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Sexual function, depressive symptoms and quality of life of people undergoing hemodialysis therapy

Função sexual, sintomatologia depressiva e qualidade de vida de pessoas submetidas à terapia hemodialítica

Función sexual, síntomas depresivos y calidad de vida de las personas en tratamiento de hemodiálisis

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ABSTRACT

Objective: to analyze the correlation between sexual function, depressive symptomatology and quality of life of people on hemodialysis treatment. **Method:** a cross-sectional study developed with 54 participants. Data collection occurred between the months of March and May 2020. The data were analyzed with the Mann-Whitney and Spearman Correlation tests, with a 95% confidence interval. **Results:** the correlation between sexual function and depressive symptomatology was only clinically relevant for women (ρ= -0.724). Regarding quality of life, it was observed that the overall sexual function of men is negatively correlated with the pain dimension (ρ= -0.349) and with the social function (ρ= -0.347). For women, overall sexual function is positively correlated with physical function (ρ= 0.501), general health (ρ= 0.737), mental component (ρ= 0.497), sleep (ρ= 0.753), quality of social interaction (ρ= 0.621), and patient satisfaction (ρ= 0.457). **Conclusion and implications for the practice:** increased sexual function was strongly correlated with reduced depressive symptoms and increased quality of life, implying the need to strengthen sexual approaches through protocols that provide referral flows to specialized trans-disciplinary teams.

Keywords: Renal Dialysis; Renal Insufficiency; Mental Health; Public Health; Sexuality.

RESUMO

Objetivo: analisar a correlação entre função sexual, sintomatologia depressiva e qualidade de vida de pessoas em tratamento hemodialítico. **Método:** estudo transversal desenvolvido com 54 participantes. A coleta de dados ocorreu entre os meses de março a maio de 2020. Os dados foram analisados com os testes de Mann-Whitney e Correlação de *Spearman,* com intervalo de confiança de 95%. **Resultados:** a correlação entre a função sexual e a sintomatologia depressiva somente foi clinicamente relevante para as mulheres (ρ= -0,724). Já em relação à qualidade de vida, observou-se que a função sexual geral dos homens está negativamente correlacionada com a dimensão dor (ρ= -0,349) e com a função social (ρ= -0,347). Já para as mulheres, a função sexual geral está positivamente correlacionada com a função física (ρ= 0,501), saúde geral (ρ= 0,737), componente mental (ρ= 0,497), sono (ρ= 0,753), qualidade da interação social (ρ= 0,621) e com a satisfação do paciente (ρ= 0,457). **Conclusão e implicações para a prática:** o aumento da função sexual esteve fortemente correlacionado com a redução de sintomatologia depressiva e com o aumento da qualidade de vida, implicando a necessidade de fortalecer as abordagens sexuais por meio de protocolos que ofereçam fluxos de encaminhamento às equipes transdisciplinares especializadas.

Palavras-chave: Diálise Renal; Insuficiência Renal; Saúde Mental; Saúde Pública; Sexualidade.

RESUMEN

Objetivo: analizar la correlación entre función sexual, síntomas depresivos y calidad de vida de personas en hemodiálisis. **Método:** estudio transversal desarrollado con 54 participantes. La recolección de datos ocurrió entre marzo y mayo de 2020. Los datos fueron analizados mediante las pruebas de Mann-Whitney y Correlación de *Spearman*, con un intervalo de confianza del 95%. **Resultados:** la correlación entre la función sexual y los síntomas depresivos solo fue clínicamente relevante para las mujeres (ρ= -0,724). En cuanto a la calidad de vida, se observó que la función sexual general de los hombres se correlaciona negativamente con la dimensión dolor (ρ= -0,349) y con la función social (ρ= -0,347). Para las mujeres, la función sexual general se correlaciona positivamente con la función física (ρ= 0,501), salud general (ρ= 0,737), componente mental (ρ= 0,497), sueño (ρ= 0,753), calidad de la interacción social (ρ= 0,621) y con la satisfacción del paciente (ρ= 0,457). **Conclusión e implicaciones para la práctica:** el aumento de la función sexual se correlacionó fuertemente con la reducción de los síntomas depresivos y con el aumento de la calidad de vida, lo que implica la necesidad de fortalecer los abordajes sexuales a través de protocolos que ofrezcan flujos de derivación para equipos transdisciplinarios especializados.

Palabras clave: Diálisis Renal; Insuficiencia Renal; Salud Mental; Salud Pública; Sexualidad.

INTRODUCTION

Chronic Kidney Disease (CKD) is defined as the irreversible and progressive loss of kidney function, requiring adherence to dialysis therapies to ensure the body's homeostasis. The global prevalence of people undergoing dialysis therapy is 552 patients for every million of the population, and among the types of renal replacement therapy, hemodialysis (HD) is the most prevalent dialysis method in the world. It is a modality in which the blood is purified extra-corporeally, with the help of a machine and a complex capillary line system, configuring itself as a high-tech therapy in favor of patients; however, it also brings some undesirable effects along with CKD[1].

Among such effects are impaired function, fatigue[2], low Quality of Life (QoL), onset of clinical complications such as anemia and neurological disorders[3], in addition to anxiety and depression disorders[2,4]. Depression is considered the most prevalent psychiatric condition among CKD patients[2-3] whose estimates indicate a rate of 20% to 30% in HD patients[2].

Depression in hemodialysis patients is related to increased morbidity and mortality, poor therapeutic adherence and decline in nutritional status. However, despite being frequent, it is a commonly underdiagnosed condition, since the symptoms of CKD are similar to depressive symptoms, such as anorexia, sleep disorders, weight changes, pain, fatigue, and nausea[2].

In addition, disturbances in sexual functioning are also frequent in people with CKD[5-6] and are little known complaints[6], because patients do not usually report them to health professionals due to sociocultural factors[5]. According to meta-analysis studies, the prevalence of sexual dysfunction in women with CKD is 74%[7] and erectile dysfunction in men reaches up to 76% in the pre-dialysis phase and 77% in the post-dialysis phase[8]. It is generally observed that, regardless of gender, about 70% of HD patients experience some form of sexual dysfunction It is generally observed that, regardless of gender, about 70% of HD patients experience some form of sexual dysfunction It is generally observed that, regardless of gender, about 70% of HD patients experience some form of sexual dysfunction[9].

This is a problem resulting from a multifactorial complex associated with advanced age, hypertension, hyperlipidemia, iron therapy and presence of depression, and its prevalence is higher among people with CKD when compared to the general population. Despite this, there is a quantitative limitation of scientific investigations that address any correlation between dialysis methods and sexual dysfunction in people with CKD, which has undesirable repercussions on the knowledge of this problem[10] and increases the relevance of the development of this study.

In this perspective, it was hypothesized that sexual function is correlated, negatively and with strong magnitude, with depression, besides being correlated, positively and with strong magnitude, with the QoL of people in HD. If this hypothesis is confirmed, this study will serve as a direction to the multiprofessional health teams that work in Nephrology Services and in public health to approach the theme with the patients and present scientifically safe and efficient alternatives to satisfy this vital component of the human being. Therefore, this study aimed to analyze the correlation between sexual function, depressive symptoms and QoL of people on hemodialysis treatment.

METHOD

This is a cross-sectional and observational study, with a descriptive and analytical approach, developed with 54 participants selected through consecutive non-probability sampling in which questionnaires were made available online for completion. The sample size was determined considering a dialysis population of 133,464[11], 70% prevalence of sexual dysfunction[9], sampling error of 5% and confidence level of 95%, resulting in a final sample of 95 participants. However, due to factors such as difficulty in joining the research, social dogmas related to the topic and losses for other reasons, the calculated sample size was not fully achieved, resulting in 54 participants in the study. Inclusion criteria were: being over 18 years old, diagnosed with CKD and on hemodialysis treatment for a period equal to or greater than one year.

The study scenario consisted of the five Brazilian regions: North, Northeast, Midwest, Southeast and South. Data collection occurred between March and May 2020, exclusively online, through the Facebook Social Network, in which a social interaction page called "sexuality and quality of life" was created. On this page, the authors published a hyperlink that gave direct access to the research questionnaire.

In addition, the strategy of post boosting was used in order to reach the sample size according to the inclusion criteria. In this boosting model, Facebook is responsible for disseminating the hyperlink of the questionnaire to the profiles that have specific characteristics that, previously selected, there is the targeted disclosure. We chose, then, the profiles of users who had some interest in the area of Nephrology as the main characteristic, either by liking and sharing of posts on the theme or even by participation in groups formed by people with dialysis.

The research questionnaire was built by the free tool Google Forms and divided into four blocks: biosociodemographic, sexual function, depression and QoL. In addition, before accessing the questionnaires, the participants' e-mail address was required for better control of the data sent, which allowed the identification of possible multiplicity of answers given by the same participant.

The biosociodemographic block was organized with questions prepared by the authors themselves in order to trace the profile of the participants, such as: gender; religious belief; marital status; sexual orientation; age group; ethnicity; education; family income; occupation; underlying diseases; time of dialysis; period of dialysis sessions; donor of dialysis treatment; whether they have received and/or ask health professionals for guidance on sexuality and geographic location.

The sexual function block was built with two instruments, the Sexual Quotient - Male Version (SQ-M)[12] and the female version[13], constructed and validated in Brazil according to the sexual specificities of each sex. The instruments are composed by ten questions whose answers are organized in a Likert scale:

(0=never); (1=rarely); (2=sometimes); (3=approximately 50% of the time); (4=most of the time) and (5=always). The final score is obtained by adding the points corresponding to each answer given, and then multiplying the result by two. For the female version only, the constant five must be subtracted by the value answered in the seventh question [5-q7] for subsequent summation and multiplication of the values to obtain the final score. This question refers to the sensation of pain during vaginal penetration[13]. For both instruments, the final score ranges from zero to 100 points, which will serve as a parameter to classify sexual performance into: with dysfunction (≤ 60 points) and without dysfunction (>60 points)[12-13].

The depression block was structured with the Beck Depression Inventory adapted and validated for the Brazilian population[14]. This instrument considers the last week and is organized in 21 self-assessment questions with four alternatives whose scores range from zero to three, totaling a final score of zero to 63. The final classification obeys to the following scores: absence of depressive symptoms (<10 points) and presence of depressive symptoms (>10 points)[15].

The QL block was structured with the Kidney Disease and Quality of Life - Short Form (KDQOL-SF™ 1.3), validated and adapted for the Brazilian CKD population[16]. It is an instrument composed of 80 items distributed in 19 dimensions. The dimensions, in turn, are divided into aspects of general health, assessed by the Medical Outcomes Study (MOS) 36 item Short-form Health Survey (SF-36), and the specific aspects of CKD. For each dimension, the scores range from zero to 100 points, and the higher the score, the better the perception of QoL of the person investigated[16].

In the dimensions that assess general health, there are items referring to physical functioning; role limitations caused by physical problems; role limitations caused by emotional problems; general health perceptions; social functioning; emotional well-being; energy/fatigue and health status compared to one year ago, totaling eight dimensions. In the dimensions directed to kidney disease, there are items referring to the list of symptoms/problems; effects of kidney disease; burden of kidney disease; cognitive function; quality of social interaction; sexual function; sleep; social support; work status; general health assessment; patient satisfaction and encouragement from the dialysis team, totaling 11 dimensions[16].

After verifying the non-normality of the data, non-parametric statistics was used with the Mann-Whitney and Spearman Correlation (ρ) tests in IBM® SPSS Statistics, version 25. Qualitative variables are presented as frequencies (absolute and relative), median (Md), interquartile range (IQ), mean (M), standard deviation (SD), and minimum and maximum values. Correlation values were interpreted as follows: weak magnitude ($\rho < 0.4$), moderate magnitude ($\rho > 0.4$ to $\rho < 0.5$), and strong magnitude ($\rho > 0.5$)[17].

It is noteworthy that this study respected all aspects of Resolution No. 466/2012 of the National Health Council. Approval was obtained from the Research Ethics Committee of the School of Nursing of Ribeirão Preto, University of São Paulo, in 2020, under Opinion No. 4,470,721. All participants signed the Informed Consent Form (FICT) online before proceeding with the research, and a copy was returned to all informed e-mails, in the form of hidden copy, in order to preserve the identity of those involved.

RESULTS

It is noted that the highest prevalence of participants belongs to the male gender (64.8%), with complete High School Education (53.7%), heterosexual (92.6%), who do hemodialysis therapy by UHS (83.3%) and who never received guidance on sexuality by health professionals (87.0%). The mean age was 41.85 years (standard deviation = 12.91). The other information is shown in Table 1.

Table 2 presents descriptive data of the variables studied. It is observed that women have better sexual function by presenting higher scores in the global score (Md=62.00 [IQ=46.00-74.00]). When analyzing QoL involving both genders, it is noted that the best perception of QoL was identified among the dimensions sexual function (Md=75.00 [IQ=62.50-100.00]) and encouragement from the dialysis team (Md=75.00 [IQ=71.87-100.00]).

Table 3 shows the correlation analysis between sexual function with depressive symptoms (column 1) and the comparison of sexual function according to the presence or absence of depressive symptoms (columns 2, 3 and 4). It is observed that the correlation between male sexual function with depressive symptoms was negligible in all dimensions and with no statistically significant difference. However, with regard to female sexual function, correlations of strong magnitude and with statistical differences are noted in all dimensions, with the exception of "comfort". When comparing the sexual function according to the presence or absence of depressive symptomatology, we notice that, only for men, the dimensions "general satisfaction of the individual" and "general satisfaction with the partner" had statistically significant differences, with the participants without symptomatology having a better experience of their sexual function in these dimensions.

Table 4 demonstrates the correlation analysis between male sexual function and QoL. It is observed that men's overall sexual function is negatively correlated with pain ($\rho= -0.349$; $p<0.05$) and social function ($\rho= -0.347$; $p<0.05$). In addition, pain correlated negatively with erection quality ($\rho= -0.344$; $p<0.05$) and ejaculation control ($\rho= -0.446$; $p<0.05$). Another important result was that the "sleep" dimension is positively correlated with the ability to achieve orgasm ($\rho= 0.494$; $p<0.05$) and with the individual's overall satisfaction ($\rho= 0.393$; $p<0.05$). Finally, encouragement from the dialysis team correlated positively with overall satisfaction ($\rho= 0.346$; $p<0.05$).

Table 5 demonstrates the correlation analysis between female sexual function and QoL. It is observed that women's overall sexual function is positively correlated with physical function ($\rho= 0.501$; $p<0.05$), general health ($\rho= 0.737$; $p<0.05$), mental component ($\rho= 0.497$; $p<0.05$), sleep ($\rho= 0.753$; $p<0.05$), quality of social interaction ($\rho= 0.621$; $p<0.05$), and patient satisfaction ($\rho= 0.457$; $p<0.05$). In addition, there were also negative correlations

Table 1. Biosociodemographic characteristics - Ribeirão Preto, SP, Brazil, 2020.

Variables	n	%	Variables	n	%
Sex			**Religion**		
Male	35	64.8	Catholic	25	46.3
Female	19	35.2	Protestant	14	25.9
Education			Spiritist	2	3.7
Primary	10	18.6	Others	13	24.1
Highschool	29	53.7	**Ethnicity**		
Higher	14	25.9	White	17	31.5
No Schooling	1	1.8	Yellow	1	1.9
Family income (salary = R$ 1,100)			Black	9	16.7
Less than 1 salary	9	16.7	Brown	26	48.0
Between 1 and 2 salaries	30	55.6	Does not know	1	1.9
More than 3 salaries	15	27.8	**Occupation**		
Marital Status			Retired	30	55.6
Married	32	59.3	Unemployed	8	14.8
Single	10	18.5	Employed	9	16.6
Stable Union	7	13.0	Liberal professional	7	13.0
Widower	2	3.6	**Brazilian Region**		
Divorced	3	5.6	North	3	5.6
Do you live with your children?			Northeast	11	20.4
Yes	30	55.6	Center-West	12	22.2
No	10	18.5	Southeast	19	35.1
I don't have children	14	25.9	South	9	16.7
How long have you been on hemodialysis?			**Underlying disease**		
Between 1 and 2 years	19	35.2	Diabetes	1	1.9
Between 3 and 4 years	10	18.5	Hypertension	29	53.7
Between 5 and 6 years	7	13.0	Hypertension + diabetes	11	20.4
Between 7 and 8 years	10	18.5	Other	13	24.0
More than 9 years	8	14.8	**Sexual orientation**		
Period of the hemodialysis sessions			Heterosexual	50	92.6
Morning	30	55.6	Other	4	7.4
Afternoon	14	25.9	**Have you ever received orientation about sexuality?**		
Evening	10	18.5	Yes	7	13.0
Financer of the treatment			Never	47	87.0
Unified Health System	45	83.3	**Do you ask about sex and sexuality?**		
Health Insurance	9	16.7	Yes	9	16.7
Do you live in the treatment city?			No	45	83.3
Yes	34	63.0	**Do you use drugs for sexual performance?**		
No	20	37.0	Yes	9	16.7
			No	45	83.3

Table 2. Descriptive analysis of sexual function, depressive symptomatology and QoL - Ribeirão Preto, SP, Brazil, 2020.

VARIABLES	M_d (IQ)	M±SD	Minimum-Maximum
Male Sexual Function			
Sexual desire and interest	4.00 (2.00-4.00)	3.25±1.29	1.00-5.00
Self-confidence	3.00 (2.00-4.00)	2.80±1.43	0.00-5.00
Erection quality	7.00 (3.00-12.00)	7.54±4.76	0.00-15.00
Control of ejaculation	2.00 (1.00-4.00)	2.20±1.67	0.00-5.00
Ability to reach orgasm	4.00 (2.00-5.00)	3.31±1.62	0.00-5.00
Overall satisfaction of the individual	10.00 (7.00-12.00)	9.25±3.15	2.00-14.00
Overall satisfaction that you provide to your partner	7.00 (5.00-8.00)	6.11±2.38	7.00-9.00
Overall score	60.00 (42.00-72.00)	56.74±21.33	14.00-94.00
Female Sexual Function			
Sexual desire and interest	8.00 (5.00-10.00)	7.42±3.87	0.00-15.00
Preliminaries	4.00 (2.00-5.00)	3.68±1.63	0.00-5.00
Personal excitement and attunement with partner	8.00 (4.00-8.00)	6.26±2.99	0.00-10.00
Comfort	5.00 (5.00-6.00)	5.05±1.77	0.00-7.00
Orgasm and satisfaction	7.00 (3.00-8.00)	6.00±3.14	0.00-10.00
Global score	62.00 (46.00-74.00)	56.84±23.55	0.00-92.00
Depressive Symptomatology	12.50 (10.00-20.500)	14.75±8.05	1.00-36.00
Quality of life			
General			
Physical Function	57.50 (40.00-80.00)	55.64±26.13	10.00-95.00
Physical Function	25.00 (0.00-56.25)	32.40±35.56	0.00-100.00
Pain	52.50 (40.00-75.00)	55.23±22.01	20.00-100.00
General health	55.00 (45.00-70.00)	56.01±19.53	15.00-90.00
Emotional well-being	56.00 (48.00-60.00)	54.07±9.08	32.00-80.00
Emotional functioning	33.33 (33.33-66.67)	48.76±25.66	0.00-100.00
Social Function	43.75(25.00-75.00)	47.22±28.49	0.00-100.00
Energy/Fatigue	37.50 (25.00-50.00)	38.15±14.80	5.00-70.00
Physical Component	38.16 (30.80-45.28)	38.11±8.20	23.05-54.56
Mental component	43.29 (37.66-47.13)	42.43±7.57	24.81-60.10
Specifics			
List of symptoms/problems	69.79 (58.33-87.50)	69.71±24.34	0.00-100.00
Effects of Kidney Disease	59.38 (39.84-78.91)	58.62±23.77	0.00-100.00
Burden of kidney disease	43.75 (31.25-60.06)	46.29±20.51	6.25-87.50
Work situation	44.25 (30.75-62.07)	31.48±40.39	0.00-100.00
Cognitive Function	56.66 (45.00-66.67)	54.44±13.50	20.00-80.00
Quality of social interaction	60.00 (46.67 (61.66)	56.42±10.81	33.33-86.67
Sexual Function	75.00 (62.50-100.00)	77.18±24.33	12.50-100.00
Sleep	62.50 (46.87-75.62)	59.76±20.05	15.00-100.00
Social Support	66.67 (45.83-87.49)	64.50±30.72	0.00-100.00
Dialysis team encouragement	75.00 (71.87-100.00)	73.37±29.54	0.00-100.00
Patient satisfaction	66.67 (50.00-80.00)	61.72±25.82	0.00-100.00

Table 3. Correlation (ρ) and comparison of sexual function with depressive symptomatology - Ribeirão Preto, SP, Brazil, 2020.

SEXUAL FUNCTION	Depressive symtoms	With Symptomatology (n=42; 77.8%)	No Symptomatology (n=12; 22.2%)	p-value
	ρ	M_d (IQ)	M_d (IQ)	
MALE				
Sexual desire and interest	-0.005	3.00 (2.00-4.00)	4.00 (2.00-5.00)	0.238
Self-confidence	-0.052	2.00 (1.25-4.00)	4.00 (2.00-4.00)	0.211
Erection quality	0.004	6.50 (3.00-11.75)	9.00 (3.00-12.00)	0.636
Control of ejaculation	0.050	2.00 (1.00-3.00)	2.00 (1.00-4.00)	0.740
Ability to reach orgasm	-0.169	3.50 (2.00-4.00)	5.00 (2.00-5.00)	0.107
Overall satisfaction of the individual	-0.049	9.50 (6.25-10.75)	12.00 (10.00-12.00)	**0.043***
Overall satisfaction to partner	-0.167	6.00 (4.00-8.00)	8.00 (6.00-9.00)	**0.033***
Overall score	-0.031	56.00 (33.50-68.00)	70.00 (52.00-76.00)	0.211
FEMALE				
Sexual desire and interest	**-0.604****	8.00 (4.75-10.00)	12.00 (1200-12.00)	0.211
Preliminaries	**-0.721****	4.00 (2.00-5.00)	5.00 (5.00-5.00)	0.421
Personal excitement and attunement with partner	**-0.629****	8.00 (3.75-8.00)	10.00 (10.00-10.00)	0.105
Comfort	**-0.369**	5.50 (5.00-6.00)	5.00 (5.00-5.00)	0.737
Orgasm and satisfaction	**-0.725****	7.00 (2.75-8.00)	10.00 (10.00-10.00)	0.211
Overall score	**-0.724****	60.00 (44.00-74.00)	84.00 (84.00-84.00)	0.211

* Statistical significance by Mann-Whitney Test (p<0.05). ** Spearman correlation (ρ) statistically significant (p<0.05)

between overall sexual function and energy/fatigue (ρ= 0.547; p<0.05) and effects of kidney disease (ρ= -0.584; p<0.05). Finally, encouragement from the dialysis team correlated positively with orgasm and satisfaction (ρ= 0.501; p<0.05).

DISCUSSION

The overall prevalence of sexual dysfunction found in this study was 50%, being 47.4% among women and 51.4% among men. There are several factors that favor the development of sexual dysfunction in patients with CKD, such as hormonal factors (hyperprolactinemia, hypogonadism, changes in the hypothalamus, among others); psychosocial factors (social isolation, loss of work bond, financial difficulties, low self-esteem, anxiety, depression, among others); medication factors (antihypertensives, antidepressants, histamine receptor blockers, among others); and pathological factors (anemia, mineral and bone metabolism disorders, malnutrition, cardiovascular problems, among others) that are common to this group studied[18].

Furthermore, it is suggested that satisfactory sexual function in people with CKD may exert positive health influences such as reduced levels of depressive symptoms and increased QoL[18]. In this study, clinically relevant correlations were found between sexual function and depressive symptoms only for females, indicating that the better sexual function of women in HD is correlated with lower levels of depressive symptoms. The highest correlation found was with "orgasm and satisfaction", which highlights the importance of this dimension in the mental health of the women investigated.

In this sense, a study cited[19] developed with patients in Italy, which found that the main sexual dysfunctions in women on hemodialysis therapy were orgasm disturbance and pelvic pain, and that the highest prevalence of the investigated women presented severe orgasm disturbance (50%). Another meta-analysis study[20] found that women with renal failure in treatment with HD had significantly lower values in desire, arousal, lubrication, orgasm and satisfaction, that is, in virtually all the variables that make up the female sexual function. Finally, it is reported that dialysis women, especially those in amenorrhea, are more likely to have low estradiol levels, resulting in vaginal atrophy and dryness, which, in turn, culminates in a higher prevalence of dyspareunia and orgasmic problems[21].

It is worth noting that depression is the main factor that induces the individual not to adhere to treatment, and is therefore associated with increased mortality in dialysis populations. In addition, it is estimated that people undergoing dialysis have a four times greater risk of developing depression when compared to the general population. Depression, in turn, can result in sexual dysfunction[22].

Table 4. Correlation and comparison of male sexual function with quality of life - Ribeirão Preto, SP, Brazil, 2020.

QUALITY OF LIFE	DOMAINS OF MALE SEXUAL FUNCTION							
	Sexual desire and interest	Self-confidence	Quality of erection quality	Control of ejaculation control	Ability to reach orgasm	Overall satisfaction of the individual	Overall satisfaction to the partner	Global score
General dimensions								
Physical Function	**-0202***	-0.155	0.056	-0.067	0.131	0.176	0.026	0.059
Physical Function	-0.277	-0.073	-0.050	0.055	0.230	0.068	0.142	0.010
Pain	-0.242	-0.147	**-0.344***	**-0.446***	-0.151	-0.313	-0.240	**-0.349***
General health	0.022	-0.214	-0.059	0.081	-0.083	0.056	0.031	-0.022
Emotional well-being	-0.045	0.214	-0.116	-0.192	0.071	0.026	-0.001	-0.055
Emotional functioning	-0.154	-0.139	-0.098	0.031	0.205	-0.054	0.168	-0.077
Social Function	-0.159	-0.057	**-0.362***	**-0.353***	-0.104	-0.169	-0.234	**-0.347***
Energy/Fatigue	0.003	-0.245	-0.009	-0.078	-0.223	-0.127	**-0.360***	-0.130
Physical Component	-0.323	-0.124	-0.110	-0.122	0.110	0.046	0.051	-0.081
Mental component	-0.227	-0.094	-0.307	-0.271	-0.013	-0.230	-0.107	-0.325
Specific Dimensions								
List of symptoms/problems	-0.377	-0.343	**-0.600***	-0.169	-0.215	-0.265	0.461	-0.481
Effects of Kidney Disease	-0.009	0.170	-0.136	-0.111	0.300	0.179	0.170	0.034
Burden of kidney disease	-0.076	0.015	0.047	0.176	-0.003	0.112	0.127	0.080
Work situation	-0.011	0.090	-0.142	0.227	0.297	0.137	0.264	-0.014
Cognitive Function	0.074	0.241	-0.093	-0.025	0.095	-0.176	0.040	-0.064
Quality of social interaction	0.022	-0.037	-0.267	-0.079	0.035	0.091	0.194	-0.108
Sexual Function	**0.370***	**0.363***	**0.436***	0.176	0.314	**0.724***	**0.647***	**0.578***
Sleep	0.262	0.325	0.190	-0.019	**0.494***	**0.393***	0.329	0.301
Social Support	0.124	0.106	0.085	-0.036	0.096	0.291	0.238	0.142
Dialysis team encouragement	0.148	0.251	0.119	0.239	0.278	0.294	**0.346***	0.253
Patient satisfaction	0.042	0.170	0.114	0.146	-0.081	0.179	0.185	0.158

* Spearman's correlation (ρ) statistically significant (p<0.05)

In this sense, an investigation developed in Egypt, with women in hemodialysis therapy, identified that HD affects sexual function and satisfaction, and that depressive symptomatology is a precipitating factor for depression among the population studied[23]. Another study in Greece found that satisfaction with sex life was negatively associated with depression, in addition to other variables such as somatic symptoms, anxiety, insomnia and social problems[18].

The results of this study, together with the data from the studies cited, ratify the inversely proportional relationship between the presence of depressive symptomatology and sexual function. Since there are no current scientific investigations on this relationship, especially with the dialysis population, it is suggested that experimental research be developed to test relationships of effects and causality and, therefore, advance knowledge on the subject.

Regarding the relationship between sexual function and QoL, it is evident that the person undergoing hemodialysis may report different types of pain, a symptom that encompasses sensory, behavioral, affective and autonomic factors. Among them, we highlight the pain associated with the progressive loss of muscle mass, bone disorders, vascular obstruction, underlying

Table 5. Correlation and comparison of female sexual function with quality of life - Ribeirão Preto, SP, Brazil, 2020.

QUALITY OF LIFE	DOMAINS OF FEMALE SEXUAL FUNCTION					
	Sexual desire and interest	Preliminaries	Personal excitement and attunement with your partner	Comfort	Orgasm and satisfaction	Global score
General Dimensions						
Physical Function	-0.005	0.140	-0.045	0.316	0.007	0.005
Physical Function	0.375	**0.464***	0.424	**0.472***	0.326	**0.501***
Pain	0.151	0.168	0.080	0.339	0.339	0.187
General health	**0.664***	**0.673***	**0.571***	**0.463***	**0.708***	**0.737***
Emotional well-being	0.244	0.293	0.196	-0.045	0.425	0.378
Emotional functioning	0.187	0.363	0.416	0.034	0.380	0.371
Social Function	0.121	0.352	-0.002	0.117	0.126	0.137
Energy/Fatigue	-0.402	**-0.481***	-0.359	**-469***	**-0.666***	**-0.547***
Physical Component	0.034	0.196	-0.077	0.369	-0.112	0.005
Mental component	0.390	0.420	0.377	-0.141	**0.664***	**0.497***
Specific Dimensions						
List of symptoms/problems	-0.129	-0.038	-0.148	-0.077	-0.069	-0.059
Effects of Kidney Disease	**-0.479***	**-0.691***	-0.392	-0.122	**-0.700***	**-0.584***
Burden of kidney disease	0.310	0.382	0.206	0.294	0.149	0.310
Work situation	0.025	0.211	0.031	0.017	-0.098	-0.064
Cognitive Function	-0.269	-0.339	-0.303	-0.245	-0.259	-0.312
Quality of social interaction	0.288	0.113	0.257	0.020	0.373	0.277
Sexual Function	**0.657***	0.510	0.376	-0.103	**0.759***	**0.621***
Sleep	**0.729***	0.447	**0.630***	**0.491***	**0.611***	**0.753***
Social Support	**0.477***	0.289	0.264	0.123	**0.505***	0.430
Dialysis team encouragement	0.199	0.142	0.107	-0.057	**0.501***	0.259
Patient satisfaction	**0.479***	0.281	0.315	-0.092	**0.526***	**0.457***

* Spearman's correlation (ρ) statistically significant (p<0.05)

diseases such as Diabetes Mellitus, among other types, which may consequently generate unsatisfactory impacts on QoL[24].

In this sense, in this study, pain (one of the QoL variables) correlated negatively with the overall sexual function of men (Table 4) and women (Table 5), and the only correlation with greater magnitude found was between pain and control of erection, as shown in Table 4. It is inferred that, as satisfactory erection requires perfect harmony between the psychogenic, neurological, hormonal, and vasculogenic aspects[25], the pain inherent to CKD and hemodialysis therapy may interfere with some physiological aspect of erection and, consequently, reduce QoL in the sexual component of men.

Energy/fatigue was another QoL variable that correlated negatively and strongly with orgasm/satisfaction and with overall sexual function in women. For men, this dimension also correlated negatively, but with weak magnitude in the dimension of overall satisfaction provided to the partner.

Fatigue is a common and debilitating symptom among the dialysis population, and is associated with the risk of death and hospitalization. It is estimated that about 70% of people with CKD report fatigue, with up to 25% reporting severe symptoms.

The pathophysiology is multifactorial and is probably related to reduced oxygen delivery, and, consequently, increased anaerobic activity, the impacts of chronic metabolic acidosis and increased serum phosphates in skeletal muscles, among other factors[26], which demonstrates the depth of the impacts of CKD on the body and, consequently, impacts on QoL.

Another important result was that the "sleep" dimension of QoL is positively correlated with the ability to reach orgasm and with overall satisfaction among men (Table 4), while for women; sleep was positively correlated with sexual desire and interest, personal arousal and harmony with the partner, comfort, in addition to orgasm and satisfaction, as shown in Table 5. These results indicate that better sexual function, represented by the components mentioned above, may act as a mediator that increases the quality of sleep in HD patients.

According to meta-analysis investigations, the prevalence of poor sleep quality in people undergoing HD ranges from 75.30% to[27] to 94%[28]. This high prevalence becomes a reason for concern among health authorities, since the impact of poor sleep quality in these patients has repercussions on QoL dissatisfaction, premature death, reduced immune response, probability of developing cardiovascular diseases, reversion of day by night, insomnia, headache, depression, decreased functional capacity, among other factors, which highlights the need to periodically direct the assistance to this problematic[27].

Some strategies can be used to improve sleep quality, such as adjusting the lighting, temperature and ventilation of the environment, using comfortable bedding, as well as some medical interventions[27]. Still in this sense, the results of this study indicated moderate to strong correlations between the variables sleep and sexual function, which may indicate that the stimulation of sexual practice, allied with a good sexual function, can help people in HD to improve the quality of their sleep. However, the development of clinical studies is required to test this relationship of effects and confirm this hypothesis.

Social support, another dimension of QoL, is also positively correlated from moderate to strong magnitude with desire, sexual interest, orgasm, and satisfaction in women, as shown in Table 5. No relevant correlations were found for men.

It is revealed that the social support perceived and received by the person with CKD has a satisfactory influence on their attitudes, which, in turn, allow ensuring greater therapeutic adherence, including dietary, dialysis and drug therapies. Therefore, the importance of social support to this public is clear, because HD is not limited to the dialysis machine, but the entire process of adaptation and re-adaptation throughout life[29].

As far as we know, there are no recent studies with the HD population that address social support, but according to a research developed with people on peritoneal dialysis[30], another dialysis modality, the social support perceived by the participants was associated with a better perception of QoL in the physical and mental components. The authors found that social support acts as a strategy capable of absorbing the effects of HD and CKD (physical and psychosocial stress), besides contributing to the adoption of healthy habits[30]. In this sense, if social support is positive for individuals on peritoneal dialysis, it can also be effective in people undergoing HD, since it is a therapeutic modality that exerts a greater burden on the general condition of the user.

Finally, the incentive of the dialysis team correlated positively with overall satisfaction in men and with orgasm and satisfaction in women, which demonstrates the importance of the health professional in clinical and educational support to this public. However, in this study, there was a prevalence of participants who never received guidance on sexuality from health professionals (87.0%) and who do not question about sex or sexuality with such professionals (83.3%).

In this sense, a study[9] developed with nurses from dialysis services identified that such professionals do not usually address the sexuality of patients in a consistent manner, although they feel responsible for immersing themselves in this field. This situation implies the need for guidance and training of teams, as well as the implementation of an articulated network that allows effective referrals for this specialized care[9], especially to CKD patients undergoing hemodialysis therapy.

Given such evidence, it is understood that the dialysis teams are not fully prepared to offer comprehensive care to users of renal dialysis services, especially with regard to approaches on sex and sexuality. This reality can be configured as a serious fragmentation of health care, because people with CKD undergoing hemodialysis treatment may not be enjoying the benefits that these approaches can generate for their mental health and QoL.

CONCLUSION

Clinically relevant correlations were observed, suggesting that increased sexual function is strongly correlated with reduced depressive symptoms and increased QoL of people with CKD undergoing HD. It is noteworthy that, among the QoL variables, the dimensions pain, energy/fatigue, sleep, social support and encouragement from the dialysis team were some of the variables that correlated significantly with sexual function.

It is noteworthy that this study has some limitations, such as the non-probabilistic approach, which does not allow generalizations of the results. Another limitation concerns the fact that the sample size was not reached, which may also affect the representativeness of the data. Despite this, this study provides relevant data to guide professionals in dialysis units to address the issue with patients and present scientifically safe and effective alternatives to satisfy this vital component of the human being.

It is suggested that health professionals improve the effective communication about the aspects related to sexual function with users of dialysis services. This communication can be systematized through the creation of institutional protocols with referral flows to trans-disciplinary teams specialized in the topic. Thus, health care to this population will be improved by contemplating aspects little explored in current assistance and research.

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