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# Sexual Dysfunction and Health Related Quality of Life among Female Patients Undergoing Hemodialysis

**Shalabia Elsayed Abozead[1,*], Ghadah Abdelrahman[2], Atyat Hassan[1], Walaa Hosny Ibrahim[3]**

[1]Medical Surgical Nursing, Faculty of Nursing, Assiut University, Egypt
[2]Obstetrics, Gynecological and Reproductive Health Nursing,
Faculty of Nursing, Assiut University, Egypt
[3]Department of Internal Medicine, Assiut University
*Corresponding author: shalabia.abozead@aun.edu.eg

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**Abstract** **Background:** Sexual dysfunction among female patients undergoing hemodialysis has a negative effect on their quality of life. **The aim of this study** was to identify the effect of hemodialysis among female patients on their sexual function and quality of life. **Material and Methods:** A cross sectional descriptive study was utilized in this study. It was conducted at a hemodialysis unit, Assiut University Hospitals, Egypt. Purposive simple was used in this study. Data was collected through three tools: firstly, Sociodemographic Questionnaire; secondly, Index of Female Sexual Function (IFSF) to assess sexual function and finally, the 36-item Short Form Health Survey Questionnaire to measure the impact of hemodialysis on their quality of life. **Results:** It reveals that more than half of these female patients with hemodialysis had sexual dysfunction and poor quality of life. There are no statistical significance differences between patients' Female Sexual Function Index (FSFI) scores and socio-demographic characteristics. **Conclusions:** there are a positive correlation between female sexual dysfunction and poor quality of life among female patients with hemodialysis. **Recommendations:** routine screening of sexual function and quality of life among female patients with chronic kidney diseases.

***Keywords:*** *hemodialysis, female sexual function, quality of life*

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## 1. Introduction

There are many problems associated with women undergoing hemodialysis. One of these common problems is sexual dysfunction [1]. It is defined as a disorder associated with the following symptoms: diminishing sexual desire, veganism, failure of achieving orgasm, vaginal dryness, menstrual irregularities, infertility and dyspareunia [2].

Sexual dysfunction among female undergoing hemodialysis has a negative effect on their quality of life [3,4]. It affects high prevalence of women (22-93%). There are other destructive problems associated with female sexual dysfunction such as: low self-confidence, negative social relationship and disturbed marital status [5].

There is a relationship between physical and psychological effects of women undergoing hemodialysis. The evidence of metabolic, emotional and hormonal damages is very clear among women with chronic renal failure [6].

Some forms of negative impact of sexual dysfunction on the different quality of life domains are the presence of anxiety, low self-esteem and self-confidence, depression and social problems [7].

Because of the bad impact of sexual dysfunction on women undergoing hemodialysis, there is a recent tendency for changing the line of treatment from hemodialysis to kidney transplantation. It will improve the quality of life and reducing morbidities and mortalities [8]. Renal transplantation may improve reproductive function to give a chance for woman to have a healthy baby [9]. Female patients with hemodialysis can't live normal life which is meaning life free from physical and psychological disorders [10].

Lack of awareness and shame to talk about sexual dysfunction among women with chronic renal failure are considered as important factors leading to negative effects on their quality of life [7].

The magnitude of the problem of female sexual dysfunction has a little attention of the researchers in Arab countries [11]. Few researches have investigated the relation between female sexual dysfunction in patients with chronic renal failure and their quality of life [12]. So the researcher will assess the prevalence of sexual dysfunction among women undergoing hemodialysis and investigate its effect on their quality of life.

**Aim of study was to:**

- Identify the effect of hemodialysis among female patients on their sexual function and quality of life.

# 2. Material and Methods

## 2.1. Research Design

- Across sectional descriptive study was utilized in this study.

## 2.2. Settings

- The study was conducted at hemodialysis unit, Assiut University Hospitals, Egypt.

## 2.3. Sampling

- Purposive simple was used in this study. The sample was calculated by using Epi-Info Statistical Package, version 7.2 which is designed by CDC (Centers for Disease Control and Prevention) with power 80%, a value of 2.5 is chosen at the acceptable limit of precision (D) at 95% confidence level (CI) With expected prevalence 20%, worst accepTable 50%. Accordingly, sample size was estimated to be 50+10% of individuals to guard against non-despondence rate. The total sample was 50 female patients with hemodialysis.

## 2.4. Subjects

- Purposive simple sample for married female patients with end-stage renal disease (ESRD) undergoing hemodialysis was recruited in this study.

## 2.5. Inclusion Criteria

- Married women aged between 20-50 years.

## 2.6. Exclusion Criteria

- No evidence of active psychiatric diseases.
- Uncontrolled congestive heart failure.
- Acute complications from uremia.
- Poorly controlled diabetes mellitus.

## 2.7. Tools

### 2.7.1. Data Was Collected Through Three Tools

**Tool I: Sociodemographic Questionnaire:**

It was developed by the researcher. Personal data included the following items: age, education level, residence and occupation. Data related to women's health status such as: The number of years the patient has lived with kidney disease, the number of years on hemodialysis, the presence of other medical diseases and menstrual status.

**Part II: Index of Female Sexual Function (IFSF) to assess sexual function (Rosen, 2000):**

A validated Arabic version of the 19 items Female Sexual Function Index (ArFSFI) translated by [11] to assessed sexual function status or sexual problems during the previous month. Sexual function questionnaire was designed as a self-reported tool to assess the following 6 domains: sexual desire, arousal, lubrication, orgasm, satisfaction, and pain during sexual intercourse. For each of these six domains a score will be calculated and the total score ranged between 2 and 36.

The individual domain scoring system of the FSFI can be developed by formula presented in the following table. For individual domain scores, add the scores of the individual items that represent the domain and multiply the sum by the domain factor (see below). Add the six domain scores to obtain the full scale score. It should be noted that within the individual domains, a domain score of zero indicates that the woman reported no sexual activity during the previous 4 weeks. Woman's scores can be entered in the right column.

| Domain | Questions | Score Range | Factor | Minimum Score | Maximum Score | Score |
|---|---|---|---|---|---|---|
| Desire | **1, 2** | **1-5** | **0.6** | **1.2** | **6.0** | |
| Arousal | **3,4,5,6** | **0-5** | **0.3** | **0** | **6.0** | |
| Lubrication | **7, 8, 9, 10** | **0-5** | **0.3** | **0** | **6.0** | |
| Orgasm | **11, 12 , 13** | **0-5** | **0.4** | **0** | **6.0** | |
| Satisfaction | **14, 15, 16** | **0 (or 1) -5** | **0.4** | **0.8** | **6.0** | |
| Pain | **17, 18, 19** | **0-5** | **0.4** | **0** | **6.0** | |
| **Full Scale Score Range** | | | | **2** | **36.0** | |

- A total score of more than 25 will be considered "Normal Female Sexual Function".
- A total score of less than 25 will be considered to constitute "Female Sexual Dysfunction".

**Part III: the 36-item Short Form Health Survey Questionnaire (SF-36, Arabic Standard Version):**

It was translated in to Arabic version (Al Abdulmohsin et al., 1997) [18]. to survey health related quality of life. The validated Arabic version of the SF-36 is a common questionnaire including 36 questions that evaluate eight aspects of Quality of life: physical functioning (PF), role limitations as a result of physical problems (RP), bodily pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations as a result of emotional problems (RE), mental health (MH), as well as two summary scores are related to the physical component summary score (PCS), and the mental component summary score (MCS). Each of the eight domains is scored out of 100, with higher scores indicating better functioning. The MCS and PCS scores are standardized to a mean of 50, with scores above indicating positive health related quality of life and below 50 indicating negative health related quality of life.

## 2.8. Procedure

An approval for the study was granted before starting the female patient's recruitment process. The approval was obtained from the administrator of Assiut University hospital. A cover letter that explained the purpose of the study and the study questionnaire was sent to the administrator of the hospital. Explaining the purpose of the study and assuring the confidentiality of all participants, a verbal informed consent was obtained from each participant. Data were collected at the renal dialysis at Assiut university Hospital. Three tools were collected by the researcher including the following: the 1st tool was used for collecting two parts: (Personal data such as: age, education, residence and occupation and the second part

included health status of these female patients such as: the duration of the renal disease, the duration of hemodialysis and the presence of other medical diseases or not. The 2nd tool was FSDI (Female Sexual Dysfunction Index) which explored the prevalence of FSD (Female Sexual Dysfunction) among these female patients. The last tool was applied in this study was SF-36 Questionnaire which informed the researcher about the health related quality of life problems among these patients. The researcher spent 30 minutes with each patient and let her explore all her feelings about her disease. Some patients were interviewed at the morning dialysis session and the other at the afternoon session according to the Renal Dialysis Schedule of the patients.

A pilot study was carried out on ten patients who represented 10% of the sample to ensure the clarity and applicability of the tool. Necessary modifications were done to ensure the validity and reliability of the study.

### 2.8.1. Field Work

The study started at January 2017 and ended at April 2017.

### 2.8.2. Data Analysis

Statistical Package for Social Sciences (SPSS) version 25 was used for data entry and analysis. Descriptive Statistics (frequency, percentage, mean and standard deviation) were used to present distribution of study population. Pearson's chi-squared test (X2) was used to examine statistical significance difference between levels of both female sexual dysfunction index and the quality of life among the study group and different categorical variables. One way ANOVA test is used to determine whether there are any statistically significant differences between the means of two or more independent (unrelated) groups of both scales (female sexual dysfunction index and the quality of life).

## 3. Results

Table 1 clarifies the main sociodemographic data of the female patients with chronic renal failure. As regards age, the majority of women (80%) aged from 35-54 years old with the mean age 41.5±9.2 years old. More than half of women had primary education and lived in rural areas (52% & 60%) respectively. Concerning the patient's health condition, more than half of women had renal diseases and undergoing hemodialysis from 1 to less than 5 years (54% & 58%) respectively. The majority of women (80%) are still having menstruation.

Table 2 reflects the different scores of female sexual function index according to its domains. It reveals that the total score is less than 25 so there is female sexual dysfunction among these patients.

Table 3 describes the main 8 domains of SF-36 Scale for measuring the quality of life among these patients. The mean score is less than 50 which is meaning negative health effects related to their quality of life.

Table 4 identifies the levels of Female Sexual Function Index (FSFI) and Short Form-36 (SF-36) satisfactions. It reveals that more than half of female patients have unsatisfactory levels for both scales.

**Table 1. Distribution of studied female patients with hemodialysis by Socio-demographic data**

| Items | Study group (n=50) | |
|---|---|---|
| | No. | % |
| **Age:** | | |
| 18-34 | 10 | 20.0 |
| 35-54 | 40 | 80.0 |
| **Range** | 18.0-54.0 | |
| **Mean±SD** | 41.5±9.2 | |
| **Level of education:** | | |
| Illiterate | 22 | 44.0 |
| Primary education | 26 | 52.0 |
| University education | 2 | 4.0 |
| **Occupation:** | | |
| Working | 8 | 16.0 |
| Housewives | 42 | 84.0 |
| **Residence:** | | |
| Urban | 20.0 | 40.0 |
| Rural | 30 | 60.0 |
| **Years of kidney disease:** | | |
| 6 month-1 year | 0 | 0.0 |
| 1 year-less than 5 years | 27 | 54.0 |
| 5 years and more | 23 | 46.0 |
| **Range** | 1-9 | |
| **Mean±SD / years** | 4.8±1.9 | |
| **Years of hemodialysis:** | | |
| Less than 1 year | 0 | 0.0 |
| 1 year-less than 5 years | 29 | 58.0 |
| 5 years and more | 21 | 42.0 |
| **Range** | 1-9 | |
| **Mean±SD / years** | 4.7±2.5 | |
| **Do you suffer from other diseases?** | | |
| Yes | 36 | 72.0 |
| No | 14 | 28 |
| If yes | | |
| Hypertension | 28 | 56.0 |
| Diabetes | 2 | 3.0 |
| Hepatitis C | 3 | 5.0 |
| Others Heart diseases | 4 | 8.0 |
| **Menstrual status:** | | |
| Postmenopausal | 9 | 18.0 |
| With menstrual cycle | 41 | 82.0 |

**Table 2. The Female Sexual Function Index (FSFI) Scores among patients with hemodialysis**

| Domain | Group | | |
|---|---|---|---|
| | Min | Max | Mean±SD |
| Desire | 1.0 | 3.5 | 2.2±0.8 |
| Arousal | 0 | 4.0 | 2.0±1.1 |
| Lubrication | 0 | 4.5 | 2.1±1.4 |
| Orgasm | 0 | 4.3 | 2.0±1.4 |
| Satisfaction | 0 | 5.0 | 2.0±1.6 |
| Pain | 0 | 3.33 | 1.7±1.2 |
| **The total score** | **1.0** | **24.6** | **20.1±0.5** |

**Table 3. The SF-36 Scale Scores among patients with hemodialysis**

| Domain | Group | | |
|---|---|---|---|
| | Min | Max | Mean±SD |
| Physical functioning | 0 | 90 | **31.1±30.5** |
| Role limitations due to physical health | 0 | 100 | **27.0±42.5** |
| Role limitations due to emotional problems | 0 | 100 | **44.0±50.1** |
| Energy/ fatigue | 0 | 70 | **41.0±50.1** |
| Emotional well being | 8 | 80 | **40.7±18.8** |
| Social functioning | 0 | 100 | **32.5±31.3** |
| Pain | 0 | 100 | **38.8±30.9** |
| General health | 10 | 55 | **30.5±12.2** |

**Table 4. Distribution of female patients according to levels of FSFI & SF-36 scales for patients with hemodialysis**

| Items | FSFI | | SF-36 | |
|---|---|---|---|---|
| | No. | % | No. | % |
| **Satisfactory Level** | 23 | 46.0 | 18 | 36.0 |
| **Unsatisfactory Level** | 27 | 54.0 | 32 | 64.0 |
| **Total** | 50 | 100.0 | 50 | 100.0 |

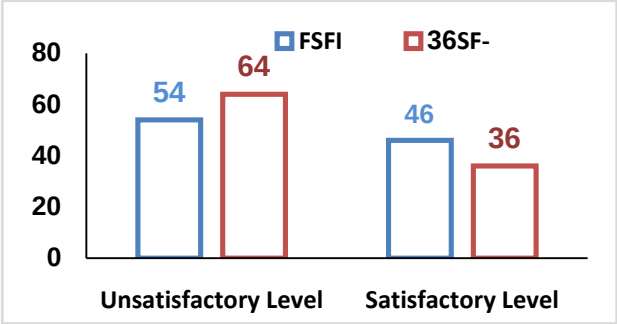


**Figure 1.** Percentage distribution of FSFI & SF-36

**Table 5. Relationship between patients' Female Sexual Function Index (FSFI) scores and socio-demographic characteristics**

| Items | Study group (n=50) | | | | P-value |
|---|---|---|---|---|---|
| | Satisfactory (n= 23) | | Unsatisfactory (n=27) | | |
| | No. | % | No. | % | |
| **Age:** | | | | | 0.331 |
| 18-34 | 6 | 60.0 | 4 | 40.0 | |
| 35-54 | 17 | 42.5 | 23 | 57.5 | |
| 55 years and more | 0 | 0.0 | 0 | 0.0 | |
| **Level of education:** | | | | | 0.279 |
| Illiterate | 8 | 36.4 | 14 | 63.6 | |
| Primary education | 14 | 53.8 | 12 | 46.2 | |
| University education | 1 | 50.0 | 1 | 50.0 | |
| **Occupation:** | | | | | 0.809 |
| Working | 4 | 50.0 | 4 | 50.0 | |
| Housewives | 19 | 45.2 | 23 | 54.8 | |
| **Residence:** | | | | | 0.028* |
| Urban | 13 | 65.0 | 7 | 35.0 | |
| Rural | 10 | 33.3 | 20 | 66.7 | |
| **Years of kidney disease:** | | | | | 0.429 |
| 6 months-1 year | 0 | 0.0 | 0 | 0.0 | |
| 1 year-less than 5 years | 11 | 40.7 | 16 | 59.3 | |
| 5 years and more | 12 | 52.2 | 11 | 47.8 | |
| **Years of hemodialysis:** | | | | | 0.451 |
| Less than 1 year | 0 | 0.0 | 0 | 0.0 | |
| 1 year-less than 5 years | 12 | 41.4 | 17 | 58.6 | |
| 5 years and more | 11 | 52.4 | 10 | 47.6 | |
| **Do you suffer from other diseases?** | | | | | 0.128 |
| Yes | 19 | 52.8 | 17 | 47.2 | |
| No | 4 | 28.6 | 10 | 71.4 | |
| **Menstrual status:** | | | | | 0.535 |
| Postmenopausal | 5 | 55.6 | 4 | 44.4 | |
| With menstrual cycle | 18 | 43.9 | 23 | 56.1 | |

Chi-square test & On-way-ANOVA test.
Statistical significant differences ($p \leq 0.05$).

Table 5 indicates that there are no statistical significance differences between patients' Female Sexual Function Index (FSFI) scores and socio-demographic characteristics (P.V > 0.05) except by residence (P.V < 0.05).

Table 6 shows that there are statistical significance differences between patients' Female Sexual Function Index (FSFI) scores and socio-demographic characteristics as regards residence, the presence of other medical diseases and their menstrual status (P.V < 0.05).

**Table 6. Relationship between patients' SF-36 scale scores and socio-demographic characteristics**

| Items | Study group (n=50) | | | | P-value |
|---|---|---|---|---|---|
| | Satisfactory (n= 18) | | Unsatisfactory (n=32) | | |
| | No. | % | No. | % | |
| **Age:** | | | | | 0.080 |
| 18-34 | 6 | 60.0 | 4 | 40.0 | |
| 35-54 | 12 | 30.0 | 28 | 70.0 | |
| 55 years and more | 0 | 0.0 | 0 | 0.0 | |
| **Level of education:** | | | | | 0.099 |
| Illiterate | 5 | 22.7 | 17 | 77.3 | |
| Primary education | 12 | 46.2 | 14 | 53.8 | |
| University education | 1 | 50.0 | 1 | 50.0 | |
| **Occupation:** | | | | | 0.925 |
| Working | 3 | 37.5 | 5 | 62.5 | |
| Housewives | 15 | 35.7 | 27 | 64.3 | |
| **Residence:** | | | | | 0.022* |
| Urban | 11 | 55.0 | 9 | 45.0 | |
| Rural | 7 | 23.3 | 23 | 76.7 | |
| **Years of kidney disease:** | | | | | 0.460 |
| 6 months-1 year | 0 | 0.0 | 0 | 0.0 | |
| 1 year-less than 5 years | 11 | 40.7 | 16 | 59.3 | |
| 5 years and more | 7 | 30.4 | 16 | 69.6 | |
| **Years of hemodialysis:** | | | | | 0.362 |
| Less than 1 year | 0 | 0.0 | 0 | 0.0 | |
| 1 year-less than 5 years | 12 | 41.4 | 17 | 58.6 | |
| 5 years and more | 6 | 28.6 | 15 | 71.4 | |
| **Do you suffer from other diseases?** | | | | | 0.047* |
| Yes | 16 | 44.4 | 20 | 55.6 | |
| No | 2 | 14.3 | 12 | 85.7 | |
| **Menstrual status:** | | | | | 0.035* |
| Postmenopausal | 6 | 66.7 | 3 | 33.3 | |
| With menstrual cycle | 12 | 29.3 | 29 | 70.0 | |

Chi-square test & On-way-ANOVA test.
Statistical significant differences ($p \leq 0.05$).

**Table 7. Pearson correlation coefficients between SF-36 and FSFI scales**

| SF-36/FSFI | Desire | Arousal | Lubrication | Orgasm | Satisfaction | Pain |
|---|---|---|---|---|---|---|
| **Physical functioning** | 0.786** | 0.503** | 0.528** | 0.565** | 0.626** | 0.316* |
| **Role limitations due to physical health** | 0.703** | 0.245 | 0.158 | 0.211 | 0.200 | 0.320* |
| **Role limitations due to emotional problems** | 0.506** | 0.423** | 0.378** | 0.444** | 0.464** | 0.252 |
| **Energy/ fatigue** | 0.608** | 0.435** | 0.389** | 0.403** | 0.361* | 0.294* |
| **Emotional well being** | 0.291* | 0.286* | 0.324* | 0.369** | 0.436** | 0.112 |
| **Social functioning** | 0.194 | 0.219 | 0.252 | 0.301* | 0.278 | 0.065 |
| **Pain** | 0.411** | 0.307* | 0.299* | 0.388** | 0.385** | 0.151 |
| **General health** | 0.294* | 0.093 | 0.016 | 0.037 | 0.083 | 0.213 |

P-values for the correlation: ** P < 0.01 & * P < 0.05.

This table shows that there are positive relationship between FSFI and SF-36 Scales. R equal more than 0.7.

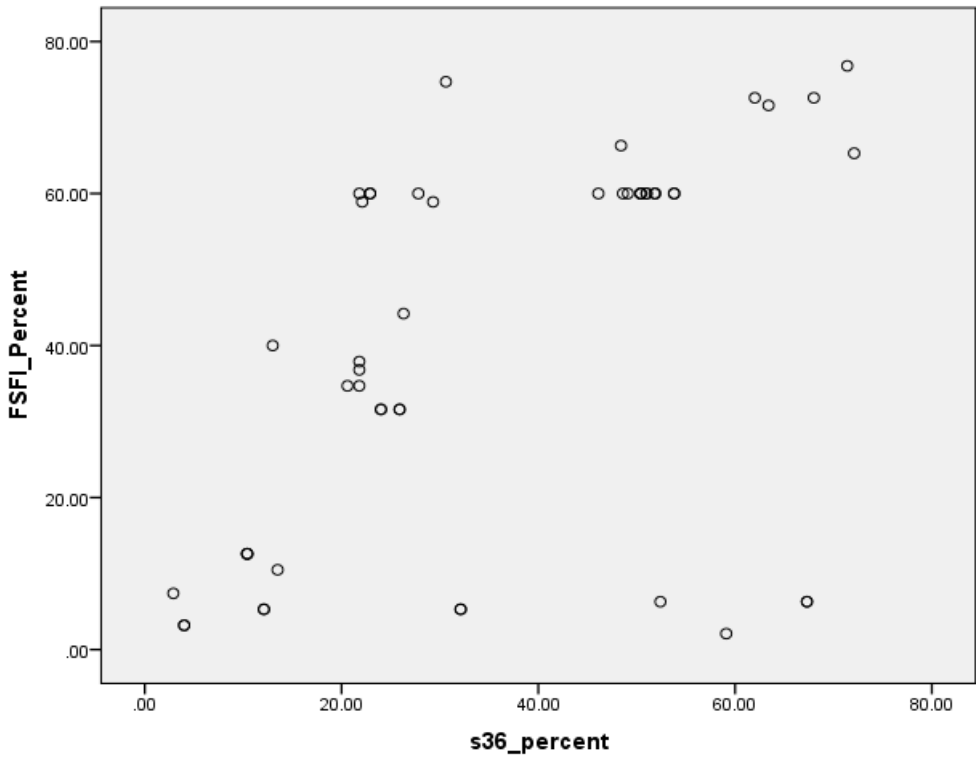


**Figure 2.** The relation between total score of studied patients according to Lists SF-36 scale and Female Sexual Function Index (FSFI) scores determined by Pearson's correlation test: There is positive relationship between FSFI and SF-36 Scales. R equal more than 0.7.

## 4. Discussion

Chronic renal disease has negative effects on both female sexual function and quality of life. The alterations of female sexual function related to endocrine disorders [1].

The present study revealed that the mean age among female patients with hemodialysis was 41.5±9.2. More than half of them had primary school. As regards duration of renal disease and hemodialysis, more than half of these female patients had from one to less than five years. Nearly three quarters of them had associated medical diseases. Concerning menstruation, the majority of female patients still had menstruation.

These findings are consistent with [4] who reported in their Brazilian study about sexual dysfunction and quality of life among women undergoing hemodialysis that the mean age was 38+10.8 years. More than one third of them had associated medical diseases. The duration of hemodialysis was around three years.

At the opposite line, Song and colleagues, 2007 documented in their Korean study about sexual function and quality of life among female patients with hemodialysis that the mean age was 39.7+6.2 years. The highest percentage of educational level was high school. Nearly three quarters of them had menstruation.

Another Turkish study was done by [13] about assessing female sexual function and quality of life in patients with hemodialysis reported that the mean age was 43.08±12.44 years. Nearly two thirds of them had primary education. The majority of them were housewives while more than half of them had another chronic disease and at menopause.

The explanation of the differentiations present between the present findings and other studies as regards the sociodemographic data may be contributing to the nature of these countries and the differentiations of the sample size.

The present study finding explored that more than half of patients with hemodialysis had female sexual dysfunction and poor quality of life.

These findings are congruent with [4] who mentioned in his study about female sexual dysfunction during hemodialysis in Turkey that more than half of female patients have sexual dysfunction.

At the opposite line, [14] who reported in his study about quality of life and sexual dysfunction among women with hemodialysis that more than three quarters of women have sexual dysfunction and low quality of life.

Guvel and Zumrutdal, [15] reported in their study about sexual dysfunction among women with chronic renal failure that nearly one third of women have sexual dysfunction which is in agreement with the present study.

Another Korean study about sexual function and quality of life in women with chronic renal failure explored that there are high prevalence of female sexual dysfunction and impaired quality of life [16].

The same findings present in other studies such as Yazici and colleagues, [1] and Coelho-Marques and colleagues, 2013.

From the previous studies, there are total agreements that there is female sexual dysfunction associated with poor quality of life in patients with hemodialysis. The explanation may refer to the endocrine disorders associated with chronic renal diseases.

As regards the correlation between SF-36 and FSFI scales, the present study revealed positive relationship between both scales in most of their variables.

Santos and colleagues, 2012 reported that there are positive correlations between the most variables of SF-36 and FSFI scales which is consistent with the present study.

Another study by [17] reported that there are positive correlations between the most variables of SF-36 and FSFI scales which is also congruent with the present study.

### 4.1. Limitations of the Study

- The sample size was small which is leading to some limitation to generalize the findings.

## 5. Conclusions

There is high prevalence of female sexual dysfunction and poor quality of life among patients undergoing hemodialysis. Associated medical diseases are considered as an important factor affects quality of life. There are positive correlations between both SF-36 and FSFI scales among female patients with hemodialysis.

## 6. Recommendations

- Routine screening of female sexual dysfunction among patients undergoing hemodialysis.
- Group psychotherapy to teach patients undergoing hemodialysis how to cope with their life.
- More researches for assessing the prevalence of female sexual dysfunction and quality of life among patients with end stage renal diseases.

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