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## Evaluation of health-related quality of life of women living in a city center in the east of Turkey

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**Aim:** To evaluate the health-related quality of life of women living in Van city center by SF-36 and its association with the women's characteristics.

**Materials and methods:** The women (n = 1527) answered a questionnaire through a face-to-face interview, and some measurements were made. The variations of physical component score (PCS) and mental component score (MCS) of SF-36 were investigated by non-parametric tests, and by linear regression analysis.

**Results:** The percentage of early marriages among married women was 55.6. Number of pregnancies per married woman was  $4.5 \pm 2.8$ , the lowest mean in vitality ( $44.0 \pm 20.6$ ) and the highest mean in physical functioning ( $73.2 \pm 28.2$ ) components of SF-36. The women's means on PCS was  $43.7 \pm 11.4$ , and on MCS was  $37.2 \pm 8.9$ . In regression analysis, the age of marriage, the number of live births, and presence of still birth-spontaneous miscarriage, and BMI were associated with PCS; the age of marriage, smoking cigarette, physical exercise and BMI were associated with MCS.

**Conclusion:** Policies to improve the status of women and interventions for reproductive health and for promotion of healthy behavior are needed to enhance the HRQOL of women living in the city of Van.

**Key words:** Women, Health related quality of life, SF-36

### Türkiye'nin doğusunda bir il merkezinde yaşayan kadınların sağlıkla ilgili yaşam kalitelerinin değerlendirilmesi

**Amaç:** Bu kesitsel çalışma Van il merkezinde yaşayan kadınların SF-36 Ölçeği ile sağlıkla ilgili yaşam kalitelerini ve sosyodemografik özelliklerle ilişkisini incelemeyi amaçlamıştır.

**Yöntem ve gereç:** Kadınlar (n = 1527) bir yüz yüze görüşülerek bir anket formunu cevaplamış ve bazı ölçümler yapılmıştır. SF-36 ölçeğinin fiziksel bileşen puanı (FBP) ve ruhsal bileşen puanlarının (RBP) değişimi non-parametrik testlerle lineer regresyon analiziyle incelenmiştir.

**Bulgular:** Evli kadınlar arasında erken evliliklerin yüzdesi 55,6'dır. Evli kadın başına gebelik sayısı  $4,5 \pm 2,8$ , SF-36 ölçeği bileşenlerinden en düşük ortalama canlılık bileşeninde ( $44,0 \pm 20,6$ ), en yüksek ortalama fiziksel işlevsellik bileşenindedir ( $73,2 \pm 28,2$ ). Kadınların FBP ortalaması  $43,7 \pm 11,4$ , RBP ortalaması ise  $37,2 \pm 8,9$ 'dir. Regresyon analizinde yaş, ilk evlenme yaşı, canlı doğum sayısı, ölü doğum-spontan düşük yapma, BKİ FBP ile ilişkili, ilk evlilik yaşı, sigara içme, fizik egzersiz yapma ve BKİ RBP'ı ile ilişkili bulunmuştur.

**Sonuç:** Van il merkezinde yaşayan kadınların yaşam kalitelerini iyileştirmek için kadınların statülerini yükseltecek politikalara, üreme sağlığını ve sağlıklı davranışları geliştirmeye yönelik müdahalelere ihtiyaç vardır.

**Anahtar sözcükler:** Kadın, Sağlıkla ilgili yaşam kalitesi, SF-36

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## Introduction

Quality of life is defined by the World Health Organization (WHO) as “individuals' perceptions of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns” (1). Due to increased need to produce data not only on measuring the level of population's health and the success of health services using classic indicators such as mortality and morbidity indices but on individuals' health perceptions, the concept of health-related quality of life (HRQOL) and its determinants have evolved since the 1980s to encompass those aspects of overall quality of life that can be clearly shown to affect health—either physical or mental (2). According to CDC, the term “HRQOL” refers to the physical, psychological, and social domains of health, seen as distinct areas that are influenced by a person's experiences, beliefs, expectations, and perceptions (2). HRQOL helps to better understand the burden of disease on public level. It also helps to screen and stratify patients for treatment, to demonstrate treatment efficacy, to facilitate regulatory approval of new therapies, to substantiate marketing claims, to raise consumer and clinician awareness, and to improve the quality of care in daily clinical practice (3).

Gender is one of the main determinants of health-related quality of life. Therefore, it is needed to develop gender sensitive concern on the health related-quality of life area. Examining the gender aspects of how health and disease are perceived by women, and how the health care system and professionals perceive the health needs of women will help us to understand women's health problems better. Today, in the international scientific literature, there is an increasing number of studies conducted to evaluate women's health-related quality of life. The number of articles including key words “women” and “health-related quality of life” in their headings according to a Medline database search was 183 in July 2010. The studies conducted on this subject examine the influences of socio-demographic characteristics such as gender, and general and reproductive health problems of women on their health-related quality of life (4-6). Another group of studies aim to investigate the results of treatments and health services on

HRQOL of women (7). In recent years researchers have tried to show the negative impacts of intimate partner violence on HRQOL of women too (8). The measurement of HRQOL of women is conducted using scales that have specific purposes, such as menopause, menorrhagia, or pregnancy. The Women's Health Questionnaire, Dartmouth COOP Charts for Pregnant Women, and Menorrhagia Severity Scale were examples of these scales (9).

Studies carried out in Eastern Anatolia and throughout Turkey to determine health levels of women are mostly on basic health indicators and reproductive health and our information on health-related quality of life of women is insufficient.

Van is a city in Eastern Anatolia and 40% of its approximately one-million population live in the city center and the population of the city center has increased by 60.3% between the years 1990 and 2000 (10). The city's location within the country, its natural conditions and social factors such as forced rural-urban migration in the 1990s and rapid and dramatic increase in the city's population and scarcity of employment opportunities adversely affect the health of people primarily women living in the city. Data for this article were based on the “Research for Determining the Socio-Demographic Characteristics, Quality of Life and Health Level of Urban Population in the Central District, City of Van”, one of the components of Van Project (VAP) carried out by TÜBİTAK (11). The main report of the study was prepared by the authors of this article in 2003 and published in several scientific environments (11,12). The aim of this study was to document the relationships between some socio-demographic and health-related characteristics of women who were at the age of 15 and over living in the city center of Van and HRQOL which was determined by MOS SF-36 Scale, and to compare their scores with those of women in other populations.

## Materials and methods

In this cross-sectional study, the sample size was calculated using the infant mortality rate of the Eastern Anatolian region (61.5‰) ( $n = 4300$ ), and 0.5% error and with 95% confidence level by using the formula when the universe population was known to determine the indicators of health of people living in

Van city center. The “household” was determined as the sampling unit. The number of persons living per household was 6 for the region and the number of household which had to be reached was determined as 717 and the sampling size was reached 1000 after adding the reserve part to the sample. The addresses were identified by Van Geographical Information System based on household satellite photographs of the city. Due to several reasons, 65 houses could not be reached (6.5%), 1613 women at the age of 15 and over were interviewed, and 1527 women completed MOS SF-36 Scale. Data of this study were collected in 2002 by a group that consisted of the last year students and teachers of the Vocational School of Health Services of Yüzüncüyıl University and staff of Van Local Health Authority by an interview-administered face-to-face questionnaire. Questionnaire forms were made up of questions on socio-demographic characteristics, health conditions, fertility characteristics and life styles of women and SF-36 Scale. No significant difference was found between the women who completed the interview and who halted the interview with respect to characteristics other than marital status.

The general purpose “36-Item Short-Form Health Survey” (The MOS 36-Item Short-Form Health Survey; SF-36) is one of the best known scales used to measure the health-related quality of life, a subjective concept that is constituted at perception level. SF-36 is a generic measure of health status and quality of life that was developed by the Rand Corporation in the US during the 1970s, and it was subsequently refined and used in the Medical Outcomes Study (13,14). The SF-36 consists of 36 questions evaluating the respondent’s perception of their performance in terms of 8 dimensions of daily life: physical functioning (PF), role physical (RP), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE), and mental health (MH) dimensions. Responses from the SF-36 are summed and then transformed to give 8 scores with a 0-100 scale where higher scores indicate better function in that dimension. There is an additional non-scaled single item asking respondents about health changes over the past year, and 2 further summary measures of physical (PCS) and mental (MCS) health can be calculated (15). The physical functioning, role physical, bodily pain, and general health scales are aggregated to make a physical health summary

measure (PCS) (15). The role emotional, social functioning, mental health, and vitality scales are aggregated to give a mental-health summary measure (MCS) (15). The SF-36 has been tested and proven to be a reliable, valid and sensitive measure of health status in the general population in various countries including Turkey (16). The normative values and summary scores of SF-36 of Turkish population were calculated by Demiral et al. ( $46.6 \pm 9.9$  for PCS and  $47.3 \pm 9.8$  for MCS) (17). Measurements were conducted to determine some characteristics of women such as height and weight. In statistical analysis, bivariate associations were examined by Mann-Whitney U and Kruskal-Wallis tests, since the distributions of the 8 domains were skewed. Median and average scores of SF-36 Scale components, standard deviations, the percentages of ceiling and floor scores were determined and statistical significance level was determined as 0.05. Associations among characteristics of women and PCS and MCS were examined by linear regression analyses. Based on the finding that there was a very strong association between the presence of a chronic disease diagnosed by a physician or a health problem in the last 15 days and PCS and MCS made it impossible to investigate the association of PCS and MCS with other variables; thus, disease status variables were not included in the variable set of regression analyses.

### Findings

Age of participant women varied between 15 and 95 (mean =  $33.0 \pm 14.8$ , median = 29), and 62.5% of the women were not the graduates of any educational institution. The women who had no health insurance comprised 36.1% of the group, and 72.7% were married at least one time. It was determined that 2.4% of the women were working, and 33.8% migrated to Van from other sites. While smoking habit among women was the case for 22.8%, 39.9% of them indicated that they were doing physical activity. The average BMI of women was 25.8 (SD  $\pm 5.5$ ), 35.8% of women were overweight, and 18.5% of them were obese according to the BMI scores. Women expressed that 19.9% of them had at least one chronic illness, and the most declared diseases were “rheumatism” (11.5%) and “anemia” (8.5%), and gastritis/ulcer (8.1%). Of the women, 44.1% had had a health complaint within the last 15 days. The women whose

age at first marriage was under 18 comprised 55.6% of the group (mean age at first marriage = 17.6 ± 3.4). During the study, 10.0% of the women whose age was 18 years or lower were married. The average number of total pregnancies per married women was 5.7 (SD ± 4.0), live birth was 4.9 (SD ± 3.6), stillbirth was 0.11 (SD ± 0.6), spontaneous abortion was 0.38 (SD ± 0.9), and voluntary abortion was 0.2 (SD ± 0.7). Of the women who were in the fertile period, 54.3% used no family planning methods.

According to the first question of SF-36 Scale in which women evaluated the change in their health compared to the previous year, 56.2% of the women within the 50-64 age group and 68.9% of the women within the over 65 age group assessed their health condition as worse than the previous year. The change in general health in due course according to the age groups was statistically significant (P < 0.001). Considering the averages and median scores of 8

component scores of the SF-36 Scale, it was seen that the lowest average and median scores were in VT (44.0 ± 20.6; 80.0) and the highest average and median scores were in PF (73.2 ± 28.2; 45.0). Ceiling effect is moderately high for the RP and RE Scales, with 42.2% and 41.8% of participating women respectively. Ceiling effect is not detected on GH, VT, SF, and MH Scales. The SF-36 scores according to age groups were higher in younger age groups and a decrease was determined in scores with increasing age in general. The 15-24 age groups' median score was 100.0 for RP, and the group who were older than 45 years old had median score as 0.0 in this component. Differences between the age groups in median scores for the components of SF-36 except SF were significant (P < 0.001) (Table 1).

The percentage of women who had lower scores than the normative values of Turkey was 55.9% for PCS and (46.6 ± 9.9) 85.7% for MCS (47.3 ± 9.8). PCS

Table 1. Averages, standard deviations, and medians of SF-36 Scale components according to age group (Van city center, 2002).

	SF-36 components							
	PF	RP	BP	GH	VT	SF	RE	MH
Mean ± SD	73.2 ± 28.2	53.1 ± 45.5	54.6 ± 29.9	50.4 ± 20.9	44.0 ± 20.6	46.5 ± 13.6	53.0 ± 44.6	52.8 ± 19.9
Median (n = 1527)	80	75	52	52	45	50	66.7	52
% floor*	2.5	37.4	2.6	0.4	1.3	0.6	35.6	0.7
% ceiling *	26.7	42.2	20.3	0.2	0.4	0.4	41.8	0.5
Age groups (n)								
15-24 (n = 561)								
Mean ± SD	86.1 ± 19.1	69.0 ± 41.0	64.0 ± 28.4	56.2 ± 19.7	49.4 ± 20.7	46.4 ± 13.7	62.0 ± 42.4	55.2 ± 20.4
Median	95	100	61	57	50	50	66.7	56
25-34 (n = 407)								
Mean ±SD	78.8 ± 22.8	54.4 ± 44.9	56.2 ± 30.9	52.5 ± 20.5	44.2 ± 20.3	47.4 ± 13.2	51.9 ± 44.7	52.1 ± 19.4
Median	85	75	52	55	45	50	66.7	52
35-44 (n = 236)								
Mean ± SD	66.4 ± 27.1	41.4 ± 45.0	45.9 ± 26.1	45.6 ± 20.0	41.6 ± 18.7	46.6 ± 12.9	47.3 ± 44.1	51.8 ± 19.1
Median	70	25	41	45	40	50	33.3	48
45-54 (n = 163)								
Mean ± SD	57.3 ± 29.7	39.7 ± 44.9	44.1 ± 26.8	45.0 ± 19.3	38.3 ± 19.0	45.3 ± 15.2	46.4 ± 45.4	49.2 ± 19.9
Median	60	0	41	45	40	50	33.3	48
55-64 (n = 99)								
Mean ±SD	43.8 ± 29.4	27.3 ± 40.9	42.1 ± 28.3	36.6 ± 19.4	36.0 ± 19.0	44.1 ± 14.0	41.8 ± 46.5	51.8 ± 19.2
Median	40	0	41	35	35	50	0	52
65+ (n = 61)								
Mean ±SD	34.2 ± 32.3	21.3 ± 39.2	38.9 ± 29.3	38.4 ± 20.7	31.8 ± 20.3	47.5 ± 10.2	35.5 ± 45.5	50.2 ± 20.4
Median	25	0	32	37	30	50	0	52
P**	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.297	< 0.001	0.013

\*% floor and % ceiling values express the percentage of women who got least (0) and most (100) from the component.

\*\*Kruskal-Wallis test

and MCS averages of women and the association of PCS and MCS medians with some socio-demographic variables were examined (Table 2). PCS and MCS averages of women were calculated as  $43.7 \pm 11.4$  and  $37.2 \pm 8.9$ , respectively. It was determined that PCS medians of women changed significantly according to age groups; educational backgrounds; marital status; availability of social security; working status; migration to Van; BMI; doing physical exercise; existence of chronic disease diagnosed by physician

and experiencing a health problem within the last 15 days ( $P < 0.05$ ). According to the smoking status, difference between the PCS medians was not significant ( $P > 0.05$ ). It was determined that MCS medians of women changed significantly according to their smoking status, existence of a chronic disease diagnosed by a physician, and experiencing a health problem within the last 15 days ( $P < 0.05$ ). No association was found among women's BMI medians and age groups, educational backgrounds, marital

Table 2. SF-36 Scale summary scores' averages, standard deviations, and medians according to socio-demographic characteristics of women (Van city center, 2002).

Characteristics	SF-36 summary scores		Statistical analysis
	PCS Mean $\pm$ SD Median	MCS Mean $\pm$ SD Median	
Total (n = 1527)	$43.7 \pm 11.4$ 44.6	$37.2 \pm 8.9$ 36.9	-
Age groups			
15 - 24 (n = 561)	$49.0 \pm 9.4$ 50.4	$37.3 \pm 9.3$ 35.6	$p_1^* < 0.001$ $p_2^* = 0.224$
25 - 34 (n = 407)	$45.5 \pm 10.1$ 46.7	$36.3 \pm 8.6$ 35.6	
35 - 44 (n = 236)	$39.9 \pm 10.4$ 40.3	$37.4 \pm 8.5$ 37.9	
45 - 54 (n = 163)	$38.0 \pm 10.2$ 37.7	$37.1 \pm 8.6$ 37.5	
55 - 64 (n = 99)	$32.9 \pm 10.7$ 32.2	$38.7 \pm 9.3$ 37.5	
65 + (n = 61)	$30.7 \pm 10.3$ 29.3	$38.7 \pm 8.8$ 36.9	
Education			
No education (n = 954)	$42.0 \pm 11.6$ 42.6	$36.9 \pm 8.7$ 36.4	$p_1^* < 0.001$ $p_2^* = 0.219$
Elementary-Secondary (n = 446)	$46.0 \pm 10.3$ 46.6	$37.7 \pm 9.2$ 38.1	
High school & higher- student (n = 127)	$48.7 \pm 10.3$ 50.9	$37.4 \pm 9.5$ 36.8	
Marital status			
Single (n = 416)	$50.0 \pm 9.4$ 51.2	$37.2 \pm 9.3$ 36.9	$p_1^* < 0.001$ $p_2^* = 0.971$
Married (n = 1010)	$42.3 \pm 10.9$ 42.8	$37.1 \pm 8.7$ 37	
Widow- divorced (n = 101)	$32.8 \pm 9.9$ 32	$37.4 \pm 9.6$ 36.8	

Table 2. Continued.

Characteristics		SF-36 summary scores		Statistical analysis
		PCS Mean ± SD Median	MCS Mean ± SD Median	
Social security	Yes (n = 976)	44.6 ± 11.1 46.1	37.0 ± 9.1 36.5	$p_1^{**} = 0.017$ $p_2^{**} = 0.547$
	No (n = 551)	43.2 ± 11.5 43.8	37.2 ± 8.8 37.1	
Working status	Yes (n = 37)	48.1 ± 12.0 54.1	37.6 ± 10.2 39.8	$p_1^{**} = 0.012$ $p_2^{**} = 0.577$
	No (n = 1490)	43.6 ± 11.4 44.5	37.1 ± 8.9 36.9	
Migration	Yes (n = 1008)	42.9 ± 11.3 46.6	37.3 ± 9.0 36.8	$p_1^{**} < 0.001$ $p_2^{**} = 0.515$
	No (n = 514)	45.5 ± 11.2 43.6	37.0 ± 8.8 37.1	
Smoking	Yes (n = 483)	43.7 ± 10.8 44.3	35.1 ± 9.1 34.9	$p_1^{**} = 0.545$ $p_2^{**} = 0.000$
	No (n = 1179)	43.7 ± 11.7 45	38.1 ± 8.7 37.9	
BMI (kg/m <sup>2</sup> )	Underweight (n = 26)	44.6 ± 13.2 48.1	35.8 ± 8.0 35.1	$p_1^{**} < 0.001$ $p_2^{**} = 0.157$
	Normal (n = 600)	44.8 ± 11.0 46.1	36.9 ± 8.9 36.4	
	Overweight / obese (n = 829)	38.4 ± 11.3 37.7	38.0 ± 9.0 38.3	
Physical exercise	Yes (n = 375)	42.6 ± 11.0 45.4	36.8 ± 8.9 37.1	$p_1^{**} = 0.012$ $p_2^{**} = 0.246$
	No (n = 1152)	44.1 ± 11.5 44.6	37.2 ± 8.9 36.9	
Chronic disease	Yes (n = 302)	37.9 ± 10.7 37.1	35.9 ± 8.6 35.3	$p_1^{**} < 0.001$ $p_2^{**} = 0.002$
	No (n = 1213)	45.2 ± 11.1 46.4	37.5 ± 9.0 37.5	
Health complaint during previous two weeks	Yes (n = 674)	40.5 ± 11.0 39.7	36.2 ± 8.9 35.5	$p_1^{**} < 0.001$ $p_2^{**} = 0.015$
	No (n = 853)	46.3 ± 11.0 48.1	37.9 ± 8.9 38.1	

\*Kruskal-Wallis test    \*\*Mann-Whitney U test

$p_1$  = PCS p value

$p_2$  = MCS p value

status, social security, working status, migration, or taking physical exercise in bivariate analyses ( $P > 0.05$ ).

According to linear regression analysis results, increase in age, decrease in the first marriage age, increase in number of live birth, history of stillbirth-spontaneous abortion, and increase in BMI were associated with the decrease in PCS. Similarly, in linear regression analysis conducted for MCS, it was determined that decrease in the first marriage age, smoking, not doing physical exercise, and decrease in BMI were variables associated with the decrease in MCS (Table 3).

**Discussion**

Findings of this study demonstrated that there were serious problems of women in city center of Van in terms of their general and reproductive health. It was found that the majority of these women had no formal education, almost none of them had an income generating job, 1 in 3 women had settled in Van city

center by immigrating during a period of her life, and 1 in 5 women had a chronic illness, and more than half of them were overweight or obese. It was seen that more than half of the women got married at an early age and had history of more than 5 pregnancies; 1 in 4 women had spontaneous or voluntary abortion; approximately 1 out of every 2 women who were at the reproductive age did not use any family planning methods. Moreover, 32.4% to 68.9% of women, according to the age groups, reported that their perception of general health status was poorer than the previous year, which also supported these findings.

Average scores of women for the 8 components of the SF-36 Scale and PCS and MCS were low compared with the women who participated in the studies conducted in İzmir, Greece, Romania, Lebanon, Ireland, and Canada (17-22). While scores of women living in İzmir were found high in all components compared with the women in Greece and in some components with the women in Canada, all scores of women living in Van city center were low compared

Table 3. Statistical associations of socio-demographic characteristics of women with PCS and MCS of SF-36 Scale by linear regression analysis (Van city center, 2002).

	P	Beta	95% Confidence Interval
PCS*			
Age	< 0.001	-0.248	-0.302 to -0.195
First marriage age	0.004	1.758	0.574 to 2.942
Number of live births	0.002	-0.345	-0.562 to -0.128
Stillbirth - spontaneous abortion	0.003	-2.083	-3.434 to -0.732
BMI	0.011	-0.137	-0.243 to -0.032
MCS**			
First marriage age	0.016	1.220	0.232 to 2.208
Smoking	< 0.001	-1.685	-2.236 to -1.134
Not taking physical exercise	0.042	-1.278	-2.508 to -0.049
BMI	0.020	0.104	0.016 to 0.192

\* In the linear regression analysis, the association between the variables education, health insurance, working status, physical exercise, smoking, alcohol, marital status, accident history, and migration history and the PCS was obtained as not-significant.

\*\* In the linear regression analysis, the association between the variables age, education, health insurance, working status, alcohol, marital status, total number of live birth, number of stillbirth and spontaneous abortion, accident history, and migration history and the MCS was obtained as not-significant.



with the women in other studies. Regarding the percentage of women whose scores were lower than the normative values of women on PCS and MCS, the result indicated that health perceptions of women living in Van city center were considerably poor compared with the women living in more developed parts of the country and developed countries (17,18,22). Women's SF-36 scale component score averages and medians were lower if they were older, their educational level was low, they were widowed or divorced, they had no social insurance, they did not work, they had immigrated to Van city center, they were overweight or obese, they had chronic health problems, and if they had experienced a health problem within the 2 weeks prior to the study. Perceptions of older women that their health status was significantly lower than it was in the previous year strengthened the above-mentioned conclusion. The only exception to this point of view was the SF component. There was not a statistically significant change between women's scores in the study group that were taken from this component and getting older. There are similar or different results in studies carried out in other countries (23-25). This finding implies that perceptions of women on social functioning did not change widely depending on age. Alternatively, questions in this component may be inadequate in measuring social functionalities of women in the study group since the factor load of the social functionality component was low (17). These findings gave rise to the thought that problems such as chronic diseases and increases in dependency that emerged due to these diseases were also important in addition to the social problems negatively affecting the health of old women living in Van city center.

In this study, some socio-demographic characteristics in relation to the SF-36 Scale, PCS was determined. Six out of 10 women in Van city center had not completed a formal education program and they were the ones whose HRQOL perception was the worst. This situation indicates that receiving education is an important factor in relation to the HRQOL for women in Van city center. Marital status belongs to the set of factors that influence health of women, especially reproductive health, in all dimensions. In this group, while single women were the best in terms of the HRQOL, widow-divorced

women were in the worst situation. Almost all single women were very young and widow-divorced women were in the advanced age group. Therefore, age may be the confounding variable for marital status. Similarly, in a study in Greece, single women got the highest scores from the SF-36 Scale components (18). On the other hand, in a study in Norway, it was seen that the best scores were received by the women who were married or lived together (23). Social insurance influenced PCS of women as much as that of men living in Van city center. However, this effect was more apparent in men (12). Although there were not many working women in Van city, PCS average of working women was considerably higher than that of the women who did not work. Considering this situation, it can be stated that working influenced the physical health perceptions of the women in a positive way no matter what type of job they did. Migration was a phenomenon that affected the majority of the men and women as well. Migration negatively influenced the physical health perception of women. Furthermore, it should be considered that factors such as the type, timing, and origin of migration were also important in terms of the effect of the migration on the HRQOL of women. Obesity has been increasingly recognized as a public health concern in different countries due to its adverse consequences, such as diabetes mellitus, heart disease, various cancers, arthritis, and premature death (26). Studies that examine the association of obesity and the HRQOL indicate that deviation from the normal BMI negatively affects the life quality (27).

This study also showed that increase in BMI of women lowered the PCS, but not MCS. Physical exercise at least 2 or 3 times a week increased the PCS of women in Van city center. This finding is also similar with other studies that show the positive effect of physical exercise on the HRQOL (28). The PCS of women who had chronic health problems were lower. The most frequent health problem declared by women was "rheumatism". In addition, a study demonstrated that degenerative arthritis ranked first among the chronic health problems that affect SF-36 scores (29).

Contrary to the PCS, the associations of the variables socio-demographic characteristics and reproductive health status with the MCS remained

limited in this study. It was seen that smoking, having a chronic health problem, and having experienced a health problem within the last 2 weeks were associated with the MCS. In one of the few studies that examined the association between cigarette smoking and HRQOL, significant decreases were shown in components of both physical and mental health of especially heavy smokers (30). These findings indicate that there may exist further different factors dominantly influencing the mental health of women living in Van city center. Average scores of women for all components of SF-36 Scale were lower compared to men living in Van city center (14). In terms of gender, the highness on scores of SF-36 Scale in favor of men was also apparent in other studies (23-27). However, in a study in Ireland, no gender difference was found regarding SF-36 Scale's components (22). Unlike other studies, a previous study in Van revealed that SF average score of men in SF-36 component was 1.7 times higher than women's (12).

In linear regression analysis, which was conducted to examine the association among characteristics of women and SF-36 Scale's PCS and MCS, variables in association with the PCS were determined as follows: age, first marriage age, existence of stillbirth - spontaneous abortion, the number of live births, and BMI. The variables in relation to the MCS were first marriage age, smoking, not taking physical exercise, and BMI. When these findings were evaluated overall, it is possible to group the variables in association with HRQOL under 3 main headings. First of these are influences that come into existence by getting older, the second is negative reproductive health

consequences related to early marriage, and the third is problems related to healthy life behavior such as obesity, lack of physical exercise, and smoking. In linear regression analysis, the association of reproductive characteristics of women with PCS was considerable. Early marriage was in relation with both summary scores of SF-36. BMI was found to be associated with both physical and mental summary scores of SF-36. Increase in BMI coexisted with a decrease in PCS but an increase in MCS. This finding indicates that weight gain had negative consequences on women's perception of physical health in Van city center.

Among the limitations of this study are a lack of data on factors that may influence the HRQOL of women such as domestic violence, forced marriage, economic condition, and other characteristics of women in the region. The power of the sample to represent of Van City center is high; however, as in all cross-sectional studies it is not possible to build a casual association between the variables in this study.

In conclusion, the different dimensions of health and HRQOL of women which were discussed above should be dealt with together in a holistic and women's health based approach due to the strong relationships between each other to increase the level of health of women in Van city center. Measures should be taken for the welfare of elderly women, for prevention of early marriages and negative reproductive health consequences, and for supporting healthy life behavior such as healthy nutrition so as to increase the HRQOL of women in Van.

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