Health Related Quality of Life and Its Socio-Demographic Determinants among Iranian Elderly People: a Population Based Cross-Sectional Study

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ABSTRACT

Introduction: In the stage of demographic transition, the rate of elderly is increasing and their health condition is a matter of concern. Thus, the objective of this study was to investigate the health related quality of life (QoL) and the associated socio-demographic determinants among Iranian elderly people.
Methods: We conducted a cross-sectional study with a representative samples of 750 elderly people whom community dwelling in urban area of Babol, in the north of Iran. In a household survey, the demographic data were collected and the health related QoL was assessed with a validated standard short form questionnaire (SF-36). The multiple linear regression analysis was performed to determine the demographic characteristics in predicting QoL using SPSS ver 13.
Results: The overall mean (SD) scores of QoL was 62.4(17.2) for men and 51.2 (17.9) for women. The mean scores of QoL in all dimensions in men had significantly higher than women. The adjusted regression coefficient of gender, age, educational level, being couple were significant on overall scores of QoL. Aging is inversely associated while male gender and education at high school or higher and being couple are positively associated in prediction of overall scores of QoL.
Conclusion: The findings indicate that the health related QoL is rather poor in old people particular in women, elderly with low education level and being single. Therefore, healthcare policy makers should consider an urgent health interventional program among elderly people at present stage of demographic transition with emphasis on high risk demographic profiles.

Introduction

Elderly people are vulnerable subgroups in different populations and their health conditions are a matter of concern. In the state of demographic transition, Iranian population has been changing toward elderly in the two recent decades. The national census data in Islamic Republic of Iran showed that about 5.2% of population was at aged 60 years or older in 1986 while it was increased to 7.3% in 2006.[1,2] It is expected that this would be elevated to 14.5% in 2036.[1] Elderly age is a sensitive stage of individual life that influences on physical, emotional, psychological and social ability.[3] The health related quality of life that convey an overall sense of wellbeing including aspects of happiness and satisfaction of life all physical, mental, psychological and social perceptions.[3]

Through demographic transition, increasing the elderly rate is accompanied with tremendous changes on the rate of non-communicable diseases such as hypertension, diabetes, heart disease, and cancers. Moreover, the increasing rate of morbidity can be explained by changing modern life style and civilization such as consumption of high caloric foods in particular using fast foods with

low physical activities have leaded to epidemic of overweight and obesity in recent decades in both developed and developing countries.[4-6]

These evidences have been documented in different populations.[7-10] Besides the high cost of management of induced co-morbidity such as diabetes and cardiovascular disease and cancers, all aspects of health related QoL are influenced at 7th and 8th decades of life.[11,12]

Populations living in urban area in the north of Iran have experience of changing toward modern life style in the recent decades. It has been documented that the rate of obesity and overweight has been increased significantly.[5]

The consequences were that the rate of metabolic syndrome has increased dramatically.[6] In particular, it was more prevalence among female compared to male in age group of 60-70 years.[6] However, the data regarding different subscales of quality of life and its determinants are sparse in elderly people living in community in the north of Iran. Thus, the objective of this study was to determine the health related quality of life and the associated socio-demographic characteristics among elderly people who are community dwelling in the north of Iran.

Materials and methods

This population based cross-sectional study was conducted with representative samples of 750 elderly people (375 men and 375 women) aged 60 years or older who were dwelling in urban community of Babol, the north of Iran, during the 1st of September until the end of December in 2014. With presumption of standard deviation of QoL scores of 15, this allocated sample size estimates the mean scores of QoL in each subscales with maximum marginal errors of 2 in the estimates at 95% confidence level. We used two stage cluster sample techniques in subject selection.

In the first stage, 25 clusters were selected randomly based on cumulative frequencies of population size under the coverage of health centers. Then around the center of each cluster, 30 elderly people (15 men and 15 women) whose age were 60 years or older were recruited in the study.

All subjects have signed a written consent form prior participation in the study. Subjects who had sever disability and those with sever dementia who were not able to participate in the interview were excluded from the study.

The five trained nurses with similar instructions were used to collect the data by interview. The demographic data such as age, gender, educational level, occupation, marital status and living condition were collected by a researcher made questionnaire. For assessment of health related QoL, a standard short form of QoL questionnaire (SF36) were used. All interviews were performed in a family health survey at home visit. The validity and reliability of this questionnaire have been confirmed in several previous reports.[13,14] This questionnaire measures the health related quality of life in 8 subscales including physical functioning (10 items), physical role limitations (4 items), emotional role limitations (3 items), bodily pain (3 items), social functioning (2 items), vitality (4 items), mental health (5 items) and general health (6 items). Each item was scored with likert scale. The score of each subscale were converted from 0 (the worst) to 100 (the best) conditions of QoL.[14] The reliability coefficient as measured by Cronbach's alpha was ranged from 0.68 to 0.92 for subscales of SF36. The study protocol was approved by the Ethical Research Committee of Babol University of Medical Sciences. (Ethical committee: 4026 Date Apr. 22, 2014)

Data were analyzed by SPSS software (version 13.0). The descriptive statistics of the score of QoL were calculated as mean (SD) in different subscales. The normality of data of QoL was assessed using Kolmogorov-Smirnov test. In the univariate analysis the two independent samples t-test and analysis of variance (ANOVA model) were used to compare the mean score of QoL in different subgroups. We also performed the linear regression model to quantify the predictive ability of demographic characteristics in the scores of QoL in different subscales. In the multiple regression model, the binary variables were defined as gender (female versus male), age group 70-79 vs. 60-69 years, aged >=80 vs. 60-69 years, educational level of high school or

higher vs. <high school, and marital status (couple v.s. not). The adjusted regression coefficients and the 95% confidence interval were estimated. The p-value less than 0.05 was considered as significant level.

Results

The mean age of participants was 68.0 (7.6) years for men and 67.7 (7.9) years for women. Table 1 shows that the distribution of age group was rather similar (P=0.681) but the distribution of other demographic characteristics were significant between sexes (P=0.001). The mean (SD) of scores of various domains of QoL have been presented in Table 2. The mean scores of QoL in all dimensions in men had significantly higher than women (P=0.001). The highest score of QoL was observed for subscales of social functioning and the lowest score in general health in both genders. Table 3 presents that the overall health related QoL scores were significantly higher in age group of 60-69 years (P=0.001) compared to higher age groups and also in higher educational level compared with lower

level or illiterate in both sexes (P=0.001).

Elderly subjects who had partner (married) showed significantly higher scores of QoL than others (P=0.001) in either of gender. In addition, among those who live alone a poorer QoL have been observed significantly (P=0.001).

Table 4 shows the adjusted regression coefficients of demographic characteristics in predicting of different subscale of QoL. Male gender versus female is positively associated with all subscale of QoL while age group of 70-79 and 80 or older were inversely associated compared with age of 60-69 years. Education level at high school or higher almost is positively associated but its effect on subscales of emotional role limitation, social functioning, and bodily pain was not significant (P<0.05).

Regarding to the marital status, being couple is positively associated with the score of QoL in subscales of physical function, social functioning, vitality and mental health. In addition, the adjusted regression coefficients of all demographic characteristics were significant on the overall score of health related QoL (Table 5).

Table 1. Distribution of demographic characteristics of elderly subjects with respect to gender

Demographic Characteristics	Male (n=375) N (%)	Female (n=375) N (%)	Total (n=750) N (%)	P-Value$^\epsilon$
Age group				0.681
60-69 years	241 (64.3)	245(66.2)	486(65.2)	
70-79	88 (23.5)	87(23.5)	175(23.5)	
≥80	46(12.3)	38(10.3)	84(11.31)	
Marital status				0.001*
Married(Couple)	343(91.5)	260(69.5)	603(80.4)	
Widow	29(77.7)	109(29.1)	138(18.4)	
Divorced	1(0.3)	2(0.5)	3(0.4)	
Not married	2(0.5)	4(1.1)	6(0.8)	
Educational level				0.001*
Illiterate	127(33.9)	193(51.5)	320(42.7)	
Primary	103(27.5)	93(24.8)	196(26.1)	
Elementary	28(7.5)	24(6.4)	52(6.9)	
High school/college	94(25.1)	54(14.4)	148(19.7)	
University level	23(6.1)	11(2.9)	34(4.5)	
With whom living				0.001*
Alone	27(7.7)	67(18.5)	95(13.0)	
Couple	183(50.0)	145(39.9)	328(45.0)	
Couple with sons/daughters	147(40.2)	125(34.4)	272(37.3)	
Relative	8(2.2)	26(7.2)	34(4.7)	

$^\epsilon$ Chi-square test; *statistically significant

Table 2. Comparison of mean (SD) of health related quality of life of elderly people according to various subscales between males and females

Subscales of quality of life	All Mean (SD)	Male Mean (SD)	Female Mean (SD)	P-value$^\epsilon$
Physical functioning	57.3 (26.6)	63.6 (25.6)	50.9 (26.2)	0.001*
Physical role limitation	56.4 (27.2)	63.0 (25.6	49.7 (27.3)	0.001*
Emotional role limitation	61.7 (27.0)	67.4 (24.2)	56.0 (28.5)	0.001*
Social functioning	69.0 (23.0)	72.9 (22.2)	65.1 (23.1)	0.001*
Bodily pain	63.2 (26.5)	69.6 (25.0)	56.8 (26.4)	0.001*
Mental health	56.1 (19.6)	60.8 (8.9)	51.6 (19.1)	0.001*
Vitality	55.9 (22.1)	60.8 (20.4)	50.9 (22.7)	0.001*
General health	48.8 (19.3)	53.8 (18.3)	43.7 (19.0)	0.001*
Overall quality of life	56.8 (8.4)	62.4 (17.2)	51.2 (17.9)	0.001*

$^\epsilon$ Two independent sample t-test; * statistically significant

Table 3. The mean (SD) scores of health related quality of life of elderly individuals according to demographic characteristics in males and females

Demographic characteristics	Male Mean (SD)	P-Value$^\epsilon$	Female Mean (SD)	P-Value$^\epsilon$
Age group		0.001*		0.001*
60-69 years	66.3 (16.1)		56.5 (16.4)	
70-79	58.0 (17.1)		43.3 (14.8)	
≥80	50.3 (15.9)		34.5 (18.7)	
Marital status		0.004*		0.001*
Married (Couple)	63.3 (17.1)		54.0 (16.9)	
Widow	52.8 (15.0)		44.8 (18.6)	
Divorced	34.0 (–)		33.6 (37. 8)	
Not married	52.4 (16.2)		52.2 (8.6)	
Educational level		0.001*		0.001*
Illiterate	55.4 (16.5)		45.4 (18.2)	
Primary	61.3 (15.9)		53.2 (13.9)	
Elementary	72.0 (13.9)		59.4 (16.1)	
High school/college	65.9 (15.5)		60.3 (15.4)	
University level	78.7 (16.7)		71.9 (16.9)	
With whom living		0.001*		0.001*
Alone	54.9 (16.1)		44.2 (18.2)	
Couple	60.7 (17.3)		52.0 (17.5)	
Couple /sons/daughters	66.4 (16.6)		55.5 (17.4)	
Relative	48.8 (11.3)		45.0 (18.8)	

$^\epsilon$ Analysis of variance and F test; * statistically significant

Table 4. The adjusted regression coefficients and 95% confidence interval (CI) of demographic characteristics in predicting the scores of quality of life of elderly people in different subscales

Dependent Variables	Constant	Male vs. Female	Age group 80-79 vs. 60-69 years	Age group ≥80 vs. 60-69 years	Educational level ≥high school vs. <high school	Marital status Couple vs. not
PF	28.3(18.4, 8.2)$^\epsilon$	11.0(7.4, 14.8)$^\epsilon$	-12.5(-16.7, -8.2)$^\epsilon$	-24.5(-30.3, -8.5)$^\epsilon$	7.3(3.0, 11.6)$^\epsilon$	5.0(0.3, 9.7)$^\yen$
PR	37.7(27.5, 48.0)$^\epsilon$	13.1(9.4, 16.9)$^\epsilon$	-15.4(-19.8,-10.0)$^\epsilon$	-23.4(-29.5, -7.3)$^\epsilon$	4.9(0.5, 9.3)$^\yen$	-0.5(-5.4, 4.4)
ER	42.8(32.2, 53.4)$^\epsilon$	10.7(6.8, 14.6)$^\epsilon$	-11.4(-15.9,-6.8)$^\epsilon$	-17.9(-24.3, -1.6)$^\epsilon$	2.4(-2.1, 6.9)	7.3(2.9, 11.7)$^\epsilon$
SF	46.7(37.4,55.9)$^\epsilon$	5.8(2.4, 9.1)$^\epsilon$	-7.2(-11.1, -.2)$^\epsilon$	-7.3(-12.8, -.8)$^\epsilon$	2.4(-1.5, 6.4)	3.8(-1.1, 8.8)
BP	37.4(27.0, 47.8)$^\epsilon$	11.8(8.0, 15.6)$^\epsilon$	-9.0(-13.5, -4.5)$^\epsilon$	-13.7(-19.8, -7.5)$^\epsilon$	3.7(-0.7, 8.2)	3.8(-1.1, 8.8)
VT	27.9(19.2, 6.6)$^\epsilon$	7.7(6.6, 10.9)$^\epsilon$	-3.4(-7.2, 0.3)	-8.5(-13.7, -3.0)$^\epsilon$	7.9(4.2, 11.7)$^\epsilon$	4.5(0.4, 8.7)$^\yen$
MH	27.6(19.9, 35.2)$^\epsilon$	7.3(4.5, 10.1)$^\epsilon$	-2.1(-5.3, 1.1)	-6.7(-11.3, -2.2)$^\epsilon$	8.9(5.6, 12.1)$^\epsilon$	4.3(0.6, 7.9)$^\yen$
GH	23.0(15.6, 30.4)$^\epsilon$	8.5(5.8, 11.3)$^\epsilon$	-6.2(-9.3, -2.9)$^\epsilon$	-8.7(-13.1,-4.3)$^\epsilon$	8.4(5.2,11.5)$^\epsilon$	2.7(-0.8, 6.2)

$^\epsilon$ P<0.001; $^\yen$ P<0.05; PF: physical functioning; PR: physical role limitation; ER: emotional role limitation; SF: social functioning; BP: bodily pain; VT: vitality; MH: mental health; GH: general health, All variables are coefficients (95%CI)

Table 5. The adjusted regression coefficients and 95% confidence interval (CI) of demographic characteristics in predicting the overall scores of quality of life of elderly people in multiple linear regression

Demographic characteristics	Coefficients (95%CI)	P-Value$^\epsilon$
Constant	31.1 (24.2, 37.8)	0.001[*]
Male vs. Female	9.7 (7.2, 12.1)	0.001[*]
Age group		
70-79 vs. 60-69 years	-8.7 (-11.6, -5.8)	0.001[*]
≥80 vs. 60-69	-15.4 (-19.4, -11.4)	0.001[*]
Educational level		
≥high school vs.<high school	6.6 (3.7, 9.5)	0.001[*]
Marital status		
Couple vs. not	3.7 (0.5, 6.9)	0.02[*]

[ε] T-test; [*] statistically significant

Discussion

According to our findings, the highest mean score of QoL was observed in subscale of social functioning in both sexes and the lowest score was found in the domain of general health. On overall, the mean score of QoL was slightly higher than median point of measurement scale studied while the mean score for women are closer to median point of scale. In all subscale, elderly women had significantly lower score of QoL. Elderly people with low education, older age, being single or living alone had significantly poorer scores of QoL.

The findings of present study revealed that the health related QoL of women was significantly poorer than men with similar mean age in all domains. This result is in accordance with those reported in other studies.[15-18] One possible explanation of the lower level of QoL in elderly women may be related to the higher prevalence of trait of anxiety and depression symptoms in Iranian women.[19-21] Our results show that women are more susceptible to physical function disability and physical role limitations which leads to lower score of subscale of bodily pain. They are also more vulnerable to emotional role limitations and they have less social functioning relationship because of the lack of outdoor activities and lower financial resources.

Additional to physical conditions, on overall the higher rate of psychological disorders have been reported in women compared with men.[20,21] This explains that rationale of lower score of QoL in the subscales of mental health and vitality and all resulting the poorer score of general health among women in our findings. A similar results was found among Tehranian elderly adults between sexes.[15] In contrast, in the elderly people who live in south of Iran (Bandar Abbas), the score of QoL was lower in women only in subscales of physical functioning, vitality and general health than not other domains.[22] The lower score of overall QoL in elderly in south of Iran compared with north might be explained by differences in socio-economics status, the life styles and the living conditions.

The highest score in the domain of social functioning that was observed in present study may reflect the social cultural position that elderly people possess in Islamic culture in Iran. This higher rate of social functioning score may be originated from Islamic point of view that emphasizes on the social interaction with members of family, neighbors and relatives that considers as social values.

Based on our findings, older age (>80 years and 70-79 years) had significantly lower QoL than age group of 60-69 years. These results are consistent with other studies in Iranian elderly people and Asian populations.[15-18,22] Aging influences on the lower score of QoL because of high rate of

comorbidity due to diabetes, renal failure, heart diseases, stroke and cancers in older age. These comorbidities are almost more prevalent in 6th and 7th decades of life in Iranian elderly people.[6,8] In addition, aging process itself deteriorates functional disability, mental health and psychological disorders.[12,18]

In present study, a positive association has been observed between educational level and QoL. In particular, elderly people with higher level of education at university level had significantly better QoL than illiterate. Similar results were found in other studies in elderly.[15-18,22] On the other hand, the lower educational level is accompanied with poorer social activities, less vitality and less self-esteem resulting poor QoL.

Elderly people with higher education are more aware for preventive measures for chronic conditions such as diabetes, renal diseases, heart diseases, stroke and cancers and they may have a positive attitude and their life styles may differ with illiterate elderly people. This prompts the lower rate of obesity and the corresponding co morbidities that influence on physical functioning in elderly.[23]

The present study showed that elderly people who live with their husband/wife had a better score of QoL than those who live alone. This finding is in line with other reports.[15,22] Obviously, married people enjoy their life more than who are widowed or divorced in elderly. The "emotional turbulence" that comprises three subthemes including uncertainty, perceived worries, and living with fears influence on QoL.[24] The implication of our findings is that the social interaction in the family, particular with spouse increases the degree of happiness to enjoy their life. Being married makes couple to be happy and to have more relaxation in their lives and thus it brings more vital energy. On the other hand, loneliness and being single with no relationship with spouse brings more sadness and depression.[15] Thus, it influences on some aspects of QoL in

particular, and emotional and psychological domains of health related QoL. Hopefully, based on our culture and religious background, in our study, the majority of elderly subjects were being married; only 7.7% of elderly men and 18.5% of elderly women lived alone. The apparent findings may originate from the Islamic religious orders to the young people that to take care of their parents in elderly. This is in contrast with western culture that elderly people almost live alone or they live in elderly institute/nursing home.[3] However, the value of take caring elderly people within families may change toward western culture due to accommodation problems and modernization of life styles. This may affect the social interaction between younger and older.

Our study may have some limitations. The cross sectional nature of study limits any causal interpretations in apparent association between demographic profiles and QoL. We used community based and a standard sample procedure in household survey; thus our samples excluded those who live in instutionalized nursing home in elderly or hospitalized. However, Iranians are family centered, and respect elderly people with their families. According to Iranian culture, providing cares to elderly and respecting to them are as duties and values.[24] Thus, most Iranian are willing to provide cares of elderly at home and the rates of elderly people who live in nursing home is almost low.[25-27] In addition, our data was collected by self -report in interview. There is possibility the collected data in different subscales of QoL to be under report or equivalently it may be exaggerated by some other people.

However, such misclassification is almost non differential with respect to socio-demographic profiles. It only distorts the association toward the null hypothesis. The advantages of our study were that we used a well standard sampling procedure with relative high sample size and the desired degree of precision. Also, we used the

trained interviewers in order to minimize the inter observer variability. In addition, we applied a well standard valid and reliable questionnaire. A high rate of internal consistency coefficients was observed in our data.

Conclusion

This study indicates that the health related QoL is rather poor in particular in women, older age, low education level and being single. The results imply that health policy makers should consider an urgent health interventional program among elderly people at present stage of demographic transition with emphasis on high risk demographic profiles.

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Ethical issues

None to be declared.

Conflict of interest

The authors declare no conflict of interest in this study.

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