



Ineffective sexuality pattern of elderly people with Diabetes mellitus

Padrão de sexualidade ineficaz de idosos com Diabetes mellitus

Patrón de sexualidad ineficaz de ancianos con Diabetes mellitus

Isabella Cristina Severina¹

Luciano Ramos de Lima²

Silvana Schwerz Funghetto¹

Walterlânia Silva Santos²

Cris Renata Grou Volpe²

Marina Morato Stival¹

1. Universidade de Brasília, Faculdade de Ceilândia. Programa de Pós-Graduação em Ciências e Tecnologias em Saúde. Brasília, DF, Brasil.

2. Universidade de Brasília, Faculdade de Ceilândia, Curso de Graduação em Enfermagem. Brasília, DF, Brasil.

ABSTRACT

Objective: to investigate the nursing diagnosis ineffective sexuality pattern in elderly people with Diabetes mellitus in primary care and analyze their sexuality profile. **Method:** this is a cross-sectional study carried out in a Basic Health Unit with a sample of 134 elderly diabetics. Interviews were carried out between July and August 2019 with structured instruments and laboratory tests. An instrument was used to investigate the nursing diagnosis ineffective sexuality pattern with conceptual and operational definitions of the defining characteristics and related factors according to the NANDA-I taxonomy (2018-2020). **Results:** women predominated, although men were more sexually active ($p < 0.001$). Younger people were more sexually active ($p = 0.001$). Regarding hormonal parameters, elderly people with higher testosterone levels reported being sexually active ($p < 0.001$). Most do not use condoms during sexual intercourse. When analyzing the nursing diagnosis of ineffective sexuality pattern, the most prevalent defining characteristic was "a change in sexual behavior" and the related factor was "skills deficit in sexuality-related alternatives". **Conclusions and implications for practice:** the nursing diagnosis ineffective sexuality pattern has importance in assessing elderly diabetics, as sexuality influences their behavior and personal satisfaction.

Keywords: Sexuality; Elderly; Nursing; Diabetes Mellitus; Nursing Diagnosis.

RESUMO

Objetivo: investigar o diagnóstico de enfermagem *Padrão de sexualidade ineficaz* em idosos com Diabetes mellitus na atenção primária e analisar o seu perfil de sexualidade. **Método:** estudo transversal realizado em uma Unidade Básica de Saúde com uma amostra de 134 idosos diabéticos. Entrevista foi realizada entre julho e agosto de 2019 com instrumentos estruturados, assim como foram coletados exames laboratoriais. Para investigação do diagnóstico de enfermagem *Padrão de Sexualidade Ineficaz*, foi utilizado um instrumento com as definições conceituais e operacionais das características definidoras e fatores relacionados de acordo com a taxonomia NANDA-I (2018-2020). **Resultados:** predominaram mulheres, mas os homens eram mais ativos sexualmente ($p < 0,001$). Os mais jovens eram sexualmente mais ativos ($p = 0,001$). Com relação aos parâmetros hormonais, idosos com maiores níveis de testosterona relataram serem ativos sexualmente ($p < 0,001$). A maioria não utiliza preservativo durante a relação sexual. Ao analisar o diagnóstico de enfermagem *Padrão de Sexualidade Ineficaz*, a característica definidora mais prevalente foi "alteração no comportamento sexual", e o fator relacionado foi "déficit de habilidades sobre alternativas relacionadas à sexualidade". **Conclusão e implicações para a prática:** o diagnóstico de enfermagem *Padrão de Sexualidade Ineficaz* tem sua importância na avaliação de idosos diabéticos, visto que a sexualidade tem influência em seu comportamento e sua satisfação pessoal.

Palavras-chave: Sexualidade; Idoso; Enfermagem; Diabetes Mellitus; Diagnóstico de Enfermagem.

RESUMEN

Objetivo: investigar el diagnóstico de enfermería "Patrón de sexualidad ineficaz" en ancianos con Diabetes mellitus en atención primaria y analizar su perfil de sexualidad. **Método:** estudio transversal realizado en una Unidad Básica de Salud, con una muestra de 134 ancianos diabéticos. Las entrevistas se realizaron entre julio y agosto de 2019 con instrumentos estructurados y se recolectaron pruebas de laboratorio. Para investigar el diagnóstico de enfermería Patrón de Sexualidad Ineficaz, se utilizó un instrumento con definiciones conceptuales y operativas de las características definitorias y factores relacionados según la taxonomía NANDA-I (2018-2020). **Resultados:** predominaron las mujeres, pero los hombres fueron más activos sexualmente ($p < 0,001$). Las personas más jóvenes eran más activas sexualmente ($p = 0,001$). En cuanto a los parámetros hormonales, las personas mayores con niveles más altos de testosterona refirieron ser sexualmente activas ($p < 0,001$). La mayoría no usa condones durante las relaciones sexuales. Al analizar el diagnóstico de enfermería de Patrón de Sexualidad Ineficaz, la característica definitoria más prevalente fue "cambio en la conducta sexual" y el factor relacionado "déficit de habilidades sobre alternativas relacionadas con la sexualidad". **Conclusiones e implicaciones para la práctica:** el diagnóstico de enfermería Patrón de Sexualidad Ineficaz tiene su importancia en la evaluación de los ancianos diabéticos, ya que la sexualidad influye en su comportamiento y satisfacción personal.

Palabras clave: Sexualidad; Anciano; Enfermería; Diabetes Mellitus; Diagnóstico de Enfermería.

Corresponding author:

Isabella Cristina Severina.
isabella.c.severina@hotmail.com

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INTRODUCTION

According to population projections released by the Brazilian Institute of Geography and Statistics (IBGE) in 2018, the Brazilian population reached 19.2 million elderly people over 65 years in 2018, corresponding to 9.2% of the total population. The projection is that in 2060, the percentage of the population in this age group will reach 25.5% of the population, representing roughly 58.2 million elderly people in Brazil.¹

Important changes may be experienced during the aging process. Among them, sexuality, a critical factor for the quality of life of the elderly, stands out. Sexuality in old age becomes complex given the changes in the sexual anatomy and physiology, which are accompanied by difficulties in accepting sexuality. This can occur both by lack of information and the conceptualization that sexuality is restricted to the genital organs, a conception that exists among the elderly and society.²

From the biological point of view, these changes are caused by a decrease in hormone production. Additionally, psychological and sociocultural aspects also influence sexuality. Health conditions, especially chronic diseases, are other factors that negatively interfere with sexuality.³

Diabetes Mellitus (DM) stands out in this context; it is a prevalent chronic disease in the elderly that can cause changes such as impotence, retrograde ejaculation in men, and decreased libido in women. Thus, it is worth emphasizing the importance of the role of health professionals regarding the sexuality of the elderly suffering the adverse effects of DM, so that these individuals can improve their sexuality and live with better quality of life in the aging process.⁴

In this scenario, nurses use the nursing process as a tool to improve their professional performance. Among the five phases of the nursing process, there is the nursing diagnosis (ND), which consists of a clinical judgment of the actual and potential responses of the individual. The Taxonomy II of the North American Nursing Diagnosis Association International (NANDA-I)⁵ defines the ND ineffective sexuality pattern as “expressions of concern about one’s sexuality.”

The increase in the elderly population corroborates the importance of this theme, especially regarding the elderly who live with a chronic disease such as DM. Furthermore, the sexuality of the elderly must be understood in its holistic sense, and it is not only a biological factor but also a biopsychosociocultural one. Investigating the ND of ineffective sexuality pattern will enable a broad analysis of this phenomenon, linked to the biological factors involved in this context, which may contribute to the demystification that permeates this process.

Little research has been carried out regarding ineffective sexuality pattern in the elderly.^{6,7} Nevertheless, some studies have been conducted to investigate factors related to sexuality in the elderly.^{2,8-10} Given the above, this study sought to investigate the ND ineffective sexuality pattern in older adults with DM in primary care and analyze the sexuality profile of these individuals.

METHOD

This is a cross-sectional study conducted in a Basic Health Unit (BHU) found in the largest administrative region of the Federal District (central Brazil). The study population was composed of patients with a confirmed medical diagnosis of Type 2 Diabetes Mellitus (DM2). The sample size calculation considered a sampling error of 5%, 95% confidence interval, and a population size of 300 diabetic patients registered in the Family Health Strategy (FHS). The sample size calculation resulted in 134 patients and was collected by convenience sampling.¹¹

The sample included patients who met the following inclusion criteria: age 60 years or older, being female or male, being enrolled in the referred FHS, and being medically diagnosed with DM2 for at least one year. Men who had already undergone prostatectomy and individuals undergoing hormone replacement were excluded. Hence, we obtained a sample of 149 elderly diabetics who met the inclusion criteria and agreed to participate, although 9 men who had already undergone prostatectomy and 6 individuals who performed hormone replacement (5 women and 1 man) were excluded. The final sample consisted of 134 elderly individuals.

Data collection occurred in a private office of the BHU from July to August 2019. All researchers who took part in data collection were previously trained to conduct interviews with the elderly. A male researcher conducted the data collection with the elderly males, and a female researcher conducted the interview with the elderly women. The researchers read the questions on the instruments and wrote down the participants’ answers. The questions were asked objectively, according to the checklist, so that the answers were not induced.

The first contact was made via telephone from the list of diabetic elderly people registered in the BHU who were invited to participate in the study. Each elderly person was instructed to come to the BHU on the scheduled day after fasting for blood collection. The informed consent form was initially signed, as established by resolution CN no. 466/2012. Then, blood was collected to determine the biochemical levels of glycated hemoglobin, fasting glucose, total cholesterol, triglycerides, high-density lipoprotein (HDL), non-HDL cholesterol, urea vitamin B12, and the hormone levels of progesterone, total testosterone, dehydroepiandrosterone, and estradiol.

Anthropometry was performed by measuring weight, height, and waist circumference. The body mass index (BMI) was calculated considering the weight divided by the square of the height. Then, data collection instruments were used. A structured instrument was applied to investigate sociodemographic variables (sex, age, education, marital status, income, and retirement), self-reported lifestyle habits (smoking, alcoholism, sedentary lifestyle, food control, and sleep), and clinical variables (age at menopause, number of medications, and time of DM diagnosis).

A structured instrument was used to investigate variables related to the sexuality of the elderly, such as sexual frequency, condom use, number of partners, pain during sexual intercourse, difficulties with erection and/or ejaculation, decreased vaginal lubrication, use of stimulants, and use of accessories. The participants were

also questioned about aspects related to the behavior of their sexuality, including maintenance of desire, moments of affection, satisfaction with sexuality and self-esteem, and the influence of age on maintaining sexuality.

To investigate the ND ineffective sexuality pattern, an assessment instrument was constructed in the form of a checklist containing the conceptual and operational definitions of the defining characteristics (DC) and related factors (RF) of the ND according to the NANDA-I taxonomy (2018-2020).⁵

For data analysis, a database was built using the software Statistical Package for the Social Sciences (SPSS®) version 20.0. As for the data related to the characterization of the sample, a descriptive statistical analysis was performed by calculating absolute and relative frequencies and measures of dispersion (mean, standard deviation, minimum, and maximum). Normal distribution was assessed using the Kolmogorov-Smirnov test, and the means between both groups were compared using the t-test. The chi-square test was used to verify differences between proportions,¹¹ and a $p < 0.05$ significance level was considered.

This study is part of a larger project called "An approach to chronic non-communicable conditions in primary health care" and approved by the Research Ethics Committee of the Foundation for Teaching and Research in Health Sciences (FEPECS), opinion no. 1.355.211 of December 08, 2015.

RESULTS

The 134 elderly with DM2 who formed the final sample were divided into two groups: those who reported being sexually active ($n = 55$) and sexually inactive ($n = 79$). Most of the participants were female (67.2%), albeit men reported being more sexually active (56.4%) than women ($p < 0.001$). Hence, we observed that most of the diabetic elderly were sexually inactive, with elderly women being more prevalent in this non-active group.

The mean age of the research participants was 68.4 years ($SD = 6.4$; $min = 60$; $max = 85$), and the younger elderly were more sexually active ($p = 0.001$). Most of the participants were married (57.5%), with education up to elementary school (64.9%), retired (58.2%), not currently working (82.8%), and with an income of 1 minimum wage (50.7%). These variables were not related to sexual activity, although it is possible to observe that widowers, those with less education, those who do not work, and those with lower income are the least sexually active.

Regarding lifestyle habits, 9.7% were smokers, 11.2% were drinkers, 50% reported difficulty sleeping, 51.5% said they had dietary control, and 55.2% were sedentary. The drinkers were more sexually active ($p = 0.002$), and those who said they had difficulty sleeping reported being less sexually active ($p = 0.039$).

The mean time of DM2 diagnosis was longer (13 years) in the sexually inactive elderly group (Table 1). The age of menopause for the elderly women, BMI, and abdominal circumference of

Table 1. Clinical profile and laboratory tests of diabetic elderly compared to sexual activity. Administrative region of Distrito Federal (DF), Brazil, 2020. ($n = 134$)

| | Sexually active | | | | <i>p</i> -value** |
|-------------------------------|------------------|--------|-----------------|--------|-------------------|
| | Yes ($n = 55$) | | No ($n = 79$) | | |
| | M | SD | M | SD | |
| DM2 time (years) | 10.0 | 8.0 | 13.0 | 10.0 | 0.141 |
| Age of menopause (years)* | 48.0 | 6.0 | 46.0 | 8.0 | 0.370 |
| Quantity of medicine | 5.0 | 2.0 | 6.0 | 3.0 | 0.004 |
| BMI (kg/m^2) | 28.5 | 4.3 | 29.0 | 4.6 | 0.552 |
| Abdominal circumference (cm) | 99.3 | 11.2 | 96.9 | 13.8 | 0.290 |
| Biochemical levels | | | | | |
| Glycated hemoglobin (%) | 7.20 | 2.10 | 7.40 | 1.70 | 0.174 |
| Fasting blood glucose (mg/dL) | 155.04 | 114.53 | 138.25 | 49.93 | 0.745 |
| Total cholesterol (mg/dL) | 220.65 | 80.49 | 216.54 | 56.92 | 0.802 |
| Triglycerides (mg/dL) | 118.35 | 48.10 | 124.76 | 55.87 | 0.654 |
| HDL (mg/dL) | 29.65 | 15.56 | 29.87 | 15.08 | 0.929 |
| Non-HDL-C (mg/dL) | 149.18 | 55.79 | 148.07 | 44.37 | 0.477 |
| Urea (mg/dL) | 40.47 | 15.40 | 37.72 | 13.73 | 0.428 |
| Vitamin B12 (pg/mL) | 287.67 | 142.54 | 275.76 | 189.35 | 0.147 |

* $n = 90$ elderly women; **t-test; (M: mean; SD: standard deviation; DM: Diabetes Mellitus; BMI: body mass index; HDL: high-density lipoprotein).

Source: Prepared by the authors

the participants did not have significant variations between the groups. However, the amount of medication used daily had a negative influence on sexuality, with a higher mean medication in the group of the sexually inactive elderly ($p = 0.004$).

When analyzing the laboratory tests of the participants, among the biochemical levels, no differences were observed between the groups. However, in a non-significant way, higher levels of fasting glucose, total cholesterol, non-HDL cholesterol, urea, and vitamin B12 were found in the sexually active group (Table 1).

Regarding the hormonal parameters of the elderly, men had higher means of progesterone, testosterone, and dehydroepiandrosterone. Additionally, 54.4% of the women had estradiol levels below 20 pg/mL, and 79.5% of the men had levels above 20 pg/mL. Testosterone was significant regarding sexual activity, as the participants of both sexes with higher testosterone levels reported being sexually active ($p < 0.001$) (Table 2).

Among females, most reported decreased vaginal lubrication, almost half of them considered to still having sexual desire, and 14.4% reported feeling pain during sexual intercourse. Among men, 97.7% considered maintaining sexual desire, albeit half of the male sample reported difficulty with erection. Moreover, 45.5% reported having premature ejaculation, and 11.4% had already used some medication for erectile dysfunction (Table 2).

Most elderly individuals reported not using condoms during sexual intercourse, especially women. We also noted that most

participants had only one partner, reporting a frequency of sexual intercourse of 1 to 2 times per month; nonetheless, men reported a higher frequency: 4 times a month (Table 3).

As for sexual satisfaction and self-esteem, most of the sample considered themselves satisfied. When asked if they had affectionate moments with their partner, a little over half of the elderly participants reported yes; however, women were the majority among those who did not consider having this moment. Most participants also considered it important to keep their sexuality active after the age of 60 and did not think that their health condition and medications influenced their sexuality (Table 3).

When analyzing the ND ineffective sexuality pattern, the most prevalent DC was “alteration in sexual behavior — mainly among the female — followed by “alteration in sexual activity” — which was more prevalent in males. The total mean of DC in the group was 2.2 (SD ± 1.5) for each individual, and among males, it was higher (Table 4).

Among the RF of this ND, “deficit of skills on alternatives related to sexuality” predominated, followed by “insufficient knowledge on alternatives related to sexuality” and “fear of sexually transmitted infection,” all more prevalent among diabetic elderly women. The mean RF was 2.5 ± 1.1 for each elderly, slightly higher among females (Table 4).

Table 2. Hormone levels and characterization of sexual activity of diabetic elderly according to sex. Administrative region of Distrito Federal (DF), Brazil, 2020. (n = 134)

| | Sex | | | | | | | |
|---------------------------------|-----------------|-------|----|-------|---------------|--------|----|-------|
| | Female (n = 90) | | | | Male (n = 44) | | | |
| | M | SD | n | % | M | SD | n | % |
| Progesterone (ng/mL) | 0.45 | 0.30 | | | 0.54 | 0.27 | | |
| Total testosterone (ng/dL) | 39.09 | 22.05 | | | 377.96 | 120.33 | | |
| Dehydroepiandrosterone (ng/mL) | 1.93 | 1.33 | | | 2.61 | 1.50 | | |
| Estradiol (pg/mL) | Below 20 | | 49 | 54.40 | | | 9 | 20.50 |
| | Over 20 | | 41 | 45.60 | | | 35 | 79.50 |
| Maintenance of sexual desire | | | 39 | 43.30 | | | 43 | 97.70 |
| Decreased vaginal lubrication | | | 59 | 65.60 | | | | |
| Pain during intercourse | | | 13 | 14.40 | | | | |
| Difficulty with erection | | | | | | | 22 | 50.00 |
| Premature ejaculation | | | | | | | 20 | 45.50 |
| Erectile dysfunction medication | | | | | | | 5 | 11.40 |

(M: mean; SD: standard deviation)
Source: Prepared by the authors

Table 3. Sexuality profile of elderly diabetics, according to sex. Administrative region of Distrito Federal (DF), Brazil, 2020. (n = 134)

| | | Total (n = 134) n (%) | Sex | | | |
|--|-----|-----------------------------|-----------------|------|---------------|------|
| | | | Female (n = 90) | | Male (n = 44) | |
| | | | n | % | n | % |
| Condom use | Yes | 7 (5.2) | 2 | 2.2 | 5 | 11.4 |
| | No | 127 (94.8) | 88 | 97.8 | 39 | 88.6 |
| Number of partners | 0 | 79 (59.0) | 66 | 73.3 | 13 | 29.5 |
| | 1 | 49 (36.6) | 20 | 22.2 | 29 | 65.9 |
| | 2 | 4 (3.0) | 2 | 2.2 | 2 | 4.5 |
| | ≥ 3 | 2 (1.5) | 2 | 2.2 | 0 | 0.0 |
| | | | | | | |
| Frequency of sexual intercourse (monthly) | 0 | 79 (59.0) | 66 | 73.3 | 13 | 29.5 |
| | 1–2 | 22 (16.4) | 14 | 15.6 | 8 | 18.2 |
| | 3–4 | 17 (12.7) | 6 | 6.7 | 11 | 25.0 |
| | > 4 | 16 (11.9) | 4 | 4.4 | 12 | 27.3 |
| Satisfied with their sex life | Yes | 102 (76.1) | 70 | 77.8 | 32 | 72.7 |
| | No | 32 (23.9) | 20 | 22.2 | 12 | 27.3 |
| Satisfied with their self-esteem | Yes | 111 (82.8) | 69 | 76.7 | 42 | 95.5 |
| | No | 23 (17.2) | 21 | 23.3 | 2 | 4.5 |
| Moments of affection with their partner | Yes | 69 (51.5) | 36 | 40.0 | 33 | 75.0 |
| | No | 65 (48.5) | 54 | 60.0 | 11 | 25.0 |
| Considers it important to maintain sexuality after the age of 60 | Yes | 103 (76.9) | 60 | 66.7 | 43 | 97.7 |
| | No | 31 (23.1) | 30 | 33.3 | 1 | 2.3 |
| Health status influences sexuality | Yes | 64 (47.8) | 31 | 34.4 | 33 | 75.0 |
| | No | 70 (52.2) | 59 | 65.6 | 11 | 25.0 |
| Medication influenced sexuality | Yes | 32 (23.9) | 17 | 18.9 | 15 | 34.1 |
| | No | 102 (76.1) | 73 | 81.1 | 29 | 65.9 |

Source: Prepared by the authors

DISCUSSION

Most participants stated that they were sexually inactive, especially the women and the older participants. A study on sexuality among elderly women also reported the majority as sexually inactive.¹² How changes are experienced is also influenced by sex since women experience this differently than men.

In women, the changes begin in the climacteric period and may generate psychological and sociocultural consequences in the elderly woman, such as a change in the social role as a reproducer, decreased lubrication during sexual intercourse, and changes in body aesthetics, among others. All these factors are negative influencers in women's behavior and sexual activity.^{9,13,14} Nevertheless, the experience of sexuality is influenced by the individual's previous experiences; that is, just as some women can become more sexually inactive, others can explore and experience their sexuality more freely.⁹

A study pointed out an association between sexual dysfunction and the presence of DM.¹⁵ It is known that DM changes the body's blood circulation, impairing the sexual act in various ways. Evidence has shown that sexual disorders in diabetic patients occur more frequently in elderly patients and those with longer DM duration;^{15,16} 35–75% of diabetics have some degree of sexual dysfunction. Therefore, it is evident that DM is considered a significant risk factor for this dysfunction. In men, it can cause problems related to ejaculation and libido, while women may experience decreased sexual response and vaginal lubrication. In this sense, it is pivotal to evaluate the impact of chronic disease on the sexuality of the elderly as they are more prone to emotional problems and social isolation.^{17,18}

With regard to lifestyle habits, alcoholism was positively associated with sexual activity, while difficulty sleeping was negatively related. A study conducted in South Africa with adults showed that alcohol consumption (especially heavy drinking)

Table 4. Description of the defining characteristics and related factors of the nursing diagnosis ineffective sexuality pattern of diabetic elderly, by sex. Administrative region of Distrito Federal (DF), Brazil, 2020. (n = 134)

| Defining characteristics | Total (n = 134) | | Female (n = 90) | | Male (n = 44) | |
|--|-----------------|------|-----------------|------|---------------|------|
| | n | % | n | % | n | % |
| Change in sexual activity | 47 | 35.1 | 19 | 21.1 | 28 | 63.6 |
| Change in sexual behavior | 71 | 53.0 | 43 | 47.8 | 28 | 63.6 |
| Change in relationship with significant person | 32 | 23.9 | 18 | 20.0 | 14 | 31.8 |
| Conflict of values | 21 | 15.7 | 18 | 20.0 | 3 | 6.8 |
| Difficulty with sexual activity | 34 | 25.4 | 14 | 15.6 | 20 | 45.5 |
| Difficulty with sexual behavior | 41 | 30.6 | 31 | 34.4 | 10 | 22.7 |
| Change in sex role | 38 | 28.4 | 27 | 30.0 | 11 | 25.0 |
| Mean defining characteristic | 2.2 ± 1.5 | | 1.8 ± 1.4 | | 2.5 ± 1.6 | |
| Related factors | | | | | | |
| Lack of privacy | 30 | 22.4 | 17 | 18.9 | 13 | 29.5 |
| Conflict over sexual orientation | 1 | 0.7 | 0 | 0.0 | 1 | 2.3 |
| Conflict over preference variation | 15 | 11.2 | 12 | 13.3 | 3 | 6.8 |
| Insufficient knowledge about alternatives related to sexuality | 80 | 59.7 | 66 | 73.3 | 14 | 31.8 |
| Deficit in skills regarding alternatives related to sexuality | 94 | 70.1 | 78 | 86.7 | 16 | 36.4 |
| Fear of pregnancy | 11 | 8.2 | 1 | 1.1 | 10 | 22.7 |
| Fear of sexually transmitted infection | 72 | 53.7 | 44 | 48.9 | 28 | 63.6 |
| Inadequate model | 24 | 17.9 | 13 | 14.4 | 11 | 25.0 |
| Impaired relationship with significant other | 16 | 11.9 | 12 | 13.3 | 4 | 9.1 |
| Mean related factors | 2.5 ± 1.1 | | 2.7 ± 1.2 | | 2.2 ± 1.0 | |

Source: Prepared by the authors

increased the chances of risky sexual behavior for both men and women.¹⁹ This is because alcohol is a psychoactive substance that modulates judgment, responsibility, and reasoning, primarily when used in excessive doses, thus leaving users with less judgment and a greater propensity to engage in risky behavior.¹⁹

It is important to point out that consuming small doses of alcohol increases erection and sexual desire due to its vasodilating effects. Nonetheless, large quantities can decrease libido and cause transient sexual dysfunction. Among the elderly, the

sociocultural and psychological changes will influence them once again since alcohol can become an escape valve to their new reality, leading to routinely uncommon behaviors, including sexual ones.¹⁷

One aspect demonstrated in this study was the negative influence of the number of medications taken on the sexuality of the elderly. The use of several medications simultaneously is common to most elderly due to the number of chronic diseases that affect them. Medications may have adverse effects and, when

used concomitantly, the risk increases due to drug interactions, which must be controlled by the health professionals who care for the elderly.²⁰

Besides DM, systemic arterial hypertension (SAH) is often observed in the elderly; it may be directly related to the decrease in nitric oxide, which is considered an essential substance for penile erection. The use of antihypertensive drugs can lead to sexual dysfunction, and the association of SAH and DM doubles the chances of developing this dysfunction. In men, angiotensin-converting enzyme inhibitors can cause vasodilation and penile irrigation. The beta-blockers reduce the heart rate and amount of blood supplied to the penis, and the calcium channel blockers reduce the contraction of the blood vessels needed by the muscles for an erection. In addition, diuretics and vasodilators negatively interfere with the erection process.^{17,21} A study with men in Nigeria showed that SAH, the use of antihypertensives, DM, and heart disease had a significant association with erectile dysfunction, reinforcing that, when associated, the comorbidities negatively influence male sexual life.³

Regarding the hormonal parameters of the elderly, we observed that men had higher progesterone, testosterone, dehydroepiandrosterone, and estradiol levels. In addition, testosterone was significantly related to sexual activity. These hormones change their concentrations starting with aging, with some having their production decreased by up to half after the age of 40. Thus, it is essential, if possible, to know the basal values of these individuals and associate possible alterations with the elderly's clinical condition to determine protocols directed towards their quality of life.

Obesity — mainly abdominal — is associated with increases in C-peptide, glucose, and insulin levels, negatively affecting testosterone levels. In obese people, there is increased activity of the enzyme aromatase, which transforms testosterone into estradiol in adipose tissue. The increased estradiol in the bloodstream suppresses testosterone production by negative feedback, leading to decreased lipolysis and increased abdominal fat deposition.¹⁷ Notably, most of the elderly in this study were overweight, as characterized by a higher BMI and abdominal circumference, which may justify higher than expected estradiol values in this population.

As for testosterone, it is known that it improves libido, providing greater sexual desire. However, testosterone replacement therapy in men is not the first-line treatment for erectile dysfunction because, as prostate cancer is hormone-dependent, the administration of testosterone may stimulate tumor growth and predispose the appearance of metastases. It is also evident that hormone replacement for elderly women must be evaluated individually based on their medical history and need because of the risk of developing breast and uterine cancer.²²

A problem pointed out by most elderly women was reduced vaginal lubrication. Research conducted with elderly participants also observed decreased vaginal lubrication as a harmful factor to the sexuality of diabetic females.^{16,23} It is known that this is a natural consequence of aging because, due to the low production

of female hormones (progesterone and estrogen), there is a change in the female reproductive system, which impairs sexual intercourse.^{8,9} In individuals with DM, another factor interferes in this process: the damage to the nerves and/or blood vessels of the sexual organs. Nevertheless, almost half of the diabetic elderly women surveyed still maintain sexual desire. A study carried out with elderly women in a gynecology outpatient clinic in Espírito Santo (Brazil), of which 78% had some comorbidity, showed that, despite most elderly women being sexually inactive, 60% expressed that they still had some sexual desire.¹²

Nurses must be trained to address this topic in follow-up consultations with elderly women, especially in primary care. Besides the pharmacological options to solve issues such as decreased lubrication, sexuality must be addressed in its entirety, regardless of the sexual act (affection, love, desire, among others). Creating a bond between professionals and patients is crucial in this process to generate trust and discuss this theme.¹³ The lack of professional support in sexual difficulties was a relevant result among the statements of elderly participants in other studies.^{24,25}

Almost all male participants considered having sexual desires, albeit half of the male sample reported erection difficulties, and many complained of premature ejaculation. Other studies have also shown sexual impairment in men with DM, from maintaining erection and/or ejaculation to overall satisfaction with their sexuality.^{16,24,25}

Despite the complaints, most surveyed participants reported that they were sexually satisfied and considered it important to maintain a sex life in old age; however, women reported not having affectionate moments with their partners. It is necessary to differentiate sexuality from sex because of the fine line that has been socially constructed. Sexuality must be approached more broadly, providing sexual satisfaction through other behaviors besides the sexual act (kissing, caressing, etc.).¹² For the elderly, especially those with chronic diseases, the need for care brings a feeling of fragility, which may cause some couples or individuals to lose moments of intimacy, affecting the quality of the relationship and the spouses' self-esteem.⁴ This highlights the importance and direct influence on the mental health of these elderly people.

In this sense, the analysis of the ND ineffective sexuality pattern revealed that the most prevalent DC was "altered sexual behavior" in women and "altered sexual activity" in men. Regarding the elderly women, it is worth noting that the change in sexual behavior can be attributed to the gradual decrease of hormone levels associated with the aging process in women, which, together with other factors — evidenced herein — can directly influence their sexual behavior. In the male context, it is known that with aging, the capacity of the penis to develop a full erection, the time required for ejaculation, and the quantity of ejaculated semen decrease.^{9,17}

Hence, nurses must know the pathophysiology of DM related to the aging process, both in clinical judgment during the preparation of the ND and in the selection of appropriate nursing interventions. In addition, nurses must consider sexuality without prejudice, myths, or sociocultural taboos because it is an issue

related to both organic aspects and biopsychosocial factors. It is noteworthy that, in a study with diabetic men in Rio de Janeiro State, the nurse did not appear as a professional to whom one could turn to talk about sexuality.²⁶ Therefore, it is of the utmost importance to treat the sexuality of diabetics as a component of life that can compromise their health.

A study conducted with 50 elderly women in Bahia (northern Brazil) pointed to the lack of communication between nurses and elderly women and the lack of specific programs, round-table discussions, support groups, and other activities focused on information and guidance on sexuality.²⁷ Given this scenario, it is pivotal to discuss the most prevalent related factors in this study. The “skills deficit on alternatives related to sexuality,” the “insufficient knowledge on alternatives related to sexuality,” and the “fear of sexually transmitted infection” stood out.

The prevalence of sexually transmitted infections (STIs) has increased among the elderly population in recent years. The FR “fear of sexually transmitted infection” may be associated with a lack of information on the subject, forms of prevention, and treatment. Moreover, most of these elderly individuals also experienced the HIV/AIDS epidemic in the 1980s, further exacerbating the fear of becoming infected. Allied to these factors, public health policies for STIs are almost always aimed at a younger audience, perpetuating the prejudice that the elderly do not have an active sex life and, thus, isolating them from the forms of prevention.

Studies have shown the low adherence of the elderly population regarding condom use, the only form of STI prevention, with rates ranging from 3 to 14% of use.^{28,29} The reasons for the resistance to using condoms vary, including not knowing how to use them, the perception that it is only to prevent pregnancy, shame in acquiring them, fear of losing erection during sexual intercourse, misunderstanding that they are vulnerable to STIs, among others.³⁰ Additionally, a study concluded that the elderly with a history of STIs were five times more likely to acquire a new infection, and all the elderly who had some STI did not use condoms.²⁸

All of the most prevalent FRs in this study are related to the lack of knowledge and information about sexuality in the elderly. Therefore, nurses must use strategies of approach within the BHU without judgments and with a bond of respect and trust to provide comfort to the elderly when addressing the subject. There must be the identification of factors involved in this context, such as those reported herein.

That said, in nursing care for the diabetic elderly, actions must be permeated not only by the prevention and/or control of chronic disease but also by promoting physical and mental well-being. It must address, mainly, sexuality, a subject that is little addressed in the health of the elderly. Sexuality presents a comprehensive concept that goes beyond sexual intercourse; however, its understanding is influenced by social and cultural aspects valued by the elderly population.

From this, the elaboration of the nursing process directed to the elderly allows that, through the NDs, the language among nurses is standardized, enabling the identification of the real needs of

this individual. In the case of the ND ineffective sexuality pattern, it allows the sexual difficulties of the elderly to be worked on in interventions that are more directed to their case, whether due to knowledge, physiological, and/or behavioral issues. Hence, the nurse involved in the care will be better prepared, have greater effectiveness in their function, and provide a higher quality of life for the elderly.

CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

Elderly women were the majority of the sample, although men and younger people were the most sexually active. The amount of medication they consume also influences their sexuality. Regarding the laboratory tests, the biochemical levels analyzed did not affect sexual activity; nevertheless, among the hormone levels, testosterone had the highest levels among the sexually active. We also observed that almost the entire sample of men reported maintaining sexual desire, and about half of the entire sample reported difficulties, such as decreased vaginal lubrication, difficulty with erection, and ejaculation. Most of the surveyed participants also reported not using condoms and being satisfied with their sex life.

When analyzing the nursing diagnosis of ineffective sexuality pattern, we observed that the most prevalent defining characteristics were “altered sexual behavior” and “altered sexual activity.” Among the related factors of this ND, the most recurrent were “deficit of skills about alternatives related to sexuality,” the “insufficient knowledge about alternatives related to sexuality,” and “fear of sexually transmitted infection,” all prevalent among diabetic elderly women.

In this study, we verified the convenience sampling and transversal delineation as limitations, given it was impossible to establish a cause-and-effect relationship among the variables. Furthermore, the use of a constructed instrument due to the lack of a validated instrument to broadly evaluate the sexuality of the elderly was a limiting factor. Another point was not asking the elderly about their conception of sexuality, the factors that influence their sexuality, and the presence — current and/or at some time — of some STI, which could shed more light on the sexual behavior of the studied public. Still, the few studies that investigated this ND limited the discussion and comparison with other studies. Furthermore, we encourage future researchers to evaluate the quality of life of the elderly with an ineffective sexuality pattern since it can influence their behaviors and personal satisfaction.

Lastly, we can conclude that the investigation of the ND ineffective sexuality pattern and, consequently, the nursing care have importance in the evaluation of elderly diabetics concerning their entire biopsychosocial scope because the issues addressed refer to their sexuality as it is a factor of important influence on their behavior and their satisfaction. Although this theme is still socially permeated with taboos, the professional nurse can and should use the ND to elaborate specific interventions directed to the elderly diabetic regarding their sexuality.

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AUTHOR'S CONTRIBUTIONS

Study design. Isabella Cristina Severina. Walterlânia Silva Santos. Marina Morato Stival.

Data acquisition. Isabella Cristina Severina. Luciano Ramos de Lima. Silvana Schwerz Funghetto. Marina Morato Stival.

Data analysis and interpretation of the results. Isabella Cristina Severina. Luciano Ramos de Lima. Marina Morato Stival.

Writing and critical review of the manuscript. Isabella Cristina Severina. Luciano Ramos de Lima. Silvana Schwerz Funghetto. Walterlânia Silva Santos. Cris Renata Grou Volpe. Marina Morato Stival.

Approval of the final version of the manuscript. Isabella Cristina Severina. Luciano Ramos de Lima. Silvana Schwerz Funghetto. Walterlânia Silva Santos. Cris Renata Grou Volpe. Marina Morato Stival.

Responsibility for all aspects of the content and the integrity of the published article. Isabella Cristina Severina. Luciano Ramos de Lima. Silvana Schwerz Funghetto. Walterlânia Silva Santos. Cris Renata Grou Volpe. Marina Morato Stival.

ASSOCIATE EDITOR

Cristina Lavareda Baixinho 

SCIENTIFIC EDITOR

Marcelle Miranda da Silva 

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