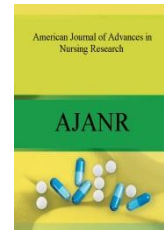




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SEXUAL DYSFUNCTION AND QUALITY OF LIFE IN PATIENTS WITH HEART FAILURE

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ABSTRACT

Heart failure (HF) has an important effect on different aspects of a patient's quality of life (QoL), including sexual function. This descriptive study was conducted in order to examine sexual dysfunction (SD) and QoL in patients with HF and evaluate factors affecting them. The sample of the study consisted of 225 married patients who admitted to a private hospital with a diagnosis of HF in the western part of Turkey between January 2011 and January 2012 and were selected according to the limitations. Data of the study was obtained by using the data sociodemographic data form, International Index of Erectile Function (IIEF), the Index of Female Sexual Function (IFSF) and the SF-36 QoL Scale. Data was analysed in the SPSS 15.0 and evaluated with descriptive statistics and the Mann Whitney U test. Most of the patients (85.3%) stated that their marital and sexual lives were affected after the diagnosis of the disease was established. The mean total score of IFSF was 27.04 ± 3.72 . The mean total score of erectile function from the subscales of the IIEF was 15.61 ± 3.45 . Sexual dysfunction was found in 81.5% of the female patients and moderate erectile dysfunction (ED) in 50.7% of the male patients. The mean scores from the subscales of SF-36 were found significantly low. It was discovered as a result of the study that QoL of patients with HF was impairment and SD was found in the majority of the female patients and ED in half of the male patients.

INTRODUCTION

Heart failure (HF) is defined by the American College of Cardiologists and American Heart Association as "a complex clinical syndrome that can result from any structural or functional cardiac disorder that impairs the ability of the ventricle to fill with or eject blood" [1,2]. Advanced age, coronary artery disease, dyslipidaemia, diabetes, obesity, hypertension, smoking and chronic renal failure is stated as major risk factors for heart failure[2-4].

Heart failure is a major health problem, with an increasing incidence all over the world [2-5]. The prevalence of heart failure in the general population in Europe and the United States ranges from 1% to 12% [2]. It is more frequent in men than in women and increases with age [2,3,6]. Annual incidence was found to be 0.05% to 0.2% in various studies performed [2-4,7]. Heart failure is a major health problem in our country and affects a significant portion of the population. The number of epidemiological studies to determine the incidence and prevalence of heart failure in Turkey is limited. According to data from the HAPPY study (Study for Prevalence and Determinants of Heart Failure) conducted

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to defined the prevalence of heart failure in Turkey, absolute values of the prevalence of adult heart failure and asymptomatic left ventricular dysfunction are respectively 2.9% and 4.8%; and the estimated values are 6.9% and 7.9%, respectively. When data from this study was compared with similar population studies of the western countries, the prevalence of heart failure in Turkey was found significantly higher than these countries despite the fact that Turkey has a population younger than these countries [5].

Heart failure is characterized by oedema, severe fatigue and dyspnea, worsening functional status, episodic adverse cardiac events and repeated hospital readmissions. Heart failure has a major effect on the quality of life (QoL) of patients, in physical, mental and social domains especially in their work lives and relationships with their families and friends [8-15].

Sexuality is an important topic across the life continuum. For many individuals, sexuality is a significant aspect of their quality of life [16]. Sexual problems are common in both male and female HF patients, in especially younger patients and those with a partner. These sexual problems can contain erectile dysfunction (ED), orgasmic difficulties, an avoidance of interest in sex since living with HF, being afraid of having sex, the partner being frightened to have sex or being overprotective [17,18].

Several studies the prevalence of ED in HF patients was found to be 74% and 84% [19-21]. Although there is no sufficient data related to sexual problems in women with heart failure, it is reported that these women encounter more sexual problems compared to normal healthy population. It was determined in the study performed by Schwarz and colleagues (2008) that 80% of women with heart failure experienced sexual problems, 80% had reduction in lubrication and 76% had failed sexual intercourse [20]. Due to the lack of sufficient data about the subject matter in our country, this study was performed for the purposes of examining sexual dysfunctions and quality of life of patients with HF and evaluating factors affecting.

MATERIALS AND METHODS

The descriptive study was carried out in a private hospital in the western Turkey. Permission was obtained from the Ethics Committee of the University before the study and the Helsinki Declaration of Human Rights was adhered. Population of the study consisted of patients who earlier were diagnosed with heart failure and visited a private hospital in the western Turkey between January 2011 and January 2012 for routine controls. 225 married patients who were aged 18 and above and agreed to participate in the study were included in the sampling of the study.

Criteria for inclusion in the sampling;

- To agree on participating in the study
- Not to have any perception disorder
- To be married or have a regular sexual partner
- To be aged above 18 and below 65
- To have a diagnosis of heart failure established one year ago
- New York Heart Association (NYHA) Class I-II and III patients
- Not to receive hormone replacement therapy
- Not to have had hysterectomy (for female patients)

Data was obtained by using a general information form containing socio-demographic characteristics and risk factors for HF and sexual dysfunction, the international sexual function evaluation forms Index of Female Sexual Function (IFSF), International Index of Erectile Function Evaluation Form for Male (IIEF) and the SF-36 Quality of Life Scale. Eligible patients with HF were defined and requested to join the present study by nurse research assistant. Patients finished the questionnaires with the nurse research assistant in participation available to answer any questions. In some patients, the nurse research assistant read the questionnaires to patients. Generally, it applied about 25-30 minutes to complete the questionnaires.

International Index of Erectile Function (IIEF):

The International Index of Erectile Function was developed and validated by Rosen et al, with the purpose to create a short and reproducible questionnaire to measure the erectile function that is culturally, linguistically and psychometrically valid [22]. This index was translated into Turkish by the Turkish Society of Andrology and validity studies for the form were carried out [23]. It is worth noting that IIFE was developed for exclusive use in relationship between men and their partners. The questionnaire consists of 15 questions, grouped in five subscales: erectile function (six items), orgasmic function (two items), sexual desire (two items), sexual satisfaction (three items) and general satisfaction (two items). Each question has a value ranging from 1 to 5, and the sum of the answers results in the final score for each domain, with low values indicating a bad quality sex life.

The erectile dysfunction can be classified in four categories, as of the erectile function domain, ranging from a minimum score of 6 to a maximum of 30, for sexually active patients. Severity of erectile dysfunction is evaluated as severe (score 6 to 10), moderate (score 11 to 16), mild (score 17 to 25) and no dysfunction (score 26 to 30). This form that can be applied to those who have had a sexual intercourse within the last month will be scored as negative and construed as no sexual dysfunction or less as the score increases [22,23].



Index of Female Sexual Function (IFSF): A 9-item, self-administered Index of Female Sexual Function (IFSF), as previously defined by Kaplan et al. (1999) was used for evaluation of sexual dysfunction, and a total of six dimensions as a sexual dysfunction symptom were analysed.²⁴ Turkish validity and reliability study of this index was performed by Yilmaz and Eryilmaz in 2004. Shortly, special domains examined in the IFSF contained quality of sexual intercourse (items one and two), desire (items four and five), and overall satisfaction with sexual function (items six and seven), orgasm, lubrication and clitoral sensation. Specific questions analysed the degree of lubrication (item two), ability to achieve orgasm (item eight) and the degree of clitoral sensation (item nine), with responses graded on a scale of 1 (almost never or never) to 5 (almost always or always). A score of 0 showed no attempt at intercourse and scores between 1 and 3 indicated the presence of related sexual dysfunction symptom. The highest score that can be received from the scale is 49. A total score of ≤ 30 IFSF, was stated to notice sexual dysfunction, according to our previous study on healthy subject [25].

SF-36-Quality of Life Scale: The SF-36 that is the most frequently used scale in the world among generic quality of life scales that was developed by Ware and Sherbourne in 1992 [26]. SF-36 has been proved to be a reliable and valid instrument in Turkish patients. This questionnaire consists of 36 items with eight subscales: physical functioning (ten items), social functioning (two items), role limitations due to physical problems (four items), role limitations due to emotional problems (three items), mental health (five items), energy and vitality (four items), pain (two items), and general perception of health (five items). For each variable item, scores are coded,

added and transformed onto a scale from 0 (worst possible health state measured by the questionnaire) to 100 (best possible health state) [27]. Data was analysed using version 15.0 of the SPSS. It was analysed with the Kolmogorov-Smirnov test whether or not data demonstrated a normal distribution. It was determined that the distribution of variables was not normal, and non-parametric tests were used in the analyses. Mean \pm SD, minimum, maximum and standard deviation, and median (25th-75th percentile was used for descriptive statistics of the continuous variables and number and percentage was used for descriptive statistics of the categorical data. The Mann-Whitney U test was performed to assess differences in SF-36 scores among the sexual dysfunction. Statistical significance was accepted as $p < 0.05$.

RESULTS

The average age of patients in the study group was 53.16 \pm 8.63 (32-65) years, the mean body mass index was 28.15 \pm 4.74 (19.15-52.73) kg/m². More than half of patients (64.0%) were male, 92.4% were primary school graduates, 57.3% were housewives/retired, 94.2% had an average and above-average income level and 36.9% were smokers. When descriptive findings associated with heart failure were examined, the mean of left ventricular ejection fraction (LVEF) was 51.09 \pm 9.50% (35-70), and the mean of years of diagnosis of heart failure was 4.56 \pm 2.64 (1-17) and 37.8% of patients were Class II according to the NYHA. The most prevalent comorbidities were: coronary heart disease 57.3%; valvular heart disease 57.3%; arrhythmia 69.3%; hypertension 63.1%; and diabetes mellitus 55.1%. It was determined that 37.8% of patients in the study group experienced changes in their marital and sexual lives after the diagnosis heart failure (Table 1).

Table 1. Demographic characteristics of the patients (N=225)

Characteristics	
Mean Age, years	53.16 \pm 8.63 (32-65)
BMI, kg/m ²	28.15 \pm 4.74 (19.15- 52.73)
Sex, n(%)	
Male	144 (64.0)
Female	81(36.0)
Education level, n(%)	
Primary school	208 (92.4)
High school \leq	17(7.6)
Occupation, n(%)	
Housewife / retired	129 (57.3)
Worker/official	96(42.7)
Income level, n(%)	
Average and above	212(94.2)
Less than average	13(5.8)
Smoking, n(%)	



Yes	83(36.9)
No	142(63.1)
Mean LVEF,	51.09±9.50 (35-70) %
Diagnosis of HF, years	4.56±2.64 (1-17)
NYHA, n(%)	
Class I	61(27.1)
Class II	85(37.8)
Class III	79(35.1)
Comorbidity, n(%)*	
Coronary artery disease	129 (57.3)
Valvular heart disease	129(57.3)
Arrhythmia	156(69.3)
Hypertension	142(63.1)
Diabetes mellitus	124(55.1)
Peripheral vascular disease	28(12.4)
Changes in marital status, n(%)	
Yes	192(85.3)
No	33(14.7)
Changes in sexual life, n(%)	
Yes	192(85.3)
No	33(14.7)
<p><i>Continuous variables are presented as mean±standard deviation (min-max), categorical variables as number (percentage). BMI-body mass index; LVEF- left ventricular ejection fraction; NYHA-New York Heart Association; HF-heart failure * Each one has selected more than one choice. Percentages on the number of patients participating in the study were included (n=225).</i></p>	

It was found out that female individuals with heart failure received the highest score from the orgasmic function and clitoral sensation subscales (4.11±1.18) and the lowest score from the lubrication subscale (1.62±0.80) from the Index of Female Sexual Function (IFSF). It was found out that male individuals received the highest score from the sexual desire subscale (6.22±1.88) and the lowest score from the erectile function subscale (15.61±3.45) from the Erectile Function Evaluation Form (IIEF) subscales. The highest and lowest mean subscale scores received from the SF-36 was from the subscales of mental health (51.86±5.38) and physical role limitations (16.89±25.84), respectively. Individuals in the study group received average level of scores from the subscales of mental health and physical function from the SF-36 and below the average from the other subscales. Quality of life of the individuals was relatively low (Table 2).

Table 2. The mean scores of Index of Female Sexual Function (IFSF) and International Index of Erectile Function (IIEF), and SF-36

IFSF subscale (N=81)	Mean±SD (min-max)	Median (25 th -75 th percentile)
Lubrication	1.62±0.80 (1-4)	1.00 (1.00-2.00)
Orgasmic function	4.11±1.18 (1-5)	4.00 (4.00-5.00)
Sexual desire	6.00±1.16 (4-9)	6.00 (5.00-7.00)
Intercourse satisfaction	6.15±2.12 (2-10)	6.00 (4.00-8.00)
Clitoral sensation	4.11±1.18 (1-5)	4.00 (4.00-5.00)
Overall satisfaction	5.06±1.35 (2-9)	5.00 (4.00-6.00)
IFSF total score	27.04±3.72 (19-36)	27.00 (24.00-30.00)
IIEF subscale (N=144)		
Erectile function	15.61±3.45 (9-21)	15.00 (13.00-19.00)
Orgasmic function	4.46±1.48 (2-6)	4.00 (4.00-6.00)
Sexual desire	6.22±1.88 (2-8)	7.00 (6.00-8.00)
Intercourse satisfaction	8.22±1.70 (4-11)	8.00 (7.00-10.00)
Overall satisfaction	5.94±2.09 (2-10)	6.00(4.00-8.00)
SF- 36 subscale (N=225)		
Physical functioning	50.82±15.11 (25-80)	50.00 (40.00-65.00)



Physical role limitations	16.89±25.84 (0-75)	0.00 (0.00-25.00)
Pain	43.73±5.79 (12-74)	52.00 (31.00-52.00)
General health	28.88±18.62 (15-42)	30.00 (25.00-32.00)
Vitality	44.62±6.51 (30-60)	45.00 (40.00-50.00)
Social functioning	28.50±14.64 (0-62.5)	25.00(12.50-37.50)
Emotional role limitations	24.00±32.23 (0-100)	0.00 (0.00-33.33)
Mental health	50.82±15.11 (25-80)	52.00 (48.00-56.00)
<i>Data were given in mean±SD (min-max) and median (25th-75th percentile)</i>		
<i>SD- standard deviation</i>		
<i>IFSF- Index of Female Sexual Function; IIEF- International Index of Erectile Function</i>		

Erectile dysfunction and sexual dysfunction status of the patients are given in Table 3. It was found out that 11.1% of male subjects in the study group had severe erectile dysfunction, 50.7% had moderate erectile dysfunction, and 81.5% of female subjects had sexual dysfunction.

Table 3. The distribution of sexual dysfunction of the participants in the study (N=225)

Sexual dysfunction	
ED degree, n(%)	
Severe ED	16(11.1)
Moderate ED	73(50.7)
Slight ED	55(38.2)
Female sexual dysfunction, n(%)	
Yes	66(81.5)
No	15(18.5)
<i>Data is presented number(percentage) ED- erectile dysfunction</i>	

The comparison of the subscale scores of individuals with heart failure received from the SF-36 with the condition of experiencing sexual dysfunction revealed a statistically significant difference only between the general health subscale scores and sexual dysfunction despite the fact that the mean scores of individuals who did not experience sexual dysfunction in all the subscales other than the mental health subscale of the SF-36 were found to be high ($z=-2.053$, $p=0.040$). Quality of life of individuals who do not experience sexual dysfunction is better (Table 4).

Table 4. Comparison of SF-36 and living conditions of sexual dysfunction of patients (N=225)

SF-36 Subscales	Sexual dysfunction	N	Mean rank	Median (25th-75th percentile)	z	p*
Physical functioning	No	15	120.50	60.0(35.0-65.0)	-0.464	0.643
	Yes	210	112.46	50.0(40.0-65.0)		
Physical role limitations	No	15	127.60	25.0(25.0-50.0)	-1.048	0.295
	Yes	210	111.96	0.0 (0.0-25.0)		
Pain	No	15	119.60	52.0(31.0-52.0)	-0.430	0.667
	Yes	210	112.53	52.0(31.0-52.0)		
General health	No	15	145.90	32.0(30.0-37.0)	-2.053	0.040
	Yes	210	110.65	27.0(25.0-32.0)		
Vitality	No	15	117.23	45.0(40.0-55.0)	-0.268	0.789
	Yes	210	112.70	45.0(40.0-50.0)		
Social functioning	No	15	139.53	37.5(25.0-37.5)	-1.689	0.091
	Yes	210	111.10	25.0(12.5-37.5)		
Emotional role limitations	No	15	118.63	33.3(0.0-33.3)	-0.387	0.699
	Yes	210	112.60	0.0(0.0-33.3)		
Mental health	No	15	103.20	52.0(48.0-56.0)	-0.619	0.536
	Yes	210	113.70	52.0(48.0-56.0)		
<i>Date is presented mean rank and median (25th-75th percentile)</i>						
<i>* Mann-Whitney U test</i>						



DISCUSSION

The sample of the study consisted of patients who earlier were diagnosed with heart failure and visited a private hospital for routine controls and who met the inclusion criteria of the study and agreed to participate in the study. The mean age of individuals in the study group was 53.16 ± 8.63 years and 64.0% of these individuals were male. Incidence of HF increases with age and women lower rates of HF than men. Male are at a higher risk for HF compared to women [28]. This finding is similar to the literature. This study sample represents the Turkish society in terms of education and income distribution [29].

The NYHA functional classification includes four classes ranging from I (no restriction of physical activity caused by cardiac disease) to IV (inadequacy to carry on any physical activity without discomfort symptoms even at rest) [30]. Patients of NYHA Class II or III were included in this study. Patients with the NYHA Class IV were not enrolled in the study because their general health status would be worse. In addition, we don't want to tire of these patients. The sample of study consists of patients with moderate level HF. The study sample reflects risk factors that cause heart failure in terms of accompanying comorbid diseases and smoking and supports the literature [1,4].

It was determined that the highest and lowest mean subscale scores received from the Index of Female Sexual Function (IFSF) were from the subscales of clitoral sensitivity and orgasmic function (4.11 ± 1.18), and lubrication (1.62 ± 0.80), respectively. It was found out that the highest and lowest mean subscale scores received from the Erectile Function Evaluation Form (IIEF) were from the subscales of sexual desire (6.22 ± 1.88) and erectile function (15.61 ± 3.45), respectively (Table 2). Although studies related to other cardiovascular diseases are found in the literature search, studies (providing mean subscale scores) that evaluate sexual dysfunction in patients with HF with the same scales could not be reached [25,31,32]. This is important in terms of specificity of the study.

There were lower scores of SF-36 all dimensions in this study. The highest SF-36 score was observed for the mental health dimension (51.86 ± 5.38). The lowest SF-36 score was received role-physical (16.89 ± 25.84) in this study. Patients with HF, the most impairment of their quality of life was in relation to the physical domain. Previous studies have reported decrease in the health related quality of life in patients with heart failure [33,34]. Juenger and colleagues found clinical symptoms of worse quality of life, defined by the SF-36 among patients with HF [35]. The other studies, patients with HF had significant reduction of physical functioning of quality of life [36-39].

Another two studies, had the lowest scores patients with HF were general health of SF-36 dimensions [13,40]. It is determined in studies in which quality of life of patients with HF is assessed that the lowest and highest mean subscale scores are received from the subscales of physical role limitations, social functioning and mental health respectively [41,42]. The results from the this study are in agreement with data in the literature, given that when subjects with HF develop functional loss, thereby limiting their daily activities, this can also compromise their quality of life. These findings should be taken into account when evaluating intervention studies, and during clinical practice. While the study findings show similarities with the literature in this regard. But the levels of SF 36 scores of patients with HF in this study were different to previous studies. The mean scores received from the SF-36 are lower than in other studies. The SF-36 indicated that the patient with HF of the study showed major impairment of directions of their quality of life relating to physical functioning and physical role. These outcomes recommend that efforts should be provided within clinical practice to increase the physical functioning of patients with HF, and therefore their quality of life. We believe that it would be useful to further examine the factors that affect to the quality of life to be that worse.

In the current study, 11.1% of men with heart failure suffered from severe ED and 50.1% moderate ED, 81.5% of female had sexual dysfunction (Table 3). This results are parallel with the findings of another studies. In studies conducted by Rastogi et al. the Medina et al., Schwarz et al. and prevalence of erectile dysfunction in HF patients was found to be 75%, 74%, 84% and respectively. Symptoms of heart failure do affect the sexual intercourses of individuals with heart failure their spouse. Numerous studies of heart failure patients have reported that diminish in sexual interest; an evident reduce in the frequency of sex; severe negative changes in sexual performance; and a damage of pleasure or satisfaction related to sexual function as a result of their heart failure [20,43-46].

Studies performed Medina and co-worker reported that 74% of patients with HF had ED while 51% had orgasmic disorder [21]. Occurrence of ED in patients with HF was 84% in study of Schwarz and colleagues [20]. Erectil dysfunction was 75% in another study [19]. Eighty percent of patient with HF had erectile dysfunction in which 36% was severe 26% moderate and 18% mild in the study of Zeighami Mohammadi and colleagues [46]. A last cohort study by Apostolo et al. has reported an ED prevalence of 69.3% in patient with HF [47]. Erectile dysfunction in patients with HF was determined 86% in the other study [48].



In this study findings supported that sexual activity is altered in patients with HF. Although our findings are similar with the literature, ED rates lower than previous studies. We believe that population of this study were affected by the fact that sex is seen as a taboo and cannot be spoken about freely in Turkish society.

Although all the sub-scale mean scores that subjects who did not experience sexual dysfunction received from the SF-36 outside the mental health subscale were higher, a statistically significant difference was found only between the scores of sexual dysfunction subscale and overall health subscale ($z=-2.053$, $p=0.040$) (Table 4). Quality of life of individuals who do not experience sexual dysfunction is better. Hemodynamic, vascular, hormonal and neuro-hormonal factors adversely affect sex life and quality of life in patients with HF [49].

Our findings are parallel to the literature. The results could not be compared well enough due the insufficient number of studies performed regarding the subject matter. However, the study findings indicate that all dimensions of quality of life of individuals with sexual dysfunction are adversely affected.

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This demonstrates the requirement for investigation of sexual dysfunction when assessing quality of life.

STUDY LIMITATIONS

This study may guide clinical practices and researches since no similar study was carried out in our country before. The small size of the sample group, the lack of control group is weaknesses of the study. It is recommended that the study to be repeated by comparing with a control group over a larger sample, sexual dysfunctions of individuals with heart failure to be evaluated routinely along with quality of life and patients with HF to be provided with information about sex life.

CONCLUSION

In conclusion; it was demonstrated by this study that HF affected sexual function, 11.1% of male subjects had severe, 38.2% had medium and 50.7% had mild erectile dysfunction, while 81.5% of female subjects experienced sexual dysfunction, and sexual dysfunction adversely affected the sub domains of quality of life.



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