Quality of Life in Different Chronic Diseases and Its Related Factors

Abstract

Background: Quality of life (QoL) is an important tool for evaluating the effect of a disease as well as effects of treatment interventions. The present study is aimed to investigate QoL of the patients with various prevalent chronic diseases in Iran. **Methods:** In a cross-sectional study, 625 patients with one of the prevalent chronic diseases were assessed. Participants were recruited via convenient sampling method in special clinics of chronic diseases in three educational hospitals in Qazvin, Iran, from May to December 2016. Data were collected using WHOQOL-BREF and demographic questionnaire through interview. Data were analyzed using independent t-test, ANOVA, Pearson's correlation coefficient, and multiple linear regression method. **Results:** Significant difference in QoL scores was found in different chronic disease; patients with diabetes and hypertension had higher scores and patients with asthma and chronic obstructive pulmonary disease (COPD) had the lowest scores. Multivariate analysis showed that age, economic status, and type of disease were among the significant variables in predicting the QoL of the patients with chronic diseases. **Conclusions:** Some patients, such as those with asthma and COPD, had less QoL than other patients and should be prioritized while planning for the promotion of healthcare services. Due to the negative effects of economic status on QoL, the financial support programs should be among the major priorities of the patients' QoL improvement programs.

Keywords: *Asthma, chronic obstructive, diabetes mellitus, hypertension, multiple sclerosis, neoplasms, peptic ulcer, pulmonary disease, quality of life*

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Introduction

The concept of health-related quality of life (QoL) is based on the definition of health provided by WHO, i.e., perfect physical, mental, and social welfare, not just lack of diseases. Health-related QoL (HRQoL) restricts the QoL to few aspects presented directly under the influence of the individual's health status as well as health care.[1] Health and welfare are interactive and multi-dimensional concepts, both of which are affected by the performance of the health system. Many sectors, including government and society, are responsible for providing a high level of welfare, which is determined based on the individual's QoL level.[2] The epidemiologic and demographic changes have resulted in some changes in health standards, increase in prevalence, incidence, and coincidence of the chronic diseases, and consequently, reduction in QoL.[3] Based on the data released by WHO, the increase in chronic diseases reached a very high level during 2002–2003 and it is estimated that, until 2020, nearly 80% of the global burden of diseases in the developing countries would be related to the problems resulted from chronic diseases.[4] Similarly, in Iran, the highest rate of mortality in 2012 was related to the chronic diseases; accordingly, the highest prevalence rate of the diseases was related to the cardiovascular diseases (24.7%), stroke (10.5%), hypertensive disorder (3.6%), diabetes mellitus (2.2%), stomach cancer (2.1%), chronic respiratory diseases (1.6%), and other chronic diseases such as endocrine, blood, and immune disorders.[5]

Most of the chronic diseases, by restricting the individual's ability to live, can lead to the worsened general health of patients, limited performance, reduced HRQoL, and increased healthcare costs.[4,6] QoL is an important tool for evaluating the effect of diseases as well as effects of treatment interventions; thus, it can be used as an index of the primary outcome and determinant of the treatment advantage.[4,7] Various studies have been focused on the investigation of the QoL among the patients with chronic diseases. Cao *et al.* reported the QoL of a sample of 5345 patients with

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chronic diseases such as hypertension, diabetes, cardiac disease, and heart stroke.[8] A study was conducted on 920 participants in Brazil in 2009, the results of which indicated that the presence of chronic disease might cause reduced QoL.[9] Comparing QoL of different chronic diseases was conducted in research by Tothova *et al*. The patients with rheumatoid arthritis, irritable bowel syndrome (IBS), chronic obstructive pulmonary disease (COPD), and ischemic disease of lower extremities (IDLE) were compared. In this study, the patients with IDLE and then COPD obtained lower scores in all the aspects of QoL than other patients.[1]

Fortin *et al*. evaluated 238 patients to investigate between multimorbidity and QoL taking into account the severity of the medical conditions based on the Cumulative Illness Rating Scale (CIRS) score. Use of the CIRS revealed a stronger association of HRQoL with multimorbidity than using a simple count of chronic conditions. Physical more than mental health deteriorated with increasing multimorbidity. Increased multimorbidity adversely affected HRQoL in primary-care adult patients, even when confounding variables were controlled.[10] Association of QoL and multimorbidity was investigated in 1419 Korean patients aged >65 years by Kim *et al*. They found the inverse association between QoL and the number of chronic diseases. Hypertension was the most common disease; There was no significant difference in QoL between men and women with similar levels of comorbidity.[11] Results of the studies conducted by Xie *et al.* to compare the 10-year QoL and death among 1793 Chinese people showed that lower HRQoL, especially the inability to live independently, was associated with a significantly increased risk of 10-year all-cause mortality.[12] Similarly, some studies have been conducted in Iran on QoL among the patients with specific chronic diseases. For example, some studies are conducted on QoL of the patients with multiple sclerosis (MS),[13,14] those with cancer undergoing chemotherapy,[15] patients with cardiac diseases,[16] patients with obstructive bronchiolitis caused by chemical injury,[17] those undergoing hemodialysis,[18,19] and patients with diabetes.[20,21]

Disease management requires cooperation with prescribed therapy, a will to change current lifestyles and the long-term maintenance of such changes.[1] Hence, evaluating and monitoring QoL of the patients with chronic diseases can provide the possibility for detecting the priorities and planning purposeful health programs to execute effective actions and consequently improve QoL of the receivers of the health services.[3] In addition to high-quality medical care, emphasis must be placed on patient self-care and responsibility for one's own health, particularly with regard to activities that may negatively affect their present state of health and increase the risk of mortality.[1] The growing need for nursing in this area can be seen in the use of QoL assessments to detect hidden issues and causes of interventional failures and patient self-care failure. Adequate interventions selected in accordance with the determined QoL can significantly influence patient responsibility for self-care and enable them to improve it and prevent disease-related complications.[1] Since the studies conducted in Iran have been focused on only one of the chronic diseases and used various instruments for this purpose, the present study was designed and implemented to investigate QoL in the prevalent types of chronic diseases to compare the QoL of different patients using a single instrument for measuring the QoL status. Various chronic diseases can affect QoL in different ways. Identifying effect of different disease on dimension of QoL can be helpful in providing care plan and patient education. It is hoped that the data obtained from the present study can help identify the priorities of medical, educational, and nursing services to improve QoL in various chronic diseases as well as identify the patients with less QoL to be prioritized in the relevant plans.

Methods

The present cross-sectional study was conducted to investigate QoL of the patients with chronic diseases in Qazvin. For this purpose, the researcher referred to the chronic diseases specialized clinics in three educational hospitals of Qazvin from May to December 2016. The inclusion criteria included (1) having one of the chronic diseases related to the cardiovascular system (hypertension), respiratory system (asthma and COPD), nervous system (MS), endocrine (diabetes), cancer, digestive system (peptic ulcer), and urogenital system (chronic renal failure), (2) not being in the acute phase of the disease, and (3) consent for participation in the research project. Sampling was performed via convenient sampling method and the samples were selected based on the research criteria.

Based on the previous studies on the QoL of the patients with chronic diseases, the maximum sample size required for each group of the chronic diseases regarding $\alpha = 0.05$, $\beta = 0.8$, and $\rho = 0.3$ was calculated through the following formula:

$$n = \frac{\left(z_{\left(1-\frac{\alpha}{2}\right)} + z_{(1-\beta)} \right)^2}{\left(\frac{1}{2} \ln \frac{1+\rho}{1-\rho} \right)^2} = 85$$

It should be noted that 10% increase in the sample size was considered due to the probability of sample loss.

The variables investigated in the present study included QoL and some of the demographic characteristics of the patients. The demographic characteristics questionnaire with nine questions was focused on the patients' characteristics, including age, occupation, education, satisfaction with economic status, and disease course. QoL was evaluated

using WHOQOL-BREF brief QoL questionnaire with 26 questions, which investigated the participants' QoL in four physical, mental, social, and environmental domains. Translation and psychometry of the Iranian version of this questionnaire were evaluated by Nedjat *et al.* in a study on 1164 individuals living in Tehran. Values of the intracluster correlation and Cronbach's alpha were equal to 0.7 in all the above-mentioned domains. Results of this study implied reliability, validity, and acceptability of the structural factors of this instrument in Iran for both healthy and patient groups.[22] Reliability of this questionnaire was examined in the present study as well; accordingly, the questionnaire was filled out by 20 individuals with the interval of 2 weeks. Based on the results, the values of intracluster correlation coefficient in the four domains ranged between 0.80 and 0.85, which indicated appropriate reliability.

Data analysis was performed by SPSS-V.21 statistical software (IBM Corp., New York, United States) using descriptive and inferential statistics. Besides, Kolmogorov–Smirnov test was used to investigate normality of the quantitative variables. Regarding the normality of distribution of the quantitative data, independent *t*-test, ANOVA with Bonferroni *post hoc* test, Pearson's correlation coefficient, and multiple linear regression were used via ENTER method. In order for the interpretation of the findings, a significance level of 0.05 was considered.

Ethical consideration

The research proposal was approved by the Research Council of Faculty of Nursing and Midwifery, Qazvin University of Medical Sciences. After obtaining the required permissions, sampling was performed. The research objectives, privacy of the participants' information, and freedom for participation in the project were all explained to the participants. After obtaining their informed written consent, the relevant questionnaires were completed through interviewing.

Results

Participants of the present study included 625 patients aged from 18 to 96 years. The mean age was 54.5 years ± 14.16 (standard deviation). The majority of the participants were female (52.2%), were married (86.2%), and were educated (67.7%). The average disease course among the participants was 5.05 ± 5.19 years. The majority of the participants (46.9%) were unsatisfied with their economic status [Table 1]. Table 2 represents the results of different aspects of QoL, both overall and separately, based on the type of the chronic diseases. The lowest scores in different aspects of QoL were observed among the patients with asthma and COPD, while the patients with diabetes and hypertension obtained the highest scores. ANOVA test confirmed the significant difference between different aspects of QoL based on the type of the disease.

Table 1: Distribution of demographic variables according to sex

	Female, *n* (%)	Male, *n* (%)	Total, *n* (%)
Age			
≥45	93 (28.5)	70 (23.4)	163 (26.1)
45-55	90 (27.6)	73 (24.4)	163 (26.1)
55-64	75 (23)	66 (22.1)	141 (22.6)
≤64	68 (20.9)	90 (30.1)	158 (25.3)
Total	326 (100)	299 (100)	625 (100)
Mean±SD	53.36±13.85	55.7±14.41	54.5±14.16
Marital status			
Married	275 (84.4)	264 (88.3)	539 (86.2)
Single	5 (1.5)	10 (3.3)	15 (2.4)
Divorced	2 (0.6)	23 (7.7)	67 (10.7)
Widowed	44 (13.5)	2 (0.7)	4 (0.6)
Total	326 (100)	299 (100)	625 (100)
Occupational status			
Homemaker	252 (77.3)	0	256 (41)
Employee	23 (7.1)	54 (18.1)	73 (11.7)
Worker	1 (0.3)	19 (6.4)	20 (3.2)
Nongovernmental job	32 (9.8)	141 (47.2)	173 (27.7)
Retired	7 (2.1)	62 (20.7)	69 (11)
Unemployed	11 (3.4)	23 (7.7)	34 (5.4)
Total	326 (100)	299 (100)	625 (100)
Educational status			
Illiterate	131 (40.2)	71 (23.7)	202 (32.3)
Elementary	31 (9.5)	16 (5.4)	47 (7.5)
Guidance	41 (12.6)	61 (20.4)	102 (16.3)
Diploma	72 (22.1)	69 (23.1)	141 (22.6)
Academic	51 (15.6)	82 (27.4)	133 (21.3)
Total	326 (100)	299 (100)	625 (100)
Economical satisfaction			
Satisfied	58 (17.9)	47 (15.7)	105 (16.9)
Partly satisfied	125 (38.6)	100 (33.4)	226 (36.1)
Dissatisfied	143 (43.5)	152 (50.8)	293 (47)
Total	326 (100)	299 (100)	625 (100)
Type of disease			
Hypertension	57 (17.5)	36 (12)	93 (14.9)
Chronic renal disease	49 (15)	46 (15.4)	95 (15.2)
Chronic respiratory disease	33 (10.1)	58 (19.4)	91 (14.6)
Chronic gastrointestinal disease	44 (13.5)	43 (14.4)	87 (13.9)
Multiple sclerosis	55 (16.9)	31 (10.4)	86 (13.8)
Cancer	35 (10.7)	51 (17.1)	86 (13.8)
Diabetes	53 (16.3)	34 (11.4)	87 (13.9)
Total	326 (100)	299 (100)	625 (100)
Disease duration			
Mean±SD	5.39±5.56	4.68±4.74	5.05±5.19

SD=Standard deviation

Furthermore, results of Bonferroni *post hoc* test indicated that, in terms of the physical health aspect, chronic renal failure ($P = 0.001$), asthma and COPD ($P = 0.000$), peptic ulcer ($P = 0.003$), multiple sclerosis ($P = 0.006$), and cancer ($P = 0.004$) resulted in less status than diabetes

Table 2: Score of the World Health Organization Quality of Life Instrument Short Form-BREF (mean±standard deviation) based on type of disease

	Physical health	Psychological	Social relationships	Environment
Total	11.65±3.1	12.12±2.59	12.68±3.65	12.23±3.18
Hypertension	12.32±2.39	12.64±3.38	13.97±3.55	13.09±3.28
Chronic renal disease	11.37±2.51	12.47±1.82	13.34±3.42	12.71±2.70
Chronic respiratory disease	10.32±2.83	11.27±2.69	10.51±3.83	10.25±3.28
Chronic gastrointestinal disease	11.42±2.91	11.82±2.40	11.63±3.40	11.02±2.77
Multiple sclerosis	11.51±2.50	11.78±2.25	11.78±3.32	11.27±2.54
Cancer	11.46±3.78	11.94±2.54	13.63±3.38	13.65±2.82
Diabetes	13.18±3.85	12.87±2.52	13.83±3.15	13.65±3.01
One-way ANOVA				
F	7.794	4.399	13.786	19.41
P	0.000	0.000	0.000	0.000

and hypertension. In terms of the mental aspect of QoL, the difference between the patients with chronic pulmonary disease and those with hypertension ($P = 0.006$), diabetes ($P = 0.001$), and renal failure ($P = 0,031$) was significant. Comparing the QoL in terms of the social relations aspect based on different types of diseases indicated that the patients with chronic pulmonary and digestive diseases had no significant difference, while there was a significant difference between these two and other diseases ($P < 0.05$). The results of Bonferroni *post hoc* test in the environmental health aspect showed the patients with chronic pulmonary disease and those with peptic ulcer and MS had no significant difference, but there was a significant difference between these patients and those with hypertension, diabetes, and cancer ($P < 0.05$). As demonstrated in Table 3, the patients with chronic pulmonary disease, including asthma and COPD, obtained the lowest scores in different aspects of QoL.

Independent *t*-test indicated no significant difference between the male and female groups in terms of different aspects of QoL ($P < 0.05$). Comparison of the aspects of QoL was performed between the two male and female groups based on the demographic variables. The univariate analysis results showed a significant difference between different aspects of QoL of the female patients with chronic diseases based on their age, marital status, occupation, education, satisfaction with economic status, and type of disease. Furthermore, aspects of QoL of the male patients with chronic diseases indicated a statistically significant difference based on their age, occupation, education, satisfaction with economic status, type of disease, and duration of disease course [Table 3].

In the multivariate analysis by multiple linear regression method, no significant difference was observed in the aspects of QoL of the female patients with chronic diseases based on their marital status and occupation; however, with an increase in the age of the female patients with chronic diseases, all the aspects of QoL worsened. Furthermore, economic status, education, and type of disease were among the predictors of QoL of the female patients with chronic diseases [Table 4].

The multiple linear regression analysis showed no significant difference in the aspects of QoL of the male patients with chronic diseases based on their education and marital status; however, with an increase in the age of the participants as well as their disease course duration, all the aspects of QoL worsened. The retired individuals, compared to other occupation groups, exhibited better status in two aspects of physical health and social relationships. Besides, economic status was one of the significant variables in predicting the status of different aspects of QoL so that by worsening the economic status, the scores of different aspects of QoL were reduced as well. Type of disease was a significant predictor in the physical health aspect for all types of the studied diseases, mental health aspect for the patients with MS, cancer, and digestive diseases, social relationships aspect for the patients with hypertension and MS, and environmental health aspect for those with MS and respiratory and digestive diseases [Table 5].

Discussion

In the past decade, there has been a considerable increase in chronic diseases due to various factors including improved living conditions, better prevention, handling of infectious diseases, medical technologies, and general aging of the population.[4] Therefore, there are numerous people living with chronic diseases that can influence their QoL. Chronic diseases can cause limited living capacity, limited performance, fertility, and HRQoL, as well as increased health costs.[3] Assessment of the QoL can help promote the treatment, care, and rehabilitation programs for patients.[18] The present study was aimed to investigate and compare QoL of the patients with different prevalent chronic diseases as well as its relationship with their demographic characteristics.

Results of the present work demonstrated that affliction with chronic diseases can affect QoL of the individuals. Since obtaining lower scores in the QoL questionnaire

Table 3: Comparison of quality of life dimension based on demographic variables

	Physical health		Psychological		Social relationships		Environment	
	Male	Female	Male	Female	Male	Female	Male	Female
Age*								
r	−0.343	−0.262	−0.292	−0.191	−0.338	−0.195	−0.280	−0.260
P	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000
Marital status** (P)	0.066	0.021	0.582	0.425	0.486	0.912	0.201	0.937
Occupational status** (P)	0.000	0.014	0.000	0.020	0.001	0.011	0.000	0.011
Educational status** (P)	0.000	0.000	0.000	0.000	0.066	0.000	0.000	0.003
Economical satisfaction** (P)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Type of disease** (P)	0.000	0.005	0.017	0.017	0.000	0.000	0.000	0.000
Disease duration*								
r	−0.112	−0.056	−0.191	−0.036	−0.186	−0.026	−0.190	0.039
P	0.053	0.317	0.000	0.517	0.001	0.646	0.001	0.489

*Pearson correlation, **One-way ANOVA

Table 4: Results of multivariate linear regression in female participants

Coefficient	Physical health		Psychological		Social relationships		Environment	
	β	P	β	P	β	P	β	P
Age	−0.19	0.006	−0.17	0.013	−0.163	0.016	−0.20	0.001
Educational status								
Illiterate	−0.094	0.072	−0.05	0.46	0.083	0.78	0.15	0.682
Elementary	−0.027	0.039	0.03	0.704	0.106	0.173	−0.027	0.674
Guidance	−0.016	0.97	0.15	0.582	0.209	0.069	−0.016	0.765
Diploma	0.063	0.489	−0.03	0.011	0.093	0.000	0.063	0.220
Academic (RG)								
Economical satisfaction								
Dissatisfied	−0.452	0.000	−0.550	0.000	−0.467	0.000	−0.63	0.000
Partly satisfied	−0.246	0.000	−0.286	0.000	−0.168	0.014	−0.35	0.000
Satisfied (RG)								
Type of disease								
Hypertension	−0.051	0.464	−0.105	0.131	−0.095	0.161	−0.145	0.022
Chronic renal disease	−0.167	0.022	−0.026	0.715	−0.107	0.132	−0.097	0.140
Respiratory disease	−0.168	0.013	−0.166	0.014	−0.251	0.000	−0.283	0.000
Gastrointestinal disease	−0.099	0.153	−0.076	0.266	−0.152	0.025	−0.220	0.001
MS	−0.192	0.014	−0.149	0.044	−0.222	0.004	−0.282	0.000
Cancer	−0.222	0.002	−0.211	0.003	−0.139	0.044	−0.096	0.131
Diabetes (RG)								

MS=Multiple sclerosis, RG= Reference Group

means lower QoL, the present study showed that QoL among patients with chronic diseases is affected overall and the acquired scores showed low QoL in this group. In this study, the participants obtained the highest scores in the physical health aspect and the lowest in the social relationships aspect. The lower QoL in case of chronic diseases has been confirmed in other studies as well.[3,8-10] Comparing the QoL in different groups of the patients indicated that the lowest scores in all aspects of QoL were related to the patients with chronic pulmonary diseases, including asthma and COPD, while the highest scores were related to those with diabetes. Consistent with this study, Prazeres and Figueiredo measured QoL of old type 2 diabetic patients in primary care in Portugal and reported that participants perceived a positive QoL.[23] Results of this study showed the difference between different aspects of QoL based on the type of diseases was significant. Tothova *et al*. compared QoL of the patients with rheumatoid arthritis, IBS, COPD, and IDLE. In this study, the patients with IDLE and then COPD obtained lower scores in all the aspects of QoL than other patients.[1] Findings of the present study could not be compared with those of the previous studies for several reasons: The difference between the instruments used for investigating QoL, investigation of QoL of the patients with only one of the chronic diseases, difference between the studied chronic diseases, and lack of access to the information related to QoL based on the type of chronic disease. The difference in QoL of the patients with different chronic diseases can be due to the difference in the nature of the diseases, duration of the disease course, complications of the diseases, and level of the need for

Table 5: Results of multivariate linear regression in male participants

Coefficient	Physical health		Psychological		Social relationships		Environment	
	β	*P*	β	*P*	β	*P*	β	*P*
Age	−0.288	0.000	−0.268	0.000	−0.361	0.000	−0.209	0.000
Disease duration	−0.212	0.000	−0.219	0.000	−0.158	0.004	−0.197	0.000
Occupational status								
Worker	−0.019	0.745	−0.05	0.425	−0.105	0.091	−0.102	0.080
Nongovernmental job	−0.045	0.554	−0.137	0.095	−0.086	0.286	−0.100	0.187
Retired	0.131	0.048	0.024	0.736	0.139	0.047	0.127	0.053
Unemployed	−0.058	0.35	−0.066	0.314	0.012	0.857	−0.026	0.672
Employee (RG)								
Economical satisfaction								
Dissatisfied	−0.292	0.000	−0.362	0.000	−0.224	0.006	−0.428	0.000
Partly satisfied	−0.151	0.032	−0.248	0.001	−0.125	0.09	−0.272	0.000
Satisfied (RG)								
Type of disease								
Hypertension	−0.233	0.000	0.058	0.410	0.161	0.021	0.071	0.271
Chronic renal disease	−0.304	0.000	−0.025	0.748	0.087	0.248	0.001	0.989
Respiratory disease	−0.443	0.000	−0.106	0.187	−0.143	0.071	−0.226	0.002
Gastrointestinal disease	−0.357	0.000	−0.141	0.056	−0.131	0.070	−0.223	0.001
MS	−0.405	0.000	−0.228	0.001	−0.213	0.002	−0.266	0.000
Cancer	−0.507	0.000	−0.249	0.002	−0.062	0.418	−0.054	0.455
Diabetes (RG)								

MS=Multiple sclerosis, RG= Reference Group

treatment, experiments, and medical interventions for controlling and improving the disease conditions.

The present study showed no significant difference between QoL of the male and female patients; thus, the findings were not consistent with those of the previous studies. Results of the studies conducted by Xie *et al.* to compare the 10-year QoL and death among 1793 Chinese people, Gargano *et al.* to investigate the gender-related difference of the convalescence from heart stroke, and Preto *et al.* to evaluate QoL of the receivers of primary health services indicated that gender was among the variables affecting QoL of the patients with chronic diseases so that women had lower QoL than men.[3,12,24] Such a difference could be due to the difference in the sample size, man/woman ratio, and type of the selected diseases in these studies. On the other hand, consistent with the present study, Haresabadi *et al.* observed no relationship between gender and QoL of the patients with MS;[14] in addition, Fortin *et al.*, conducting a multivariate analysis, reported no relationship between gender and QoL of the patients with multi-morbidity.[10]

Findings of the present study demonstrated that age, economic status, education, and type of disease were among the predictors of QoL among women, while marital status and occupation had no effect on their QoL. Among the men with chronic diseases, no significant difference was observed in the aspects of QoL based on their education and marital status; however, age, disease course, economic status, and type of disease were among the significant predictors of QoL among the men. On this basis, age,

economic status, and type of disease affected QoL in both genders.

Results of the present study showed that with increase in the age, all the aspects of QoL among both men and women with chronic diseases were reduced. Disease course was another variable that significantly affected QoL among men, while such a significant relationship was not observed among the women. The results obtained for the effect of age on QoL of the patients with chronic diseases were inconsistent with those of the previous ones. For example, Kim *et al.* and Preto *et al.* have observed no relationship between age and QoL;[3,11] on the other hand, consistent with the present work, Xie *et al.* and Gargano *et al.* have reported a significant relationship between age and QoL of the patient with chronic diseases.[12,24] Moreover, such a relationship has been reported for age and disease course with QoL of the patients undergoing hemodialysis[18] and also for age with QoL of the patients with diabetes Type-II[21] and MS.[13] Such inconsistency can be due to the difference in the age structure of the selected samples and sample size. On the whole, regarding the nature of the prolonged course of the chronic diseases and increased effect of such diseases on different body systems, as indicated by several studies, it is expected that with increased age and disease course, the QoL of the individuals is reduced.

Economic status was another variable that significantly affected all the aspects of QoL in both genders. Results of the present study showed the individuals who were unsatisfied or almost unsatisfied with their economic

status had lower QoL than those who were satisfied with their economic status. Investigating the level of effect of the economic status on different aspects of QoL indicated that, in both genders, economic satisfaction had the highest negative effect on the environmental aspect of QoL. Based on the WHOQOL-BREF questionnaire, the environmental aspect of QoL examined the financial resources, physical freedom/safety and security, accessibility and quality of social and health services, situation of acquisition of new information and skills, situation for recreations, and ease of travelling. Results of Fortin *et al*.'s study represented that the perceived social support and patients' perception of their economic status had high correlation with all the aspects of QoL.[10] The significantly positive relationship between income level and QoL among the patients undergoing hemodialysis,[18] patients with diabetes Type-II,[21] and those with cancer undergoing chemotherapy[25] has been reported as well.

In the present research, type of disease was another variable which resulted in a significant difference between the aspects of QoL in the multivariate analysis. The physical health aspect in all the studied diseases was affected significantly. In terms of social relationships, MS in men and asthma and COPD in women had the highest negative effect. MS and asthma or COPD were the diseases with highest negative effects on the aspect of environmental health of the patients. Effect of the type of the disease on different aspects of QoL has been also reported in other studies. Tóthová *et al*. studied QoL of the patients with rheumatoid arthritis, IDLE, COPD, as well as IBD and reported the effects of these diseases on the physical health, independence level, and spiritual health aspects of QoL.[1] Chronic diseases can cause changes in daily activities, especially in the case of disabling diseases. The physical, mental, and economic burdens caused by the disease can expose the patient to insecurity and social problems that, along with heavy economic costs, can influence the whole family's life.[3] Therefore, the effect level of the chronic disease on different aspects of QoL can vary under the influence of the disease severity as well as the patient's perception of the effect level of the disease on his/her own QoL. In this study, patients with COPD and asthma had the least scores in all domains of QOL in comparison to other disease. One possible explanation for this may be restriction of everyday activities due to breathing problems of these patients which may lead to depression, besides fear of death and dying in an acute stage of the disease. Such experience may result in social isolation with negative impact on the patient's general state of health. Anxiety along with depression can have a very negative impact on disease prognosis as well as QoL in COPD patients

Limitations

A limitation of the present study was the lack of control group consisting of healthy individuals; besides, the disease

severity was not considered in this study. For this reason, the effect level of the chronic diseases on QoL could not be evaluated in comparison with the healthy individuals and also based on various severities of the diseases.

Conclusions

The present study is among the few studies comparing different aspects of QoL of the patients with chronic diseases. The use of valid and reliable tools with limited questions can lead to simpler and easier application in the clinical field. Results of the present work showed the patients with asthma and COPD had lower QoL than others and should be prioritized in planning for the promotion of the care services to improve their QoL. Furthermore, regarding the effect of economic status on QoL of the patients, the financial support plans for the patients with undesirable economic status must be among the major priorities of all the QoL promotion programs. In sum, with regard to the negative effect of various diseases on QoL of the patients, it is proposed for the providers of treatment and nursing care services to pay more attention to the evaluation of QoL of the patients with chronic diseases while providing their services.

Conflicts of interest

There are no conflicts of interest.

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