

Effects of Chronic Illness on the Quality of Life in Psychiatric out patients of the Iraq – Iran War

Khodabakhsh Ahmadi PhD¹
 Shahriar Shahidi PhD²
 Vahid Nejati PhD²
 Gholamreza Karami MD¹
 Mehdi Masoomi MD³

1 Behavioral Sciences Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran

2 Departments of psychology, Shahid Beheshti University, Tehran, Iran.

3 Bonyad Shahid Organization, Tehran, Iran,

Corresponding author:

Khodabakhsh Ahmadi, PhD.
 Behavioral Sciences Research Center, Baqiyatallah University of Medical Sciences, Mollasadra Ave., Vanak Sq.P.O. Box: 19395-5487, Tehran, 14548, I.R. Iran,
 Fax: 98-21-88053767
 E-mail: Kh_Ahmady@yahoo.com

Objective: Quality of life measures can provide an important source of medical information for promoting the health status of chronically ill patients. The purpose of the present study was to evaluate health related quality of life in psychiatric veterans of the Iraq- Iran war of the 1980s.

Methods: They were out patients diagnosed with various psychiatric symptoms.

The present study used a cross sectional design, in which 971 psychiatric veterans were selected by Systematic-randomized sampling and evaluated using the SF36 questionnaire.

Results: Findings revealed that veterans who suffered from one or more chronic conditions/illnesses reported significantly more bodily pain and significantly less vitality, mental and general health compared to those veterans without chronic conditions. Moreover, specific aspects of poor quality of life were more salient in specific chronic conditions/illnesses than others.

Conclusion: Based on these findings, chronic conditions, especially respiratory problems, can have a detrimental effect on the quality of life in psychiatric war veterans.

Keywords: *health related quality of life, chronic condition, psychiatric veterans*

Iran J Psychiatry 2013; 8:1: 7-13

Quality of Life (QoL) has become a widely used measure in health outcome studies during the past ten years (1). QoL has been defined as “the perception that an individual has of his or her place in life, within the context of the culture and system values in which he or she lives, and in relation to the objectives, expectations, standards and concerns of this individual” (2). The World Health Organization has also defined Health Related Quality of Life (HRQoL) as “an integrative measure of physical and emotional well-being, level of independence, social relationships and their relationship to salient features of their environment”. The conceptualization of the term QoL is both objective and subjective and so its measurement requires reference to varied and complex areas. Also, QoL measurement can be very personal as experiences, beliefs, expectations and perceptions of each individual may be unique (3).

Health-related QoL, irrespective of disease specificity or generality, combines physical, cognitive, emotional, and social functioning experienced and reported by the patient. Further, it can be considered as the appreciation of the pervasive and adverse effects of illness on the patient as perceived by the patient. In

other words, it is the “*illness experience* as opposed to the *disease*” (3). Generic measures of health-related QoL incorporate a broad spectrum of function, health perceptions and symptoms which can be used in different patient populations including those without a disease. This enables direct comparison of QoL across different disease states and conditions. The inherent limitation of generic measures is that they may overlook important aspects or changes that are of particular value for a specific medical condition (4). Disease-specific measures quantify more clinically relevant domains for a specific disease state than a generic measure. They are often more responsive to changes in health-related QoL and are more sensitive in discriminating the range of impairment in health-related QoL, because their focus is on the most relevant aspects for the problem or condition assessed. Given the breadth and complexity of QoL, it is important to include and assess multiple domains of QoL from a variety of perspectives usually incorporating both generic and specific disease measures. Therefore, the proposed study utilizes cardiac specific QoL as the primary outcome, and generic health-related QoL as the secondary outcome (5, 6).

A chronic condition can be defined as a medical condition that is slow in its progress and long in its continuance. Chronic conditions also increase the costs of health care and long-term care (7). Measures of the quality of life in chronically ill patients provide an important source of medical information in addition to laboratory or diagnostic tests (8) and are becoming increasingly relevant in controlled clinical trials (9). One goal of measuring quality of life is to have objective evaluations of how and how much the disease influences patients' life and how they cope with it. These evaluations may be useful as a baseline and outcome measures and should provide a framework to determine the impact of any change on patients' quality of life (10). The Iraq- Iran War, also known as the Imposed War by Iranians, was an armed conflict between the armed forces of Iraq and Iran, lasting from September 1980 to August 1988, making it the longest conventional war of the twentieth century (11). The Iraq- Iran War very costly in lives and material was one of the deadliest wars since World War II (12). Both countries were devastated by the effect of the war. It cost Iran an estimated one million casualties, killed or wounded, and Iranians still continue to suffer and die as a consequence of Iraq's use of chemical weapons. In 2003, nearly 400,000 war veterans were officially registered in the Iranian War Veterans' Foundation. Few studies have addressed the issue of mental health of Iranian war veterans and the few studies which have been conducted in the past three decades have concentrated on physical rather than psychological aspects of this war (13). Hence, the aim of the present research was to evaluate the relationship between health related quality of life and chronic illness in Iranian psychiatric war veterans.

Materials and Methods

A cross-sectional design was used to evaluate health related quality of life in psychiatric Iranian war veterans. Nine hundred seventy one psychiatric out patients were thus interviewed and completed questionnaires in individual sessions. Participants came from all parts of the country. The participants were selected by Systematic randomized sampling. For sampling we select one second of patient that refers to War Related Diagnosis Committee in Bonyad Organization (WRDCBO), in 2009 in Tehran, Iran. HRQoL was assessed by means of the 36-item Short-Form Health Status Questionnaire (SF-36), which has been validated for the Iranian population. This questionnaire had been translated to Persian and validated for Iranian population. The internal consistency (to test reliability) showed that all eight SF-36 scales met the minimum reliability standard, the Cronbach's alpha coefficients ranging from 0.77 to 0.90 with the exception of the vitality scale ($\alpha = 0.65$) (14). The SF-36 Health Status Questionnaire is a 36-item multipurpose health survey.

The survey measures eight health concepts. These eight subscales are Physical Functioning (PF), Role-Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role-Emotional (RE), and Mental Health (MH). On the basis of these scales, component summary scores were calculated to provide a global measure of physical and mental functioning. The Physical Component Summary (PCS) and the Mental Component Summary (MCS) were derived from the eight multi-item scales. The scales and summary components ranged from 0 to 100, where higher values denote better functioning and fewer limitations (15).

The SF-36 survey is one of the most widely used surveys to measure health outcomes (13). The measure can be used across age, disease, or treatment groups. The SF-36 has been beneficial in comparing specific and general populations, comparing the relative burden of disease, screening patients, and differentiating the health benefits produced by a wide range of different treatments (15).

Participants: 971 male veterans of the Iraq- Iran war who were registered with Iran's Martyrs and Veterans' Organization in 2009 participated in the study. The socio-demographic characteristics of participants are demonstrated in table 1. As shown in the table, 15.2% of veterans are under 40 years of age, 59% between 41 to 50, 12% in the range of 51 to 60, and 4.5% are over 60 years of age.

Permission to examine medical records was obtained from the patients individually after explaining the purpose of the study. After examining their medical records, veterans were classified into the following groups based on the principle chronic condition for which they were being treated: 1) Respiratory disorders (asthma, chronic bronchitis, emphysema or chronic obstructive pulmonary disease); 2) Musculoskeletal disorders (arthritis, fibromyalgia or back problems); 3) Cardiovascular disorders (high blood pressure or heart disease); 4) Diabetes; 5) Urinary or bowel problems (urinary incontinence, Crohn's disease or colitis); and 6) those who were suffering the effects of a stroke. Some chronic conditions, such as food or other allergies, cataracts, glaucoma, and thyroid conditions were not included because their impact on quality of life, as measured by the Health Utilities Index, has previously shown to be indiscernible or mild (16). Migraine headaches and epilepsy were not considered as their sporadic nature did not lend itself well to a cross-sectional analysis. We first compared veterans who had one or more of the selected chronic conditions with those who reported having no chronic condition, and we subsequently repeated these analyses for each of the above chronic condition groups (17).

The soft ware of SPSS-18 was used for performing the data analysis. Descriptive statistics and Independent t-test were used to analyze data. The p-values ($P \leq 0.05$) were set as the statistically significant level. For Comparison in scores of quality of life between veterans with and without chronic conditions we divide

all of participation in 2 groups by DSM-IV classification.

Results

Psychiatric assessment of veterans is demonstrated in table 2 as the number of veterans in each axis of DSM-IV classification. Comparison in scores of quality of life between veterans with and without chronic conditions by use of independent t-test can be seen in table 3.

As demonstrated, veterans with one or more chronic conditions have reported more bodily pain and less vitality, mental and general health than those without chronic conditions. Veterans with respiratory disorders have reported lower scores of quality of life in all dimensions compared to those without respiratory disease.

Compared to their healthy counterparts, psychiatric veterans with musculoskeletal disorders reported lower scores on physical role and physical component summary. Further, diabetics had lower scores on vitality. Also, veterans suffering from urinary and bowel disorders showed higher level of bodily pain and lower level of general health, and those suffering from effects of stroke reported lower physical functioning, social functioning, and vitality as well as physical

component summary. Findings showed no significant difference between psychiatric patients with or without cardiovascular disease.

Discussion

Measures of quality of life in chronically ill patients provide an important source of medical information for promoting life satisfaction and health status (16). One goal of measuring quality of life is to obtain an objective evaluation of how and how much the disease influences patients' life and how patients cope with it (18).

The present findings show that bodily pain, vitality, mental health, and general health are lower in psychiatric veterans with one or more chronic condition than those without chronic conditions. This finding suggests that chronic pain may be considered as a threat to psychological well being of psychiatric patients. Patients with respiratory disorders experience a progressive deterioration and disability which leads to a worsening in their health-related quality of life. Shafazand (2004) reported significant impairment in all domains of quality of life in respiratory disorders,

Table 1: Demographic characteristics of veterans

	Frequency	Percent
Age group		
Under 40 years	148	15.2
41-50 years	573	59
51-60 years	117	12
Over 61 years	44	4.5
Missing	89	9.2
Marital Status		
Married	916	94.3
Single	23	2.4
Divorced	9	0.9
Widowed	1	0.1
No answer	22	2.3
Educational Level		
Illiterate	61	6.3
Primary school	565	58.2
Secondary school	206	21.2
High school	97	10
University	10	1
No answer	32	3.2
Occupation		
Employed	138	14.2
Unemployed	171	17.6
Retired	629	64.8
No answer	32	3.1

Table 2: Cannabinoids and their Properties (11)

Psychoactive components	
Name	Effects
Δ^9 -tetrahydrocannabinol (Δ^9 -THC)	Main psychoactive component; causes psychological and behavioral effects
Δ^8 -tetrahydrocannabinol (Δ^8 -THC)	Less psychoactive than Δ^9 -THC.
Cannabinol(CBN)	Less powerful than Δ^9 -THC
11-hydroxy- Δ^9 -THC (11-OH-THC)	Liabile for psychological effects of cannabis
Anandamide (arachidonylethanolamide)	Imitates activity of Δ^9 -THC and other cannabinoids that interact with cannabinoid receptors.
Non-psychoactive components	
Cannabidiol (CBD)	Lacks psychoactive properties has anticonvulsant action.
Cannabichromene	Not psychoactive
(-) Δ^8 -THC-11-oic acid)	Not psychoactive has analgesic activity.

Table3: Differences of quality of life in different chronic condition with independent t-test

Dimension of QOL Category			RP	PF	BP	VT	MH	RE	SF	GH	PCS	MCS
No chronic condition (n=518)	Mean		32.91	58.41	54.43	12.91	15.61	16.18	26.47	27.61	43.48	17.64
	(SD)		(40.4)	(28.5)	(27.6)	(8.1)	(8.7)	(19.3)	13.3)	(15.3)	(14.0)	(6.3)
	t		-1.55	1.06	1.99	-3.13	-2.85	-0.50	1.82	-4.03	-0.84	-0.67
One or more chronic condition (n=453)	Mean		27.99	60.85	59.03	10.89	13.68	15.40	28.57	22.75	42.64	17.64
	(SD)		(36.7)	(27.8)	(30.0)	(7.6)	(7.7)	(18.8)	(15.3)	(14.1)	(13.1)	(6.3)
	Sig.		0.120	0.289	0.046	0.002	0.005	0.613	0.068	0.001	0.458	0.501
Respiratory disorders (n=177)	Mean		22.46	52.56	63.30	9.80	12.25	11.30	13.27	20.50	39.70	16.77
	(SD)		(32.8)	(27.1)	(25.6)	(7.3)	(7.70)	(17.1)	(13.1)	(12.7)	(13.0)	(4.9)
	t		-2.61	-2.36	2.93	-3.54	-3.75	-2.86	4.89	-4.14	-2.85	-1.72
Musculo-skeletal disorders (n=38)	Mean		14.39	50.30	61.36	9.73	14.35	13.02	30.81	24.48	37.63	16.98
	(SD)		(19.7)	(24.7)	(22.6)	(7.0)	(9.2)	(14.5)	(11.5)	(14.9)	(8.8)	(5.0)
	t		-2.36	-1.49	0.87	-1.58	-0.15	-0.72	1.08	-0.20	-2.09	-0.46
Cardio-vascular disorders (n=143)	Mean		28.38	59.71	56.73	10.68	13.76	15.96	29.38	24.25	40.68	17.47
	(SD)		(38.7)	(28.8)	(29.70)	(7.4)	(7.6)	(18.41)	(14.6)	(13.3)	(13.6)	(4.8)
	t		-0.46	-1.96	-0.18	-1.74	-1.12	0.36	1.01	-0.59	-1.52	0.03
Diabetes (n=73)	Mean		33.87	58.27	53.07	9.95	12.58	18.81	27.66	21.60	42.18	17.23
	(SD)		(40.7)	(29.5)	(34.8)	(7.0)	(8.1)	(19.9)	(15.9)	(14.5)	(12.6)	(4.3)
	t		0.84	0.21	-1.17	-1.98	-1.94	1.49	-0.28	-1.88	-0.18	-0.32
Urinary or bowel disorders (n=86)	Mean		27.73	54.68	65.87	11.22	12.85	16.4	30.11	19.50	42.56	17.65
	(SD)		(33.3)	(27.1)	(26.5)	(80.0)	(8.27)	(18.0)	(15.8)	(12.5)	(11.7)	(5.8)
	t		-0.47	-0.83	2.55	-0.66	-1.70	0.45	1.14	-3.11	0.04	0.26
Stroke (n=10)	Mean		18.75	21.87	70.31	4.87	8.54	10.41	38.43	15.82	31.69	15.24
	(SD)		(25.8)	(23.74)	(29.07)	(5.45)	(5.4)	(15.2)	(12.8)	(13.61)	(9.2)	(3.0)
	t		-0.82	-3.60	1.32	-2.52	-1.92	-0.74	2.07	-1.76	-2.25	-1.01
	Sig.		0.411	0.001	0.186	0.012	0.054	0.456	0.039	0.078	0.024	0.313

including energy, emotional reaction, pain, physical mobility, sleep, and social isolation compared to patients without respiratory disorders (19).

Similarly, Taichman (2005) studied 155 patients with respiratory disorders, employing another widely used generic measure, the SF-36, in addition to a popular respiratory-specific measure, the St. George's Respiratory Questionnaire (SGRQ) (20). Both the physical and mental component summary scores of the SF-36 (PCS and MCS) were significantly depressed, demonstrating scores comparable with those of other debilitating and life-threatening conditions such as spinal cord injury and metastatic cancer. All domains were affected, with the greatest impairment observed in the general health, physical functioning, and role-physical and role-emotional domains. The SGRQ, and each of its subscales, also demonstrated evidence of substantial impairment. In a subset of patients, the SF-36 PCS correlated reasonably well with other physical assessments, such as 6-minute walk distance (6MWD) ($r = 0.62$) and the body mass index (BMI) ($r = 0.46$), Providing evidence of both convergent and divergent validity.

Results of the present study show that psychiatric veterans with musculoskeletal disorders have lower physical role and physical component summary in quality of life than matched ones without

musculoskeletal disorders. A number of studies have examined and reported relationships between Musculoskeletal symptoms and diminished physical health related quality of life (21-26, 16). Studies have demonstrated that physical activity can improve quality of life in adults with chronic conditions. These associations have typically been examined with respect to a particular chronic condition, such as arthritis (27, 28). Findings of this present study do not show any differences between psychiatric veterans with or without cardiovascular disease.

Juenger et al (29) compared the quality of life of patients suffering from cardiovascular disease with a previously characterized general population as well as those with other chronic diseases. The authors concluded that the total cardiovascular disease sample was characterized by significantly reduced scores in all aspects of quality of life compared with a healthy reference group. Patients with cardiovascular disease showed the same pattern of reduced quality of life as patients on chronic hemodialysis. Thus, it could be argued that all chronic disease conditions have a similar impact on quality of life.

Our findings on cardiovascular disease in psychiatric veterans do not support this conclusion. Our population has an extended network across the country that is supported by veteran affair organization which provides financial support for them. We can consider

this factor as one determinant factor that prevents severe fallacy in quality of life in psychiatric veterans with cardio vascular disease. Numerous studies of cardiac patients (coronary heart disease patients) have reported that lack of social support and social isolation are associated with increased risk of mortality, but the study undertaken by Murberg et al (2001) was the first in detecting the effect of social isolation (a patient's perception that he or she is no longer able to maintain the same degree of social contacts and activities with family, other relatives and friends as previously) on mortality among cardiovascular patients (9). Another finding concerns the relationship between the lack of intimate network support and mortality: for cardiovascular patients, most of them elderly, lack of social support from a spouse seems to be more of a critical factor of fatal outcome than the lack of social support from a primary and secondary network. The authors pointed to two possible explanations: 1) poor network support might be associated with poor compliance to physical and medical regimens and that poor compliance may lead, in turn, to a dismal outcome; 2) it could be also that the association between social isolation and mortality is a reflection of some underlying factors such as subjective health or hopelessness, which have been reported in several studies to be strong predictors of mortality independently of depression (18).

Our findings revealed that diabetic psychiatric veterans have lower vitality than patients without diabetes. Several studies show that diabetes has detrimental effects on a range of health outcomes including health-related quality of life (30, 31, 32). For example, in the Medical Outcomes Study, diabetes was found to impair all dimensions of health except mental health and pain. In one multinational study, it was found to have a notable impact on general health, measured using the Medical Outcomes Short-Form 36 (SF-36) (33). Our study showed that in a psychiatric patient, diabetes influences only vitality as a dimension of quality of life.

Another factor that should be considered is that subjects with diabetes and multiple co-existing chronic medical conditions have poorer health-related quality of life than those without these conditions (34,35). For example, subjects with diabetes and co-existing cardiovascular diseases reported significantly lower scores on RAND-36 social functioning, vitality and health-change scales (34). In another study, subjects with diabetes and co-existing coronary artery disease, peripheral sensory neuropathy and peripheral vascular diseases reported significantly lower scores on several SF-36 scales (35).

In this present study, we demonstrated that psychiatric veterans with urinary and bowel disorders have higher level of bodily pain and lower level of general health. Previous researchers have pointed out that the research on the impact of urinary and bowel disorders have not adequately addressed the role that co morbidity may play in the relationship between urinary incontinence

and quality of life (36). However, some researchers have found that the effects of incontinence on quality of life are mild or confined to a relatively small portion of the population (37, 38,39). Our findings are consistent with several other studies that found that urinary and bowel disorders have greater negative effects on quality of life (37, 40, 41,42).

Finally, we found that psychiatric veterans with stroke have lower physical, social functioning, vitality, and physical component summary than matched ones without stroke. Stroke is a major cause of disability, and when severe, it has a substantial adverse impact on the stroke survivors' health-related quality of life. Factors that have been shown to be consistently associated with lower HRQOL include depression, lower functional status, and greater severity of paralysis. The much lower physical functioning score suggests that many of these patients still encountered limitations or difficulties with their physical activities (43). Our findings confirm that psychiatric veterans with stroke have lower physical activity.

In particular, studies investigating determinants of HRQL following stroke suggest that social functioning may be more important than physical functioning in determining. It is not surprising that social relationships emerged as a major determinant of QoL for stroke patients. An important impact of a stroke is a radical shift in social roles. The reactions and behaviors of socially significant others impacts the QoL of the stroke survivor. In fact, surviving a stroke is necessarily a social effort. A majority of stroke survivors must depend on others for everyday activities (44). Therefore, social relationships are critical for the patients' survival after suffering a stroke, and are of prime importance in QoL of these patients.

Acknowledgments

The authors wish to thank Dr. Naghavi for assistance with data analysis. This work was supported by Mental Health Center of Bonyad Shahid and the Behavioral Sciences Research Center of Baqiyatallah University of Medical Science, Tehran, Iran.

References

1. Katschnig H, Krautgartner M, Schrank B et al. Quality of life in depression. In: Katschnig H, Freeman HL, Sartorius N (eds). Quality of life in mental disorders, 2th ed. Chichester: John Wiley & Sons; 2006.
2. The World Health Organization Quality of Life Assessment (WHOQOL): development and general psychometric properties. Soc Sci Med 1998; 46: 1569-1585.
3. Swan A, Watson HJ, Nathan PR. Quality of life in depression: an important outcome measure in an outpatient cognitive-behavioural therapy group programme? Clin Psychol Psychother 2009; 16: 485-496.
4. Swenson JR, Clinch JJ. Assessment of quality of life in patients with cardiac disease: the role

- of psychosomatic medicine. *J Psychosom Res* 2000; 48: 405-415.
5. Devins GM. Using the illness intrusiveness ratings scale to understand health-related quality of life in chronic disease. *J Psychosom Res* 2010; 68: 591-602.
 6. Testa MA, Simonson DC. Assessment of quality of life outcomes. *The New England Journal of Medicine*. 1996; 18: 835-840.
 7. Bean JF, Vora A, Frontera WR. Benefits of exercise for community-dwelling older adults. *Arch Phys Med Rehabil* 2004; 85: S31-42; quiz S43-34.
 8. Guyatt GH. Measurement of health-related quality of life in heart failure. *JACC* 1993; 22: 185-191.
 9. Murberg TA, Bru E. Social relationships and mortality in patients with congestive heart failure. *J Psychosom Res* 2001; 51: 521-527.
 10. Hope ML, Page AC, Hooke GR. The value of adding the Quality of Life Enjoyment and Satisfaction Questionnaire to outcome assessments of psychiatric inpatients with mood and affective disorders. *Qual Life Res* 2009; 18: 647-655.
 11. Cordesman AH, Wagner AR. *The Lessons of Modern War Volume Two: The Iran-Iraq Conflict*. USA: Westview; 1990.
 12. Karsh E. *The Iran-Iraq War 1980-1988*. London: Osprey; 2002.
 13. Taghipour H, Moharamzad Y, Mafi AR, Amini A, Naghizadeh MM, Soroush MR, et al. Quality of life among veterans with war-related unilateral lower extremity amputation: a long-term survey in a prosthesis center in Iran. *J Orthop Trauma* 2009; 23: 525-530.
 14. Montazeri A, Goshtasebi A, Vahdaninia M, Gandek B. The Short Form Health Survey (SF-36): translation and validation study of the Iranian version. *Qual Life Res*, 2005; 14:875-82.
 15. Higgins P, Campanera JM. (Sustainable) quality of life in English city locations. *Cities* 2011; 28: 290-299.
 16. Watson HJ, Swan A, Nathan PR. Psychiatric diagnosis and quality of life: the additional burden of psychiatric comorbidity. *Compr Psychiatry* 2011; 52: 265-272.
 17. Saarni SI, Suvisaari J, Sintonen H, Koskinen S, Harkanen T, Lonnqvist J. The health-related quality-of-life impact of chronic conditions varied with age in general population. *J Clin Epidemiol* 2007; 60: 1288-1297.
 18. Soler-Soler J, Permanyer-Miralda G. How do changes in lifestyle complement medical treatment in heart failure? *Br Heart J* 1994; 72: S87-91.
 19. Shafazand S, Goldstein MK, Doyle RL, Hlatky MA, Gould MK. Health-related quality of life in patients with pulmonary arterial hypertension. *Chest* 2004; 126: 1452-1459.
 20. Taichman DB, Shin J, Hud L, Archer-Chicko C, Kaplan S, Sager JS, et al. Health-related quality of life in patients with pulmonary arterial hypertension. *Respir Res* 2005; 6: 92.
 21. Bingefors K, Isacson D. Epidemiology, comorbidity, and impact on health-related quality of life of self-reported headache and musculoskeletal pain--a gender perspective. *Eur J Pain* 2004; 8: 435-450.
 22. Coutu MF, Durand MJ, Loisel P, Dupuis G, Gervais S. Measurement properties of a new quality of life measure for patients with work disability associated with musculoskeletal pain. *J Occup Rehabil* 2005; 15: 295-312.
 23. Picavet HS, Hoeymans N. Health related quality of life in multiple musculoskeletal diseases: SF-36 and EQ-5D in the DMC3 study. *Ann Rheum Dis* 2004; 63: 723-729.
 24. Salaffi F, De Angelis R, Stancati A, Grassi W. Health-related quality of life in multiple musculoskeletal conditions: a cross-sectional population based epidemiological study. II. The MAPPING study. *Clin Exp Rheumatol* 2005; 23: 829-839.
 25. Tuzun EH. Quality of life in chronic musculoskeletal pain. *Best Pract Res Clin Rheumatol* 2007; 21: 567-579.
 26. Acil AA, Dogan S and Dogan O. The effects of physical exercises to mental state and quality of life in patients with schizophrenia. *J Psychiatr Ment Health Nurs* 2008; 15: 808-815.
 27. Abell JE, Hootman JM, Zack MM, Moriarty D, Helmick CG. Physical activity and health related quality of life among people with arthritis. *J Epidemiol Community Health* 2005; 59: 380-385.
 28. Brown DW, Balluz LS, Heath GW, Moriarty DG, Ford ES, Giles WH, et al. Associations between recommended levels of physical activity and health-related quality of life. Findings from the 2001 Behavioral Risk Factor Surveillance System (BRFSS) survey. *Prev Med* 2003; 37: 520-528.
 29. Juenger J, Schellberg D, Kraemer S, Haunstetter A, Zugck C, Herzog W, et al. Health related quality of life in patients with congestive heart failure: comparison with other chronic diseases and relation to functional variables. *Heart* 2002; 87: 235-241.
 30. Reddy SS. Health outcomes in type 2 diabetes. *Int J Clin Pract Suppl* 2000: 46-53.
 31. Ahmadi K, Ranjbar-Shayan H and Raiisi F. Sexual dysfunction and marital satisfaction among the chemically injured veterans. *Indian J Urol* 2007; 23: 377-382.
 32. Ahmadi K, Reshadatjoo M, Karami GR, Sepehrvand N., Ahmadi P. Vicarious PTSD in Sardasht chemical warfare victims' offspring. *Procedia - Social and Behavioral Sciences* 2010; 5: 170-173.
 33. Alonso J, Ferrer M, Gandek B, Ware Jr JE, Aaronson NK, Mosconi P, et al. Healthrelated quality of life associated with chronic conditions in eight countries: results from the International Quality of Life Assessment (IQOLA) Project. *Quality of Life Research* 2004; 13: 283-98.
 34. de Visser CL, Bilo HJ, Groenier KH, de Visser W and Jong Meyboom-de B. The influence of cardiovascular disease on quality of life in type 2 diabetics. *Qual Life Res* 2002; 11: 249-261.

35. Lloyd A, Sawyer W, Hopkinson P. Impact of long-term complications on quality of life in patients with type 2 diabetes not using insulin. *Value Health* 2001; 4: 392-400.
36. Fultz NH, Fisher GG and Jenkins KR. Does urinary incontinence affect middle-aged and older women's time use and activity patterns? *Obstet Gynecol* 2004; 104: 1327-1334.
37. Fultz NH, Burgio K, Diokno AC, Kinchen KS, Obenchain R, Bump RC. Burden of stress urinary incontinence for community-dwelling women. *Am J Obstet Gynecol* 2003; 189: 1275-1282.
38. Andersson G, Johansson JE, Garpenholt O, Nilsson K. Urinary incontinence--prevalence, impact on daily living and desire for treatment: a population-based study. *Scand J Urol Nephrol* 2004; 38: 125-130.
39. Ahmadizadeh MJ, Ahmadi K, Eskandari H, Falsafinejad MR, Borjali A, Anisi J, Teimoori M. Improvement in quality of life after exposure therapy, problem solving and combined therapy in chronic war-related post traumatic stress disorder: Exposure therapy, problem solving and combined therapy in war-related PTSD, *Procedia - Social and Behavioral Sciences* 2010;5: 262-266.
40. Fultz NH, Herzog AR. Self-reported social and emotional impact of urinary incontinence. *J Am Geriatr Soc* 2001; 49: 892-899.
41. Coyne KS, Payne C, Bhattacharyya SK, Revicki DA, Thompson C, Corey R, et al. The impact of urinary urgency and frequency on health-related quality of life in overactive bladder: results from a national community survey. *Value Health* 2004; 7: 455-463.
42. Somani BK, MacLennan SJ, N'Dow J. Quality of Life With Urinary Diversion. *European Urology Supplement* 2010; 9: 763-771.
43. Kong KH, Yang SY. Health-related quality of life among chronic stroke survivors attending a rehabilitation clinic. *Singapore Med J* 2006; 47: 213-218.
44. Rothwell PM. Should transient ischaemic attack and minor ischaemic stroke be managed as a medical emergency? *Horizons in Medicine (RCP London)* 2004; 16: 81-88.