, marital status and household size) and socio-economic variables (such as: involvement in social activities, involvement in decision making in the family, physical health problem, caste/ethnic group, abuse, living arrangement, stress in life, educational status, medical healthcare, having old age security allowance and having land property ownership) with QOL of elderly population were examined.

Methods

This is a cross-sectional study carried out in November-December, 2017. Rural area of Kailali district of Far West Province of Nepal has been chosen purposively as a study area. Total sample size for this study was determined 396 households through Yamane formula.[15] A Multi stage sampling design was adopted for this study.

At the first stage, conveniently two Village Development Committees (VDCs) named (Hasuliya and Basauti (now renamed as Kailari Rural municipality) of Kailali districts which represent the highest proportion of elderly population were selected as sampling area. VDCs are lower-level administrative areas; Nepal had over 3200 of them at the time of the survey. Each VDC has nine wards (the lowest-level political unit). At the next stage, all the 18 wards of selected VDCs were sampled. All the wards of selected VDCs were considered as cluster. So, there were 18 clusters in this study. All the sampled clusters were considered as primary sampling units (PSU) for this study. At the last stage, 22 households with at least one elderly 60 years and above were selected from each sampled cluster. Systematic random sampling method was used for the selection of 22 households from each cluster. However, in the survey a total of 396 households were visited and 547 elderly people aged 60+ were successfully interviewed. All the elderly people in the sampled households were recruited.

World Health Organization Quality of Life – BREF (WHOQOL-BREF) was used to elicit elderly people's QOL.[4] The WHOQOL-BREF consists of 26 items with the response options ranging from 1 (very dissatisfied/very poor) to 5 (very satisfied/very good). The first two items general QOL and general satisfaction with health are not included in the overall QOL index. The remaining 24 items assesses four domains: physical, psychological, social, and environmental. The physical domain (7 items) assesses activities of daily life including dependence on medicine, energy and fatigue, mobility, and work capacity. The psychological domain (6 items) assesses positive and negative feelings, including self-esteem, bodily image and appearance. The social domain (3 items) assesses personal relationship, social support and sexual activity. The environmental domain (8 items) includes questions related to financial resources, freedom, safety and security, health and social care, physical and home, and transport.

Finally, an overall QOL Index was designed exclusively for this study by taking the means of all four domains of QOL i.e. physical health, psychological state, social relations, and environment. The potential score of the index ranges between 4-20. It is interpreted that 4 indicates the 'worst' and 20 indicates the 'best' level of quality of life of elderly people. The WHOQOL-BREF has been validated for assessing QOL in a range of settings and used to assess QOL of older adults by a number of studies. The WHOQOL-BREF has been used among older adults in Nepal[16] with past application of the Nepalese version demonstrating high reliability.[17] The WHOQOL-BREF scale in this study demonstrated high internal consistency with a Cronbach's alpha coefficient of 0.79.

The study protocol was approved by the research ethics committee of the Central Department of Population Studies, Tribhuvan University (Ref. no. 03/2017). Respondent's right to refuse and withdraw from the interview at any time was respected. Respondents were assured of the confidentiality. Informed verbal consent of respondents was sought prior to the interview.

The data was statistically analyzed by using SPSS version 20.0. A t-test was performed **to** compare the means of two groups. Statistical significance was set at standard $p<0.05$ in the two tailed test. For comparing the variability among elderly population within specific independent variable with respect to different aspect of QOL, a descriptive statistics measure was used and the results were expressed in coefficient of variation (CV), and CV values mean the extent of variability of data in a sample in relation to the mean of the population. The higher the coefficient of variation indicates the greater the level of dispersion among the mean. In addition, to examine the basic relationship between the dependent and independent variables, Karl Pearson's zero-order correlation coefficients (r) have been computed.

Results

Sample characteristics

There were 547 older adults aged 60 years and above, who were successfully interviewed for the study. The mean age of the participants was 71.43 ± 8.01 (SD) years. Majority of the participants were female (58.9%). Over three fifth (63.1%) participants were married. Average household size was reported to be 6.87 ± 3.29 persons. About one quarter (24.1%) of participants were literate. The literacy status of female respondents was lower (15.7%) compared with that of male respondents (39.1%).

Overall QOL index and selected background variables

The overall QOL was calculated 12.93 in this study (ranging from 4-20 score) which indicates moderate level of QOL of elderly people in the study area. It varies according to demographic and socio-economic variables. The overall QOL index was observed the highest (15.55) for those elderly people who have obtained secondary level of education followed by those elderly people who

frequently involved in social activities (14.13) and having no physical health problem (14.12) in the study area. The overall QOL index of elderly people was found the lowest (9.93) for those elderly people who lived with other family members (i.e., nephew/niece in law) in the study area. The distribution of overall QOL index of the elderly people according to different demographic, social, and economic variables is shown in the Table 1.

Table 1. Differentials in quality of life of elderly people by background variables					
Factors		**Mean**	**SD**	**CV**	**p-value**
Demographic Factors					
Age (Years)	60-74	13.24	1.57	0.12	<0.001
	75+	11.94	1.62	0.14	
Sex	Male	13.13	1.74	0.13	<0.01
	Female	12.64	1.63	0.13	
Marital Status	Married	13.19	1.62	0.12	<0.001
	Other marital status*	12.25	1.64	0.13	
Household size	1-2 persons	12.28	2.06	0.17	<0.05
	3-4 persons	13.05	1.63	0.12	
	5-6 persons	12.72	1.72	0.14	
	7 or more persons	12.02	1.57	0.13	
Social Factors					
Involvement in social activities	Never	12.14	1.64	0.14	<0.001
	Rarely	13.45	1.47	0.11	
	Occasionally	13.95	1.02	0.07	
	Frequently	14.13	1.63	0.12	
Involvement in decision making in the family	No role	12.44	1.63	0.13	<0.001
	Play role	13.37	1.57	0.12	
	Don't know	10.67	1.86	0.17	
Physical health problem	Yes	12.27	1.64	0.13	<0.001
	No	14.12	0.96	0.07	
Elderly abuse	Yes	12.33	1.72	0.14	<0.01
	No	12.93	1.67	0.13	
Living arrangement	Living with spouse	12.81	1.98	0.15	<0.001
	Living with son/daughter in law	12.96	1.59	0.12	
	Living with daughter/son in law	12.75	1.92	0.15	
	Grand children	10.85	1.75	0.16	
	Other family members*	9.93	2.27	0.23	
	Alone	11.64	2.05	0.18	
Stress in life	Very severe	11.14	1.99	0.18	<0.001
	Severe	11.98	2.11	0.18	
	Moderate	12.83	1.46	0.11	
	Hardly ever/ never	13.19	1.48	0.11	
Caste/ethnic group	Tharu	12.89	1.78	0.14	>0.05
	Non-Tharu**	13.04	1.66	0.13	
Socioeconomic Factors					
Level of education	Illiterate	12.58	1.63	0.13	<0.001
	Literate but no formal education	13.56	1.58	0.12	
	Basic education (1- 8)	13.59	1.83	0.13	
	Secondary education (9-12)	15.55	1.01	0.06	
	Higher education (bachelor +)	12.83	0.11	0.01	
Routine Health check	Yes	12.28	1.58	0.13	<0.001
	No	13.61	1.53	0.11	
Having old age security allowance	Yes	12.53	1.56	0.12	<0.001
	No	13.48	1.76	0.13	
Land /property ownership	Yes	13.07	1.71	0.13	<0.001
	No	12.63	1.65	0.13	
*Other marital status includes unmarried and widow/widower. *Other family members includes niece, nephew/niece in law. **Non-Tharu includes: Hill Bhraman, Chhetri, Thakuri, Magar, Gurung, Kami, Damai/Dholi, Sarki, Sonar, Lohar, Tamata and Badi caste group.					

Demographical variables and quality of life

The mean score of overall QOL index was observed the highest for the respondents (14.13) who were frequently involved in social activities. This indicates that involvement in social activities of elderly people play the most important role in determining the QOL of elderly people. The mean value of overall QOL index of all selected background variables was observed statistically significant except caste/ethnicity.

The mean score of overall QOL index was found slightly higher for male respondents compared to female respondents (M=13.15 for male; M=12.76 for female), suggesting that male elderly people may have a better overall QOL compared to female elderly people. Currently married elderly people (M=13.19) exhibited significantly higher overall QOL index as compared to elderly people with 'Others' marital status (M=12.25). The means of overall QOL of elderly people was found the highest for household size with three to four members (M=13.05) followed by households with five or six members (M=12.72). This was statistically significant. This indicates that household size has a significant effect on determining overall QOL of elderly people.

Social variables and quality of life

Elderly people who participated in social events at community level frequently had the highest overall QOL index (M=14.13) than those who never participated had the lowest overall QOL index (12.14). Elderly people who play decision making role in the family as they grew elderly had a higher overall QOL (M=13.37) as compared to those elderly people who had no role in decision making in the household (M=12.44). The finding suggests that the community participation and role of decision making in the family has a positive impact on overall QOL index of elderly people. Elderly people who suffered from at least one physical health problem had lower overall QOL index and maximum variation (M=12.27) as compared to those who did not suffer from at least one physical health problem (M=14.12).

Elderly people reporting to have faced any form of abuse (or violence) since they turned 60 years have a significantly low overall QOL index (M=12.33) as compared to those who have never faced any types of abuse (M=12.93). Elderly people living with their son/daughter-in-law only had the highest overall QOL index and minimum variation (M=12.96) compared to those who reside alone (M=11.64). This reflects that living arrangements has a strong impact in affecting overall QOL of elderly.

Elderly people who had very severe stress had the lowest overall QOL index (M=11.14) while those who hardly have any stress had the highest overall QOL index (M=13.19) (Table 1). The data reflects that as the level of stress increases in intensity i.e. becomes severe, their overall QOL index decreases and vice versa. This suggests that stress in life has a strong impact in affecting overall QOL of elderly people. Elderly people who belong to Non-Tharu ethnic group have higher overall QOL index (13.04) and lower variation (CV±0.13) compared to elderly people of Tharu ethnic group (12.89) with greater variation (CV±0.14) (Table 1), suggesting that Non-Tharu elderly people have better QOL compared to Tharu elderly people.

Economic variables and quality of life

The mean score of overall QOL index increased with the level of education. This indicates that there is positive relationship between the level of education and QOL of elderly people. Elderly people who went for routine health check-up had higher overall QOL mean scores and less variation (M=13.35; CV±0.11) compared to those who did not have routine health check-up (M=12.22; CV±0.13), suggesting that elderly people who frequently practiced in routine health check-up have better overall QOL compared to those who did not have routine health check-up. The main effect of routine health check-up was observed to be significant. It was observed that elderly people who had land/ property ownership had higher overall QOL index (M=13.07) than those who did not have land/ property (M=12.63). This result was found statistically significant. This indicates that land/property ownership has a significant impact in affecting overall QOL of elderly people.

Table 2 describes the relationship between dependent and independent variables. The overall QOL index is considered as dependent variable and other demographic and socio-economic variables are considered as independent variables. The overall QOL index was observed positively correlated with all the selected demographic variables except household size of elderly people. The correlation coefficient was found positively correlated for selected demographic variables such as: sex (0.107) and marital status (0.225), but negatively correlated with other selected demographic variables such as: household size (-0.079) and age group (-0.326) with overall QOL index. Further, there was significant relationship between overall QOL index and selected demographic variables (age, sex and marital status) except household size. This reveals that these selected demographic variables (age, sex and marital status) have significant relationship with QOL of elderly people.

Social variables have mixed result with overall QOL index. It was observed that variables (such as: elderly abuse, physical health problem and stress in life) had negative relationship (-0.153, -0.505 and -0.256 respectively) with overall QOL index; while other variables (such as: involvement in social/community activities, involvement in decision making in the family and living arrangements, caste/ethnic group had positive correlation (0.197, 0.218, 0.127 and 0.038 respectively) with overall QOL index (Table 2). Further, the correlation of all selected social variables except caste/ethnic group was found significant with overall QOL index.

The socioeconomic variables also had mixed result with overall QOL index. Some of the variables such as: education, medical care and land/property ownership were positively correlated (0.230, 0.049 and 0.101 respectively) with overall QOL index; while variables such as: old age security allowance was observed negatively correlated (-0.224) with overall QOL index.

Table 2. Zero order correlation matrix: Comparing quality of life with demographic and socio-economic variables

Variables	Demographic Variables							Social Variables					Socioeconomic Variables			
	OQOLI	AG	SD	MS	HHS	PHP	ISA	DMIF	AB	LA	SIL	CEG	EDS	MC	OASA	LO
OQOLI	1.000															
AG	-0.326**	1.000														
SD	0.107*	-0.050	1.000													
MS	0.225**	0.223**	0.339**	1.000												
HHS	-0.079	0.043	0.047	-0.033	1.000											
PHP	-0.505**	-0.355**	-0.057	-0.129**	0.003	1.000										
ISA	0.197**	0.047	0.159**	0.178**	-0.014	0.031	1.000									
DMIF	0.218**	0.226**	0.119**	0.186**	0.273**	-0.122**	0.196**	1.000								
AB	-0.153**	0.027	0.018	0.020	0.041	0.046	0.018	0.088*	1.000							
LA	0.127**	-0.013	0.027	0.196**	-0.341**	0.057	-0.006	-0.159**	-0.056	1.000						
SIL	-0.256**	0.102*	-0.121**	-0.244**	0.156**	0.055	-0.035	0.093*	0.086*	-0.167**	1.000					
CEG	0.038	0.015	0.011	-0.044	0.212**	0.190**	0.290**	0.491**	-0.005	-0.109*	0.180**	1.000				
EDS	0.230**	0.184**	0.293**	0.237**	0.023	-0.184**	0.223**	0.299**	-0.031	0.069	-0.040	0.204**	1.000			
MC	0.049	-0.073	0.093*	-0.095*	0.052	0.125**	0.090*	0.159**	-0.039	0.036	0.044	0.225**	0.150**	1.000		
OASA	-0.224**	-0.428**	-0.170**	-0.450**	-0.016	0.359**	-0.036	-0.322**	-0.046	-0.023	0.061	0.167**	-0293**	0.094*	1.000	
LO	0.101*	-0.056	0.766**	0.135**	0.084*	-0.037	0.134**	0.157**	0.018	-0.039	-0.035	0.077	0.240**	0.114**	-0.072	1.00

*Correlation coefficient is significant at the 0.05 level (two-tailed), ** Correlation coefficient is significant at the 0.01 level (two- tailed),

Note: Serially as presented in the table: OQOLI: Overall QOL index, ISA: Involvement in social activities; CEG: Caste/ethnic group, PHP: Physical Health Problem, AG: Age group, DMIF: Decision making in the family, EDS: Educational status, SD: Sex Difference, AB: Abuse, MC: Medical check-up, MS: Marital status, LA: Living arrangements, OASA: Old age security allowance, HHS: Household size, SIL: Stress in life, LO: Land/property ownership.

Discussions

This research examined the different levels of QOL of elderly people who were residing in rural areas of of Kailali district Nepal. There are very few studies carried out on the influence of sociodemographic and economic factors on QOL of elderly people in Nepal. Past studies has only focused on some specific aspects of elderly population.[1,5-14]

Overall QOL index

This study found average QOL score of Nepalese elderly in rural areas was 12.92 which indicated a moderate level of QOL. The result of the study observed close to with other similar types of studies conducted at different part of India at in the past. A study in Navi Mumbai (India) in urban areas on elderly women and found that the overall QOL index was 13.50;[18] and another study in rural areas of India on elderly men and women reported overall QOL index at 12.92.[19]

Demographic variables and overall QOL index

This study found that selected demographic variables (like age, sex and marital status) had significant relationship with overall QOL index of elderly people; while household size was not observed statistically significant. Males had higher overall QOL index than the females. Overall QOL index was found higher for those elderly people whose marital status was 'currently married' compared to elderly people who were single or widowed. Earlier studies have also shown similar pattern in relation with demographic variables and QOL of elderly, indicating that elderly people who were currently married and were living with their spouse generally led a happier life and had an overall better QOL as compared to those who were widowed or lived alone.[18,20] Central Department of Population Studies/Tribhuvan University (CDPS/TU)[14] reported in a study that females were more vulnerable than that of males. In this study, age was inversely correlated with overall QOL index of elderly. In this context, Pinquart[21] and Durgawal, Shinde, and Godwin[22] argued that advanced age reduces the QOL of most elderly. Fernandez and Kulik,[23] suggested that being younger, married, and having higher level of education have been associated with greater reported of QOL. On the contrary, in an Italian study Netuveli and Blane[24] found that centenarians reported greater satisfaction with life than younger age groups. They argued that QOL was found to be significantly higher in the elderly people compared with younger people using individual QOL measures.

Social variables and overall QOL index

This study found that psychosocial variables like elderly abuse, physical health related problem and stress in life had significant negative relationship (-0.128, -0.495 and -0.256 respectively) with overall QOL index; while caste/ethnicity, involvement in social/community activities, involvement in decision making in the family and living arrangements have significant positive correlation (0.038, 0.197, 0.218 and 0.127 respectively).

Zan and Qin[25] had reported that physical and mental health status of elderly people was positively related to subjective QOL. Dongre and Deshmukh[19] observed that physical health status, health insurance, involvement in social activities, current working status, relationship with family members, health care, spirituality, active life, involvement in decision making and welfare scheme by the government contributed to the better quality of elderly life. Avolio et al.[26] found that a social relationship which included interpersonal relations and the availability of support and advice had a significant correlation with QOL of elderly people; and suggested that social relation has positive relationship with QOL of elderly people.

Economic variables and overall QOL index

This study found that education, medical care and land/property ownership were positively correlated (0.230, 0.049 and 0.101 respectively) with overall QOL index while the variable like: old age security allowance was observed negatively correlated (-0.224). The negative correlation of old age social security allowance of elderly people with overall QOL index indicated that it did not contribute to the betterment of the elderly people in the study area. Elderly people who did not receive old age security allowance have better QOL than those who had received old age allowance. The reason might be that elderly people received old age allowance only after the age of 70 years and above. Quality of life of elderly people was found better in the earlier age compared to later ages due to physical health problem, mental health problem and lack of social relations. A study in rural Bangladesh reported that elderly people prioritized being healthy and having a secure financial situation as factors for having good QOL.[27] Many studies have reported that there was significant positive association between education and QOL of elderly people.[28,29,19] Literate elderly people had better QOL as compared to illiterate elderly people.

Limitations of the Study

This study has few limitations. As it was done in rural areas of one district of Nepal, the findings might not be generalized to whole of Nepal. Future studies should include urban populations and larger and more representative population. The study has used the responses of elderly themselves regarding the demographic and socio-economic factors rather than any objective measures or collateral information. There may be many confounding variables influencing QOL, which were not studied.

Conclusions

It was observed that the QOL of rural elderly Nepalese were at the moderate level. It varied amongst demographic and socio-economic groups. Factors such as sex, marital status, involvement in social activities, decision making in the family, living arrangements, education, and land ownership had positive influence on QOL. Age, physical health problem, stress in life, abuse, and having old age security allowance correlated

negatively with QOL. Factors like; household size, caste/ethnic group, and medical check-up have no significant influence on QOL of elderly people. Hence, policy makers and programme managers need to prioritize investments in physical and mental health healthcare for elderly people in order to improve the overall QOL. Interventions programmes designed to deal with the stress and support the mental health are expected to improve the QOL of the elderly. Various interventions such as provision of accessible counseling services and health care may be beneficial. The findings of the study suggest the need for future research in the areas such as elder abuse and its identification and management, specifically the reasons for which is these are not being reported or addressed; factors that may improve social involvement and community participation of elderly people in diverse socio-economic context.

Acknowledgement

Author information Mahendra Raj Joshi, PhD, Associate Professor, Department of Population Studies, Kailali Multiple Campus, Tribhuvan University, Dhangadhi, Nepal; Email: kmc@gmail.com and Email: drmahendrarajjoshi@gmail.com

Correspondence: Mahendra Raj Joshi, PhD, Associate Professor, Department of Population Studies, Kailali Multiple Campus, Tribhuvan University, Dhangadhi, Nepal; Email: drmahendrarajjoshi@gmail.com

References

1. Chalise HN, Kai I, & Saito T. Significant variables of self-reported health: A study of older adults from a developing country like Nepal. Bio Science Trends, 2007; 1: 102-107.

2. United Nations. Ageing and urbanization. New York: Department of Economic and Social Affairs, Population division, United Nations Secretariat; 1991.

3. Ministry of Women, Children and Social Welfare (MoWCSW). Senior citizen act 2006. Kathmandu: Author; 2006.

4. World Health Organization Quality of Life Group (WHOQOL-Group). WHOQOL User manual. Geneva: Author; 1998. Available from http://www.who.int/msa/mnh/mhp/ql1.htm.

5. Chalise HN. Social support and subjective well-being of Nepalese older adults. Asian Social Work and Policy Review, 2010; 4: 1-25.

6. Chalise HN. & Rai SL. Prevalence and correlates of depression among Nepalese Rai older adults. Journal of Gerontology and Geriatric Research, 2013; 2: 130-135. DOI:10.4172/2167-7182.1000130.

7. Chalise HN, & Lamsal U. Walking and sleep quality of Nepalese older adults living in briddashram. Journal of Gerontology and Geriatric Med, 2017; 3: 1-5.

8. Chalise HN, & Basnet M. Abuse of older adults residing in the community of Nepal. International Journal of Gerontology and Geriatric Research, 2017; 6: 415-424. DOI: 10.4172/216 7-7182.1000415.

9. Joshi MR, Chalise HN, Khatiwada PP. Quality of Life of Nepalese Elderly Living in Rural Nepal. J Gerontol Geriatr Res, 2018; 7: 484. doi:10.4172/2167-7182.1000484

10. Joshi MR. Living arrangements and quality of life of Nepalese elderly in rural Nepal. Indian Journal of Gerontology, 2019; 32 (2): 178-197.

11. Joshi MR. Physical and mental health status of of elderly people in urban setting in Nepal. Indian Journal of Gerontology, 2018; 32 (4): 382-393.

12. Joshi MR. Socio-economic status of elderly people in rural setting of Nepal. Journal of Geriatric Care and Research, 2020; 7(1): 36-42.

13. Joshi MR. Factors determining quality of life of elderly people in rural Nepal. J Gerontol Geriatr Res, 2020; 9: 510. doi: 10.35248/2167- 0374.20.9.510

14. Central Department of Population Studies/Tribhuvan University (CDPS/TU). Health and social care need assessment of elderly. Kathamndu: Central Department of Population Studies, Ageing Nepal, United Nations Population Fund; 2012.

15. Yamane T. Statistics: An introductory analysis. New York: Harper and Row; 1967.

16. Sapkota A, Sedhain A, Rai MK. Quality of life of adult clients on renal replacement therapies in Nepal. J Ren Care, 2013; 39(4): 228-235. doi: https://doi.org/10.1111/j.1755-6686.2013.12021.x

17. Mishra SR, Sharma A, Bhandari PM, Bhochhibhoya S, Thapa K. Depression and Health-Related Quality of Life among Patients with Type 2 Diabetes Mellitus: A Cross-Sectional Study in Nepal. PLOS ONE, 2015; 10(11): e0141385. doi: https://doi.org/10.1371/journal.pone.0141385

18. Gupta N. Quality of life of older women in urban India: Differential and determinants across class group in Navi Mumbai (Unpublished doctoral dissertation). School of Social Sciences, Tata Institute of Social Sciences, Mumbai; 2014.

19. Dongre AR, & Deshmukh PR. Social determinants of quality of elderly life in rural setting of India. Indian Journal of Palliative Care, 2012; 18 (3): 181-189.

20. Hameed S, Brahmbhatt K, Patip DC, Prasanna KS, & Jayara S. Quality of life among the geriatric population in a rural area. Global Journal of Medicine and Public Health, 2014; 3 (3): 1-5.

21. Pinquart, M. Age differences in perceived positive effect, negative effect and affect balance in middle and old age. Journal of Happiness Studies, 2001; 2 (4): 375–405.

22. Durgawala PM, Shinde M, & Godwin VM. Study of assessment of quality of life in elderly residing in rural area. International Journal of Science and Research (IJSR), 2014; 3 (10): 1291-1294.

23. Fernandez RM, & Kulik JC. A multilevel model of life satisfaction: effects of individual characteristics and neighborhood composition. American Sociological Review, 1981; 46 (6): 840–850.

24. Netuveli G, & Blane D. Quality of life in older ages. British Medical Bulletin, 2008; 85 (1): 113-126.

25. Zhan HJ, & Qin H. Adding life to years: Predicting subjective quality of life among oldest old. The Journal of Ageing in Emerging Economic, 2008; 43: 151-171.

26. Avolio M, Montagnoli S, Marino M, Basso D, Fluria G, Ricciardi W, & Belvist AG. Factors influencing quality of life for disabled and nondisabled elderly population. International Journal of Gerentology and Geriatrics Research, 2013; 13: 1-6.

27. Nilsson I. Occupational engagement among older people: evaluation, repertoire and relation to life satisfaction. Sweden: Umea University; 2006.

28. Kumar SG, & Majumdar A. Quality of life (QOL) and its associated factors using WHOQOL-BREF among elderly in urban Puducherry, India. Journal of Clin Diagn Research, 2014; 8 (1): 54–71.

29. Mudey A, Ambekar S, Goyal RC, Agareka S, & Wagh VV. Assessment of quality of life among rural and urban elderly population of Wardha district, Maharashtra, India. Ethno Medicine, 2011; 5 (2): 89-93.