ORIGINAL ARTICLE

Multimorbidity and Quality of Life among Geriatric Population of Karachi Pakistan

SYED HASAN DANISH[1], FARAH AHMAD[2], DANIYAL FAHAD[3], SHAIMA SULTANA MEMON[4], OAM PARKASH[5], KHUSHBAKHT SHOAIB[6]
[1]Associate Professor, Department of Community Health Sciences, Ziauddin Medical College, Ziauddin University Karachi
[2]Professor, Department of Community Health Sciences, Ziauddin Medical College, Ziauddin University Karachi
[3]Senior registrar, Creek General Hospital, United Medical and dental College, Karachi
[4]Assistant Professor, Department of Pathology, Dow Medical College, Dow University of Health Sciences, Karachi
[5]Assistant Professor, Department of Oral and Maxillofacial Surgery, Baqai Dental College, Baqai Medical University Karachi
[6]Dental Officer, Irtiqa Welfare organization Karachi
Corresponding author: Syed Hasan Danish, Email: dowite_hasan@hotmail.com

ABSTRACT

Objective: To determine association of quality of life and multimorbidity among geriatric population of Karachi Pakistan
Methods: It was a cross sectional study conducted in district of Karachi district using cluster sampling technique. Sample had greater than 60 years of age restricting those with mental disorders, speech disorders or language barriers. Sample size was n=362. Data was collected using WOHQOL-BREF with four domains, social relationships, psychological health, physical health and environment domain. Data was collected by face to face interviews after informed consent keeping information confidential. p-value less than 0.05 was considered significant. For numerical data descriptive analysis was used and categorical data was expressed by frequency and percentages using SPSS version 24. Odds ratio was used to find association of multimorbidty and quality of life
Results: Of total n=90 (25%) participants had none or single disease, with multimorbidity in n=272 (75%) participants. Most n=165 (46%) had hypertension, Diabetes was present in n=56 (16%). Bones and joints in n=133 (38%), Obesity in n=80(22%). Most n=144 (40%) rated their life quality as good, n=30 (8.3%) as very good, n=57 (15.5%) rated their quality of life as poor, n=3 (0.8%%) rated it very poor and remaining n=128(35.4%) were in between. Mean scores of Environmental domain had highest score then physical health, psychological domain and least for social domain. When association was seen in multimorbidity and life quality Environment domain displayed significant association with OR: 1.9 (p value 0.009).In Environment and Social domain majority were found to be satisfied.
Conclusion: Significant association was seen between Multimorbidity and Enviornmental domain in Quality of life.
Keywords: Multimorbidity, Quality of life, Geriatrics

INTRODUCTION

In the current times, globally, old age group population is rapidly growing. Population world over was 205 million in 1950 increasing to 810 million in 2012 and by 2050 projected to two billion with 24% of it in Asian region. (1) Asia comprises countries including Pakistan, India, China with a high proportion of older adults. (2) With a rise in life expectancy of geriatric age group along with better advances in science and technology it is predicted that geriatric population will escalate. (3) Pakistan is facing a similar demographic transition as in other Asian counterparts residing in the region. (4) With this increase in the ageing populations there is an increase in ailments (5)

It is evident in the current demographics data from developed as well as the underdeveloped and developing nations, that the ageing population is gripped under an array of illnesses that may hinder in the way of their daily activities, may completely leave them immobile or cause more inconvenience through these multiple co morbidities.(6) Multimorbidity and quality of life have been shown by studies to have inverse relationship.(7) Chronic disease leads to functional limitation and financial consequences for individual leading to deteriorating life quality along with greater hospital visits. (8).

Now for elderly people, it is the most basic need to demand a comfortable and a quality living after they pass a certain age. On the international front, health promoting life style behaviors, multi morbidity and the determinants of quality of life in the elderly has gained a lot of attention over the past few years (9) Population suffering from multimorbidity usually have low functioning capacity, enhanced use of medicines, augmented use of health care and higher fatality rates. (8) It is the need of the hour to get familiar with the issues of the elderly for timely and more effective interventions (10) According to a systemic review in South Asia there is lack of studies on multimorbidity and quality of life. (11) Since the ageing of the population is occurring at a very fast pace, there is a dire need for investigating the multimorbidities and quality of life among geriatric population which is the main objective of this study.

METHODS

Cross sectional study design was adopted for this research study. This study was a population based study conducted in North Nazimabad town of District Karachi using cluster sampling technique selection of households situated in middle and high income localities situated within the union councils. The town covers an area of about 46.62 square kilometers and comprises of 10 Union Councils (UCs). It has total population of 500,000 (as per 2017 census data retrieved from the Federal Bureau of Statistics, Karachi). This town was chosen for this study due to the diversity of its resident population and a good representation of all socio-economic groups ranging from the most affluent to most deprived individuals. Furthermore, the resident population has also a good representation from different ethnic groups living in Pakistan.

Our sample comprised of both gender aged above 60 years of age excluding those who had mental disorders, speech disorders or language barriers. Sample size was calculated using Openepi.com, online sample size calculator. The estimated sample was n=384 at 95% which was eventually considered, keeping non-response at 20% among the target population. The final sample size which was included in the study was n=362 after deleting missed data and poorly filled forms. Number of participants required for inclusion in the sample is based upon a previous household study conducted upon the elderly (12)

The data was collected through a questionnaire based survey by face to face interviews by primary investigator and three trained data collectors. It consisted of three parts: socio-demographic profile, quality of life and morbidities. The questionnaires were back to back translated in Urdu. Initially a pilot test was run on a small sample of 20 participants from the target population which was not included in the final survey. It was conducted from lower, middle and high income localities situated within the union councils within North Nazimabad. WHOQOL-Age was used to gauge the quality of living amongst the elderly (13)

WHO's instrument ,WOHQOL-BREF that tends to cover four basic domains, social relationships, psychological health, physical health and the environment around us was used in this study.(14)

Informed consent was taken from each participant while assuring that their information would be kept confidential. P value less than 0.05 was taken as significant. Descriptive analysis was carried out for numerical data whereas frequency and percentages were taken out for categorical data. Chi Square was used to find association between categorical variables.Odds ratio was calculated for quality of life and multimorbidities.

RESULTS

The Sample size was n= 362. A total of n=390 participants were initially interviewed but incomplete information and missing values led to cancelation of 28 questionnaires which led to a total response rate of 92%. The mean age of the participants was 67.7+/-7.0. Males were n=178 (49%) and females were n=184 (51%). When marital status was inquired n=329 (91%) were married, n=21 (6%) were single and n=12 (3%) were either divorced or separated. Mean years of education for the sample was 12.07+/-4.2. Regarding ethnicity of the participant's majority n=173 (46%) were Urdu speaking, Sindhi were n=77 (21%), Gujrati n=57 (16%) and remaining were from other ethnic groups residing in Karachi. When participants were inquired about their economic independency, n=140 (38.7%) participants were economically dependent, n=72 (19.9%) were partially dependent and remaining n= 150 (41.4%) were fully independent. When participants were asked about their source of income, n=149 (41%) were dependent upon their children. Around n=100 (27.6%) said they have their pensions and n=92 (25.4) were employed. Out of the total participants n= 117 (32%) were retired. When participants were inquired about their family status, majority n=225 (62%) were living in joint families while remaining were in nuclear family setups. Participants living status revealed majority were living with their spouses' n= 203 (56%). Another n=75(21%) were living with their married daughters and n=53 (15%) were living with their sons.

When the sample participants were asked about their diagnosed medical history, it was observed that majority n=165 (46%) suffered from hypertension. Diabetes was present in almost n=56 (16%). Bones and joints disease was found to be more rampant and was present in n=133 (38%) participants. Cancers and Hepatitis B&C was seen in n=13 (4%) sample population respectively. Obesity was prevalent in n=80(22%) participants. Mental illness was present in n=19 (5%) participants.
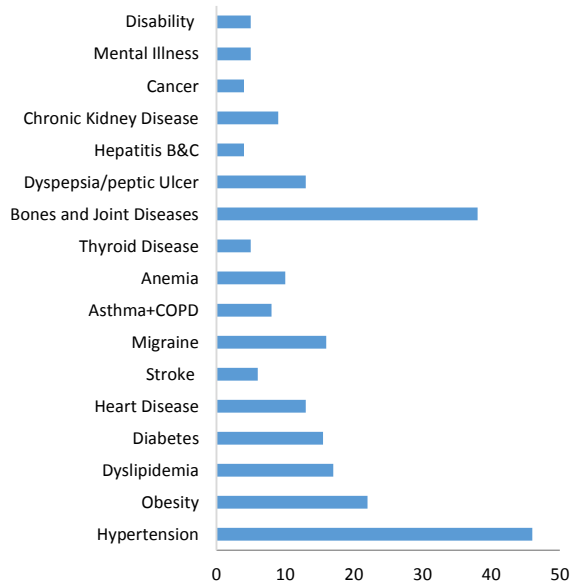

Figure 1: Percentage of different disorders in the study participants

Based on Univariate Analysis multi-morbidity was found in n=272 (75%) participants whereas single disease or no morbidity was observed in remaining n=90 (25%) participants.

When World Health Organization Quality of Life was administered on the participants, majority n=144 (40%) rated their life quality as good, n=30 (8.3%) as very good, n=57 (15.5%) rated their quality of life as poor, n=3 (0.8%%) rated it very poor and remaining n=128(35.4%) were in between. When inquired regarding their satisfaction with health most participants n=153 (42%) also claimed to be satisfied with their lives, n=65(18%) were dissatisfied and only n= 7(2%) were found to be very dissatisfied and n= 7(2%) were very satisfied. Remaining n=130(36%) were in between.

Table 1: Univariate Analysis of the Four Domains of Quality of Life (WHOQOL)

Domains	WHO bref		WHO 100	
	Mean	Standard Deviation	Mean	Standard Deviation
Physical Health	23	2.6	57.7	9.6
Psychological	19.6	2.7	57.7	11.4
Social Relationships	10.5	1.7	63.2	14.5
Environment	27.4	6.1	62.1	19.0

The descriptive analysis of the mean scores of the 4 domains of Quality of life questionnaire revealed Environment domain having the highest mean of 27.4+/-6.1 followed by physical health 23+/-2.6. Social relationships had the lowest mean score of 10.5+/-1.7.

Table 2: Satisfaction levels of the Four Domains of Quality of Life (WHOQOL)

Domains	Satisfied		Dissatisfied	
	n	%	n	%
Physical Health	180	49.7	182	50.3
Psychological	173	48	189	52.2
Social Relationships	216	59.6	146	40.3
Environment	198	54.7	164	45.3

The WHO quality of life questionnaire on the basis of the referenced cutoff was divided into satisfied and dissatisfied groups. With reference to the different domains in the questionnaire, similar numbers of participants in the physical health domain were found to be satisfied and dissatisfied (49.7% versus 50.3%). In Psychological domain slightly more were found to be dissatisfied (52.2% versus 48%). In Social relationship domain majority were satisfied (59.6% versus 40.3%). In Environment domain also majority were found to be satisfied (54.7% versus 45.3%).

When multimorbidity was associated with different domains of Quality of life, significant association was observed only in Environment domain where the odds of having multimorbidity was 1.9 times higher in people showing dissatisfaction in this domain (95% CI 1.18-3.2, P value 0.009).

Marginally significant association was observed when participants' perception of their quality of life was associated with the number of diseases they suffered from. Very poor quality of life was identified only in those who were suffering from multimorbidity n=3 (100%).

When overall life satisfaction was associated with multimorbidity, very dissatisfied was seen only in multimorbidity group (n=6, 100%). However satisfied people were also from multimorbidity group n=115 (75%) versus n=39 (25%) in no/single morbidity group.

Table 3: Association of Multimorbidity with QOL Domains

		Multimorbidity	No/Single Morbidity	Odds Ratio	95% CI	P Value
Physical Health	Dissatisfied	133	49	0.8	0.5-1.3	0.4
	Satisfied	139	41			
Psychological	Dissatisfied	147	42	1.3	0.8-2.2	0.2
	Satisfied	125	48			
Social Relationship	Dissatisfied	108	38	0.9	0.5-1.5	0.7
	Satisfied	164	52			
Environment	Dissatisfied	134	30	1.9	1.18-3.2	0.009
	Satisfied	138	60			

Table 4: Association of Multimorbidity with Subjective assessment of QOL by Study Participants

		No/Single Morbidity		Multimorbidity		P Value
		n	%	n	%	
Quality of Life	Very Poor	0	0	3	100	0.058
	Poor	12	21	44	79	
	Neither Poor nor Good	42	33	86	67	
	Good	27	19	118	81	
	Very Good	9	30	21	70	

Table 5: Association of Multimorbidity with Subjective assessment of Life satisfaction by Study Participants

		No/Single Morbidity		Multimorbidity		P Value
		n	%	n	%	
Life Satisfaction	Very Dissatisfied	0	0	6	100	
	Dissatisfied	24	37	41	63	
	Neither Dissatisfied nor Satisfied	24	18	107	82	0.017
	Satisfied	39	25	115	75	
	Very Satisfied	3	50	3	50	

DISCUSSION

In our study we had n=178 (49%) males and n=184(51%) females. This was similar to earlier studies related to multimorbidity and quality of life conducted in Japan (15) and Belgium (5). Our sample mean for education was 12.07+/-4.2. Previous studies have shown a pertinent connection between education and quality of life.(16) In our study 41.4% participants were economically independent. This resembled a study in India where one third participants were in similar position. Also noteworthy was that they had greater quality of life compared to economically dependent participants (β = 3.71; CI = 0.7: 6.7).(16)In our study most n=225 (62%) were residing in joint families. Communal connections have attracted a lot of attention by enhancing life quality in geriatric population. (17)

According to a study in Assam deficit of socialization in geriatric age group is affiliated with tobacco and alcohol consumption that leads to detrimental results on health (18) Another study associated multimorbidity with dependence in the old age group. (19) Our survey revealed n=165(46%) with hypertension, n=56(16%) with diabetes, orthopedic problems in n=133(38%) whereas obesity was found in n=80(22%). A recent study in Japan revealed hypertension most common in geriatric age group, second was lumbar disease and then lipid disorders. Renal issues, Cardiac problems, digestive tract morbidities and cancers had a valid association with functional decline.(15) According to a systemic review cardiac problems, mental health related issues and musculoskeletal problems were common in these age groups.(20). In our study univariate analysis displayed that multi-morbidity was found in n=272 (75%) participants whereas single disease or no morbidity was observed in remaining n=90 (25%) participants. This was greater than a recent study in Uttar Pradesh India where 18.4% sample suffered from multimoribidity.(16) but similar to a cross sectional survey in Japan that showed 62.8% sample aged >60 years with

multimorbidity.(21) whereas in Belgium it was 46.7%. Same study revealed that that multimorbidity augments with aging. (5)

With respect to single chronic condition, quality of life has been investigated numerous times whereas when it comes to combination of chronic diseases and its effect there are very few studies (7) When assessed in this study among different domains Social relationship domain and thereafter Environmental domain had more satisfied individuals. Latest researches have given due importance to introspect each dimension (22)This contrast with study in India where Environmental domain and Social relationship domain had least scores compared to the other two domains.(16) It showed that geriatric population residing with wife and offspring's and those living with wife had higher scores for all four domains. Those living single had lowest quality of life score in psychological domain. These studies vindicate the paramount significance of residing with family.(16)

Meta analysis revealed that quality of life attenuates with augmenting number of diseases. (7) Another study purported the same finding that low quality of life and chronic disease are directly related.(5) Also stated by a cross sectional survey in middle income countries that more than one disease can have an additive effect or antagonistic impact on quality of life.(23). Additionally, chronic conditions has a vital consequence on finances along with limitation of functional limitation adding up to drop in life quality. (8). Quality of life compromised by diseases is a vital prognosticator for diseases and fatality. (24) In Korea chronic conditions contributed to decreased life expectancy and life quality making it an essential policy related matter.(25) According to a study since multimorbidity is highly prevalent, information on how it effects self perceived health is of great significance. (26) In our study 49% were satisfied with their health and merely 19% were not satisfied. This is similar to a study in India where 18% were not satisfied. (16)

We had a few limitations in our study as this was a cross sectional study which are mostly done with only some follow up studies (7) One issue is the homogeneity of operational definition of multimorbidity that makes it challenging to assess it compared to other studies.(5) however presence of two or more chronic conditions is usually the operational definition of multimorbidity as we have used.(27) Another limitation is that multimorbidity was assessed using personal reports and this demands that participants to have suffice knowledge of their health conditions however many researches have based their findings on similar grounds(28)Self narrated information on health is the pertinent way in absence of medical records.(5) Also researchers have found great correlation in personally reported conditions and health records(29) Disease duration was also not taken in account in this study. Our strengths included the way in which sample was collected from general population that reinforces external validity like previous studies. (5) We used a validated tool to asses participants and data was collected by primary investigator. To our knowledge very few studies have been conducted in this part of the world on this issue.

CONCLUSION

Multimorbidity was seen in one quarter of population. Most participants had Hypertension, Diabetes, Obesity and Bones and Joint disease. Quality of life scores were highest for Environmental

domain and least for Social relationships. When associated with Multimorbidity only environmental domain showed significant association.

REFERENCES

1. United Nations Population Fund Website. Available online: https://www.unfpa.org/sites/default/files/pub-pdf/Ageing%20 report.pdf (accessed on 15 November 2021).
2. Chhetri JK, Chan P, Ma L, Peng D, Rodríguez-Mañas L, Cesari M, Vellas B. Prevention of Disability in the Frail Chinese Older Population. J Frailty Aging 2019;8:2–6.
3. Vanleerberghe P, De Witte N, Claes C, Schalock RL, Verté D. The quality of life of older people aging in place: A literature review. Qual Life Res. 2017;26:2899–907
4. Fakoya OO, Abioye-Kuteyi EA, Bello IS, Oyegbade OO, Olowookere SA, Ezeoma IT. Determinants of Quality of Life of Elderly Patients Attending a General Practice Clinic in Southwest Nigeria. International quarterly of community health education. 2018 Oct;39(1):3-7.
5. Van Wilder L, Devleesschauwer B, Clays E, De Buyser S, Van der Heyden J, Charafeddine R, Boeckxstaens P, De Bacquer D, Vandepitte S, De Smedt D. The impact of multimorbidity patterns on health-related quality of life in the general population: results of the Belgian Health Interview Survey. Quality of Life Research. 2022 Feb;31(2):551-65.
6. Global Age Watch Index, 2013.A summary. [online] [cited 2014 Dec 12]. Available from: URL: www.globalagewatch.org
7. Makovski TT, Schmitz S, Zeegers MP, et al. Multimorbidity and quality of life: systematic literature review and meta-analysis. Ageing Res Rev 2019;53:100903
8. Mini GK, Thankappan KR. Pattern, correlates and implications of non-communicable disease multimorbidity among older adults in selected Indian states: a cross-sectional study. BMJ open. 2017 Mar 1;7(3):e013529
9. Jackson CA, Dobson AJ, Tooth LR, Mishra GD. Lifestyle and socioeconomic determinants of multimorbidity patterns among mid-aged women: a longitudinal study. PLoS One. 2016 Jun 3;11(6):e0156804.
10. Javadzade H, Mahmoodi M, Hajivandi A, Ghaedi S, Reisi M. The relationship between health literacy and health promoting behaviors among adults in Bushehr. Journal of Health Literacy. 2019;4(2):49-60.
11. Pati S, Swain S, Hussain MA, van den Akker M, Metsemakers J, Knottnerus JA, et al. Prevalence and outcomes of multimorbidity in South Asia: a systematic review. BMJ Open. 2015;5(10):e007235
12. Hussain R, Rashidian A, Hafeez A, Mirzaee N. Factors influencing healthcare seeking behaviour at primary healthcare level, in Pakistan. Journal of Ayub Medical College Abbottabad. 2019 Mar 28;31(2):201-6.
13. Appel LJ. Dietary Patterns and Longevity Expanding the Blue Zones. Circulation 2008; 118: 214-5
14. Carter A, Breen L, Yaruss JS, Beilby J. Self-efficacy and quality of life in adults who stutter. Journal of fluency disorders. 2017 Dec 1;54:14-23.
15. Aoki T, Fukuhara S, Fujinuma Y, Yamamoto Y. Effect of multimorbidity patterns on the decline in health-related quality of life: a nationwide prospective cohort study in Japan. BMJ open. 2021 Jun 1;11(6):e047812
16. Himanshu H, Arokiasamy P, Selvamani Y. Association Between Multimorbidity and Quality of Life Among Older Adults in Community-Dwelling of Uttar Pradesh, India.2021
17. Zijlstra GR, Vorst AV, Op het Veld LP, Witte ND, Schols JM, Kempen G. DEPENDENCY IN ACTIVITIES OF DAILY LIVING: THE ROLE OF MULTIDIMENSIONAL FRAILTY AND PROTECTIVE FACTORS. Innovation in Aging. 2019 Nov;3(Supplement_1):S635-6.
18. Hakmaosa A, Baruah KK, Baruah R, Hajong S. Health seeking behaviour of elderly in rani block, Kamrup (Rural) district, Assam: a community based cross sectional study. International Journal of Community Medicine and Public Health. 2017 Feb 4; 2(2):162-6.
19. Kshatri JS, Palo SK, Bhoi T, Barik SR, Pati S. Associations of multimorbidity on frailty and dependence among an elderly rural population: Findings from the AHSETS study. Mechanisms of Ageing and Development. 2020 Dec 1;192:111384
20. Busija L, Lim K, Szoeke C, et al. Do replicable profiles of multimorbidity exist? systematic review and synthesis. Eur J Epidemiol 2019;34:1025–53.
21. Aoki T, Yamamoto Y, Ikenoue T, et al. Multimorbidity patterns in relation to polypharmacy and dosage frequency: a nationwide, crosssectional study in a Japanese population. Sci Rep 2018;8:380
22. Ophuis, R.H.; Janssen, M.F.; Bonsel, G.J.; Panneman, M.J.; Polinder, S.; Haagsma, J.A. Health-related quality of life in injury patients: The added value of extending the EQ-5D-3L with a cognitive dimension. Qual. Life Res. 2019, 28, 1941–1949.
23. Sum, G., Salisbury, C., Koh, G. C. H., et al. (2019). Implications of multimorbidity patterns on health care utilisation and quality of life in middle-income countries: cross-sectional analysis. Journal of Global Health, 9(2). https://doi.org/10.7189/jogh.09.020413
24. Xu, R. H., Cheung, A. W. L., & Wong, E. L. (2017). Examining the health-related quality of life using EQ-5D-5L in patients with four kinds of chronic diseases from specialist outpatient clinics in Hong Kong SAR, China. Patient Preference and Adherence, 11, 1565–1572
25. Lee E, Cha S, Kim GM. Factors affecting health-related quality of life in multimorbidity. InHealthcare 2021 Mar 16 (Vol. 9, No. 3, p. 334). MDPI.
26. Pati, S., Swain, S., Knottnerus, J. A., Metsemakers, J. F., & van den Akker, M. (2019). Health related quality of life in multimorbidity: A primary-care based study from Odisha, India. Health and Quality of Life Outcomes, 17(1), 116.
27. Boeckxstaens, P., & Multimorbidity, P. M. (2020). Definition, assessment, measurement and impact. Encyclopedia of biomedical gerontology (pp. 455–460). Elsevier
28. Johnston MC, Crilly M, Black C, Prescott GJ, Mercer SW. Defining and measuring multimorbidity: a systematic review of systematic reviews. European Journal of Public Health. 2019 Feb 1;29(1):182-9.
29. Guisado-Clavero M, Roso-Llorach A, López-Jimenez T, Pons-Vigués M, Foguet-Boreu Q, Muñoz MA, Violán C. Multimorbidity patterns in the elderly: a prospective cohort study with cluster analysis. BMC geriatrics. 2018 Dec;18(1):1–1.