ORIGINAL ARTICLE

CORRELATION OF DEPRESSION SYMPTOMS WITH FEMALE SEXUAL FUNCTION INDEX IN FEMALE HEMODIALYSIS PATIENTS

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ABSTRACT

Introduction. *Hemodialysis patients experience major changes in lifestyle and suffer various physical and emotional symptoms, especially symptoms of depression and sexual dysfunction in more than half of patients. Sexual dysfunction in women is often not identified because of lack of attention, especially by the clinician. Symptoms of depression limit intimacy, and affect sexual arousal and orgasm.*

Aim : *the aim of the study was to determine the correlation between depressive symptoms and female sexual function index (FSFI) in women hemodialysis patients in the Hemodialysis Unit of Dr. Sardjito General Hospital Yogyakarta.*

Methods. *The method of this study was cross-sectional. Research was conducted at the Hemodialysis Unit by Dr. Sardjito General Hospital Yogyakarta from 10 April to 24 April 2012.*

Result. *There were 42 female patients undergone routine hemodialysis who met the criteria. The median age was 49 years old and had undergone hemodialysis for a median duration of 40 months.*

Conclusion. *There was a negative correlation of depression symptoms and female sexual dysfunction with a moderate strength (r = -0.421) and statistical significantly (P <0.05). Age and prolactin had a negative correlation with a moderate strength of FSFI score. HDL levels and menstrual status had a positive correlation with FSFI, with weak and strong correlation respectively.*

Key Words: *Female sexual function index, depression, hemodialysis*

INTRODUCTION

Female hemodialysis patients suffer from various physical and emotional symptoms, mainly showing symptoms of depression, and impaired quality of life, including fatigue, pain, muscle cramps, insomnia, and sexual dysfunction in more than half of patients with chronic dialysis (Kader et al ., 2007). The incidence of sexual dysfunction is fairly high in patients with chronic renal failure (CRF). The prevalence of men and women who received renal replacement therapy (dialysis or transplantation) is 60-75%, and sexual disorder is up to 90% (Levin *et al.*, 2001).

Sexual arousal in women is strongly modulated by the thoughts and emotions, instigated by sexual stimulation. An emotional relationship with a partner and emotional well-being is the strongest predictor of sexual distress (Sadock and Sadock, 2004). Empirically, the symptoms of depression limit intimacy, and affect sexual arousal and orgasm. The value of high symptoms of depression symptoms frequently found in hemodialysis patients, and is associated with sexual dysfunction in previous studies (Peng *et al.*, 2007).

Assessment of depression symptoms and sexual dysfunction has not been done on hemodialysis patients in the Hemodialysis Unit of Dr. Sardjito General Hospital, Yogyakarta, especially in female patients. In this study the researcher tried to determine the relationship between depressive symptoms of sexual dysfunction in women as measured by the Female Sexual Function Index (FSFI) scores in female hemodialysis patients.

METHODS

The method of this study is cross-sectional to determine the correlation between symptoms of depression with female sexual function index in female hemodialysis patients in the Installation of Hemodialysis Dr. Sardjito Central General Hospital Yogyakarta. The study was conducted in The Installation of Hemodialysis Dr. Sardjito Central General Hospital Yogyakarta on 10 to 24 April 2012.

Study subjects were female hemodialysis patients in The Installation of Hemodialysis General Hospital Center Dr. Sardjito Yogyakarta who had undergone hemodialysis for at least 3 months, with a range of age 18 to 60 years old, married, had an active sexual partner and agreed to participate in the study. The exclusion criteria in this study were psychotic mental disorders, sexual trauma, gynecologic disorders, on Thiazide therapy, Betabloker, antidepressants or antianxiety, monoamine inhibitors (MAOIs), serotonin selective reuptake inhibitors (SSRIs), Benzodiazepine, Buspirone, Barbiturates, or taking phosphodiesterase 5 inhibitors (PDE 5-I) or taking alternative therapies for depression and sexual dysfunction.

The operational definition of chronic renal failure according to the definition of Suwitra (2009) is kidney damage more than 3 months, the glomerular filtration rate (GFR) less than 60 ml/minute/1.73 m2 and on regular hemodialysis. The symptoms of depression are measured by Beck Depression Inventory score (BDI). BDI analysis is numeric and categorical. In the form of categorical, the cutoff point of depression symptom is 16 or more.

Sexual dysfunction in women is measured by the Female Sexual Function Index. Data analysis is numerical and categorical. Categorical data were divided into good value if ≥ 30, moderate if 23-29, and poor if <23. Dichotomous data is divided into a bad < 23 and moderate-good ≥ 23.

Research Variables and Measurements

The independent variable is depression symptoms as measured by the BDI and the dependent variable is the female sexual dysfunction as measured by the FSFI. The other variables as factors affecting sexual functioning in women were age, duration of hemodialysis, the levels of prolactin, the levels of hemoglobin (HB), menstrual status, diabetes, and dyslipidemia as confounding variables in this study.

Statistical Analysis

The total sample of 42 patients was used in order to determine the correlation of symptoms of depression (measured by the BDI) in women with sexual dysfunction as measured by the FSFI. Data presented in the form of averages and standard deviations. The normality of data distribution used Shapiro-Wilk test. Variables with abnormal distribution were analyzed with Spearman test. Differences are considered significant if P ≤ 0:05 with 95% confidence interval.

Confounding factors such as hemoglobin (HB), age, duration of hemodialysis, prolactin, menstrual status, diabetes, and dyslipidemia were correlatively analyzed. Data analysis was using the Spearman test. Correlative analysis of ordinal data was using B x K tables with correlation test of Gamma and Somers's.

Ethical Clearance

This study used the approval of biomedical research ethics committee from Faculty of Medicine, Gadjah Mada University in Yogyakarta and the permission from the Director of Dr. Sardjito General Hospital Yogyakarta. All patients signed an informed consent to participate in this study.

RESULT

There are 70 female hemodialysis patients undergoing hemodialysis in the Dr. Sardjito Hospital, Yogyakarta. A total of 60 respondents returned the baseline data and the questionnaires. From the total of 60 respondents, 42 respondents met the inclusion and exclusion criteria. All patients performed laboratory tests, however, only 35 patients were willing to be examined on lipid profiles and 30 patients were examined serum prolactin levels. Baseline characteristics of the 42 study subjects are presented in Table 1.

The average age of respondents is 49 years; the youngest age is 34 years old and the oldest age is 58 years old. The majority of respondents are housewives, consisted of 23 respondents (54.8%)

and those working outside the home as many as 10 people (23.8%) were civil servants. A total of 3 people (7.1%) never attended school, 12 people (28.6%) attended elementary and junior high education level, most graduated from high school (42.9%) and university graduate as many as nine people (21.4%).

Table 1. Characteristics of the Study Subjects

Characteristics	Sum (N)	Percentage (%)	Mean (SD)	Minimum	Maximum
Age (years)	42		48.8 (6.0)	34.0	58.0
Religion	42				
− Islam	40	95.20			
− Hinduism	2	4.80			
Profession	42				
− Working	19	45.20			
− Housewife	23	54.80			
Education	42				
− Uneducated	3	7.10			
− Elementary and Junior High School	12	28.60			
− Senior High School	18	42.90			
− University	9	21.40			
Hemodialysis Duration (month)	42		39.64 (3.7)	4.00	175.000
HB (gr/DL)	42		9.10 (1.24)	7.00	12.40
Comorbid	42				
− Diabetes	12	28.60			
− Non Diabetes	30	71.40			
Smoking Status	42				
− Active Smoker	1	2.40			
− Passive Smoker	1	2.40			
− Non smoker	40	95.20			
Menopausal status	42				
− Menopause	25	59.50			
− Secondary amenorrhea	6	14.30			
− Regular menstruation	11	26.20			
Prolactin (mLU/L)	30		735.8 (782.2)		
− Normal	17	40.50			
− High	13	31.00			
Lipid Profile	35				
− Dyslipidemia	22	52.40			
− Non dyslipidemia	13	31.00			
BDI	42				
− Depressed (score ≥ 16)	25	59.5			
− Non-depressed (score ≤ 16)	17	40.5			
Total FSFI	42				
− Bad	36	85.70			
− Moderate	5	11.90			
− Good	1	2.40			

A total of 12 respondents (28.6%) patients had diabetes and 25 (59.5%) had experienced menopause; six respondents (14.3%) had a secondary amenorrhea and 11 (26.2%) were still menstruating regularly. There is only one person (2.4%) smoked, 1 person (2.4%) passive smoker and 40 others were non-smokers.

Hiperprolactinemia was founded in 13 respondents (31.00%) while 17 respondents had normal prolactin levels (40.50%). Average prolactin levels respondent 735.75 mlU / L with a minimum value of 181.20 mlU / L and the highest value is 4259.0 mlU / L.

Dyslipidemia was founded in 22 respondents (52.4%) and 13 had lipid profiles within normal limits. A total of 25 people (59.5%) based on the BDI score more or equal to 16 respondents suffer from symptoms of depression. The mean BDI score of respondents was 18.6, with a minimum value 1 and maximum value of 38. A total of 36 respondents (85.7%) had a poor FSFI score and only 6 respondents had FSFI score moderate to good. The mean FSFI score was 10.23 with a minimum 2 and maximum value of 33.2.

Scatter plot between the total BDI and FSFI total value can be seen in Figure 1, which shows that the higher the BDI then the lower the total FSFI score. As for the total FSFI using the ordinal value of good, average and poor sexual functions, the scatter plot can be seen in Figure 2.

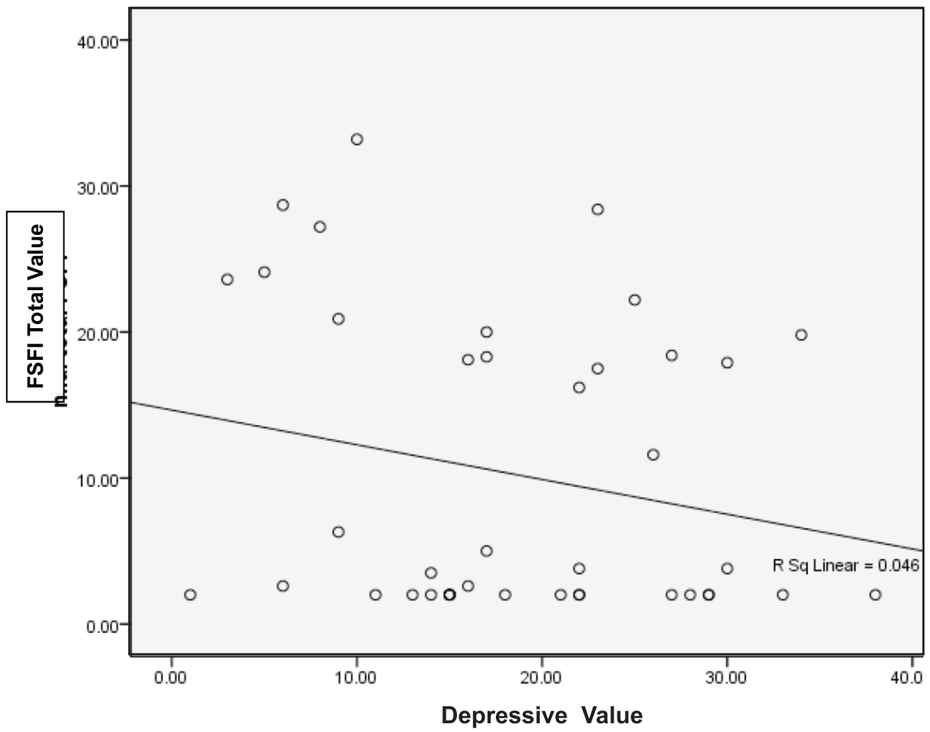

Figure 1. Scatter plot between depression and total FSFI

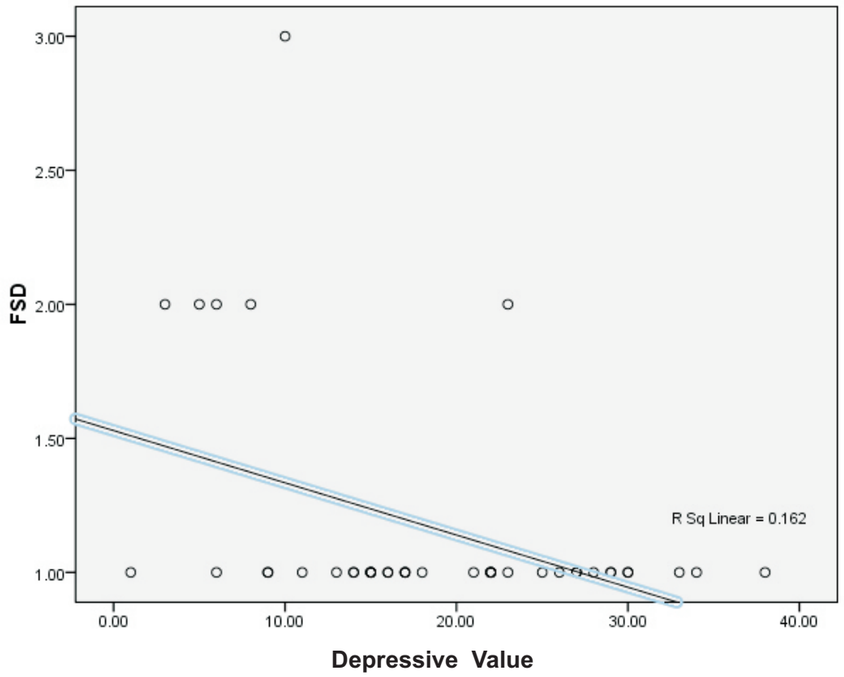

Figure 2. Scatter plot between depression and female sexual dysfunction

Correlation of depression symptoms with total FSFI values obtained using the Spearman test showed the significance value of 0.03 with negative correlation and the value of -0.421. The strength of this correlation was moderate and statistically significant.

These results are consistent with previous studies that the higher the BDI score was significantly associated with lower FSFI total with the β coefficient of -0.341 (p <0.001) (Peng *et al.*, 2005). Sexual dysfunction in women is independently associated with symptoms of depression on the CES-D scale. In non-sexual dysfunction 15.2 ± 10.0 compared with the CES-D at 21.8 ± 11.3 in sexual dysfunction (p <0.001) (Strippoli, 2012). Found a correlation -0.37 (p<0.01) between sexual function with symptoms of major depression in patients with chronic renal failure undergoing hemodialysis in Greece (Theofiliou, 2012).

Table 2. Correlation between female sexual dysfunction with the duration of hemodialysis, age, HB, prolactin, dyslipidemia and menstrual status

Independent Variable	Dependent Variable	N	Coefficient (r)	*p*
Length of HD*	female sexual dysfunction	42	0.048	0.762
Age*	female sexual dysfunction	42	-0.451	0.003
HB Value*	female sexual dysfunction	42	-0.019	0.903
Prolactin*	female sexual dysfunction	30	-0.490	0.025
HDL*	female sexual dysfunction	33	0.395	0.023

*Spearman test

The correlation between several factors that possibly influence the female sexual dysfunction in female hemodialysis patients was analyzed. The duration of hemodialysis and HB levels showed a weak correlation and was not statistically significant. HDL levels, age, prolactin levels and menstrual status showed moderate to strong correlations and were statistically significant.

Table 3. Correlation between menstrual status and female sexual dysfunction

		Female Sexual Function			Total	*r*	*p*
		Bad	Moderate	Good			
Menstrual Status	menopause	25	0	0	25	0.842	0.002
	Secondary Amenorrhea	6	0	0	6		
	Regular menstruation	5	5	1	11		
Total		36	5	1	42		

Age showed a correlative value of -0.451 (*p* = 0.003) to the FSFI score, this value means that the higher the age, the lower the total FSFI score with moderate strength and the correlation was statistically significant. These results were consistent with previous findings that the average age of sexual dysfunction in non-responders were 44.6 ± 12.1 compared with respondents with sexual dysfunction, age 61.5 ± 14.3 (*p* <0.001) (Strippoli, 2012).

DISCUSSION

Prolactin levels in this study had a correlation of -0.818 (*p* = 0.027) of the FSFI score, with the meaning that the higher levels of prolactin, the lower the total FSFI score. This result corresponds to previous research that a number of 25 women with primary hiperprolactinemia compared with 16 controls obtained a median FSFI score was 23.4 (range 17.7 to 27.3) compared to healthy women had a median total FSFI score of 31.10 (range 27, 55 to 32.88) (p <0.001) (Darwish *et al.*, 2007).

Menstrual status has a strong correlation to total FSFI score with a value of r = 0.849 (p = 0.002), the more regular menstruation than the higher the total FSFI score. In the postmenopausal patients the possibility of various factors that contribute to sexual dysfunction, among others, the production of estrogen, estrogen receptor sensitivity and number of receptors, and the degree of stimulation of stimulation (Bhasinet Basson, 2011).

Dyslipidemia in previous studies was strongly associated with sexual dysfunction in women on dimensions of quality, desire, lubrication, orgasm, and clitoral sensation (Peng, *et al.*, 2005). The dyslipidemia variable used in previous studies was hypertriglyceridemia, whereas the variables used in this study were HDL. In this research, showed the higher the HDL the better female sexual function with *r* 0.395 (*p* <0.023).

Renal anemia negatively affects the health of sex, the presence of chronic fatigue and weakness due to anemia symptoms contribute to decreased libido and the ability to have sex. Giving erythropoietin and correction of anemia were significantly associated with improved sexual ability (Levin, 2001). In this study a weak correlation between the levels of non-significant and HB with total FSFI scores was found.

CONCLUSION

Symptoms of depression had a negative correlation with female sexual function with moderate strength. Further research is needed with a method to find the relationship between the two proportions to find the estimated risk of depression on sexual dysfunction in female hemodialysis patients. Adjustments for the confounding factors that affect female sexual dysfunction which are age, prolactin levels, dyslipidemia and menstrual status is required.

REFERENCES

1. Bhasin, S., Basson, R. 2011. Sexual Dysfunction in Men and Women. *In* Melmed, S., Polonsky, K.S., Larsen P.R., Kronenberg, H.M. (Eds).Williams Textbook of Endocrinology 12th Edition. Elsevier Saunders.
2. Darwish, A., Abdellah, M., Abdel Aleem, M. 2007. *Cited* April 2012.Hyperprolactinemia and Woman's Health. *Woman's Health University Center, Assiut, Egypt*. www.intechopen.com
3. Kader, K.A., Unruh, M.L., Weisbord, S.D. 2007. *Cited* 28 October 2010.Symptom Burden, Depression, and Quality of Life in Chronic and End-Stage Kidney Disease.*ISSN*: 1555-9041/406–1057. http://cjasn.asnjournals.org
4. Levin, A. 2001.Sexual dysfunction in chronic kidney disease.*Profiles in Chronic kidney Disease,* Vol. 2, No 4, December 2001.
5. Peng, Y., Chiang, C.K., Hung, K.Y., Chiang, S.S., Lu, C.S., Yang, C.S., Wu,K.D., Yang, C.C., Lin, R.P., Cang, C.J., Tsai, T.J, Chen, W.Y. 2007.*Cited* 29 October 2010. The association of higher depressive symptoms and sexual dysfunction in male hemodialysis patients. *Nephrol Dial*
6. *Transplant* (2007) 22: 857–861. http://ndt.oxfordjournals.org
7. Sadock, B.J. and Sadock, V.A. 2005. Comprehensive Textbook of Psychiatry, volume II, 8th edition, LIPPINCOTT WILLIAMS & WILKINS. Philadelphia, USA. 2005.
8. Strippoli, G. 2012. *Cited* March 2012.Sexual Dysfunction in Women with ESRD requiring hemodialysis. *Clin J Am Soc Neprol*. http://cjasn.asnjournals.org
9. Theofilou, P.A. 2012. *Cited* March 2012. Sexual functioning in chronic kidney disease: The association with depression and anxiety. *Hemodialysis International* 2012; 16:76–81. http://onlinelibrary.wiley.com