







Knowledge of aged women about Sexually Transmitted Infections

Conhecimento de idosas acerca das Infecções Sexualmente Transmissíveis

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ABSTRACT

Objective: to understand the knowledge of aged women about Sexually Transmitted Infections. **Methods:** a qualitative study with 11 aged women from a social group at a Basic Health Unit. Data was collected individually through semi-structured interviews, coded using NVIVO software, and analyzed using Thematic Content Analysis. **Results:** four categories emerged: Sexually Transmitted Infections known by the elderly; Different forms of transmission; Forms of prevention and detection; and Barriers to Knowledge and Sexually Transmitted Infections care. **Conclusion:** participants' knowledge of Sexually Transmitted Infections was observed, especially HIV, syphilis, and gonorrhea. There was a gap in knowledge about the distinction between HIV infection and AIDS. The lack of information about active sexuality is a barrier that interferes with safe sexual practice. **Contributions to practice:** understanding the knowledge of aged women about Sexually Transmitted Infections provides information that can help plan and implement measures to prevent these infections. **Descriptors:** Aged; Health of the Elderly; Sexually Transmitted Diseases; Sexuality; Qualitative Research.

RESUMO

Objetivo: compreender o conhecimento de idosas acerca das Infecções Sexualmente Transmissíveis. **Métodos:** pesquisa qualitativa, com 11 idosas de um grupo de convivência de Unidade Básica de Saúde. Os dados foram coletados individualmente por meio de entrevista semiestruturada, codificados pelo *software* NVIVO e analisados pela Análise Temática de Conteúdo. **Resultados:** emergiram quatro categorias: Infecções Sexualmente Transmissíveis conhecidas pelas idosas; Diferentes formas de transmissão; Formas de prevenção e detecção; Barreiras para o conhecimento e cuidado das Infecções Sexualmente Transmissíveis. **Conclusão:** observou-se conhecimento das participantes sobre as Infecções Sexualmente Transmissíveis, principalmente o HIV, a sífilis e a gonorreia. Percebeu-se uma lacuna no conhecimento acerca da distinção entre a infecção por HIV e a doença AIDS. O *déficit* de informações em relação à sexualidade de forma ativa constitui-se barreira que interfere na prática sexual segura. **Contribuições para a prática:** a compreensão do conhecimento das idosas acerca das Infecções Sexualmente Transmissíveis proporciona subsídios que podem favorecer o planejamento e implementação de medidas de prevenção dessas infecções. **Descritores:** Idoso; Saúde do Idoso; Infecções Sexualmente Transmissíveis; Sexualidade; Pesquisa Qualitativa.

Introduction

Population aging is a global phenomenon, marked by a falling birth rate and an increase in people's lifespan. Data shows that in 2019 there were 703 million aged people worldwide; by 2050 this number is expected to reach 1.5 billion⁽¹⁾. In Brazil, in 2022, the population aged sixty or over was 32,113,490 (15.6%), representing an increase of 56.0% compared to 2010. Furthermore, the Southeast and South regions have the largest contingent of aged people⁽²⁾.

Increased life expectancy and quality of life contribute to people remaining socially active for longer⁽³⁾, which makes it possible for aged people to maintain their sexual activity. However, in some cases, there is misinformation about the subject and a lack of investment in health education strategies for aged people, as well as weaknesses in continuing education for health professionals⁽⁴⁾. In addition, there is the issue of sexual practice without the use of condoms due, among other factors, to women no longer being in their fertile period, men not liking to use them, and the cultural issues involved aspects that contribute to sex being treated as taboo, especially among aged people⁽⁵⁾.

Data from 2023 shows a higher percentage of hepatitis B cases in the 60 and over age group (16.7%). As for Hepatitis C, between 2000 and 2022, most diagnosed cases occurred in people over the age of 60, corresponding to 23.3% of the total, 27.6% among women and 20.0% among men. Another alarming fact is the 20.3% increase in cases of aged people with Acquired Immune Deficiency Syndrome (AIDS) between 2015 and 2022, from 2,209 to 2,657 cases⁽⁶⁾.

In addition, the mortality coefficients for this syndrome have fallen in the last ten years for all ages, except among the aged, where there has been an increase of 19.1%, from 4.7 in 2012 to 5.6 deaths per 100,000 inhabitants in 2022. Of the 40,983 cases of syphilis among women, 7,172 occurred over the age of 50⁽⁶⁾. Research aimed at identifying aged people's knowledge of Sexually Transmitted Infections (STIs)

is therefore important to develop strategies to demystify the idea that aged person cannot have an active sexual life. It is also necessary to understand the public's understanding of sexuality so that health education actions can be planned, aspects that justify the relevance of this research.

Issues related to the health of the aged are necessary and are highlighted in the Ministry of Health's National Agenda as a research priority in Brazil⁽⁷⁾, as stated in axis 12, item 12,5, which aims to analyze the practices of teams in caring for the specific health needs of the aged. In addition, the issue of STIs is linked to the United Nations 2030 Agenda⁽⁸⁾, which emphasizes objective three, item 3.3, the quest to end the epidemics of AIDS and other communicable diseases by 2030.

The aim was therefore to understand the knowledge of aged women about Sexually Transmitted Infections.

Methods

Qualitative research using the Standards for Reporting Qualitative Research (SRQR) checklist, was conducted in a Basic Health Unit (BHU) in a city in Rio Grande do Sul, Brazil. The unit operates as a mixed unit and patients are referred from the Emergency Care Unit, the Emergency Room, and BHUs in other areas.

The participants were aged people who attended a socializing group developed through an Extension Project linked to a public university at the unit. This group has existed since 1989 and is coordinated by nursing teachers. Although without any restrictions, at the time of the research, 12 aged women attended the group. Meetings were held on Tuesdays from 2 pm to 5 pm. The group aims to develop health education activities that provide support for self-care, health maintenance for aged people, and the development of recreational and cultural activities, promoting active aging and maintaining independence and autonomy.

The inclusion criteria were 60 years or older and active participation in the group. We excluded aged persons with cognitive alterations that made it impossible for them to answer the interview, which was assessed using the Mini-Mental State Examination (MMSE)⁽⁹⁾. The 12 aged women were assiduous, participated actively and frequently in the group and only one of them scored less than 25 points on the MMSE (the minimum score for participation in the study). Based on this, 11 of the 12 participants in the group met the inclusion criteria and agreed to take part in the study. It should be noted that the subject of sexuality had not been discussed with the group of aged women, but issues related to ISTS had not yet been addressed.

The data was collected between August and September 2023 through semi-structured interviews. The script consisted of two parts: the first, with the sociodemographic characterization of the subjects (education, profession, race/color, religion, marital status); the second, with the guiding questions: 1) Do you know, or have you heard about any STI? Which one(s)?; 2) What do you know about how STIs are transmitted?; 3) What is your understanding of the ways of preventing and detecting STIs? From these initial questions, we explored the possible difficulties or barriers encountered by the aged women which had repercussions on their (lack of) knowledge and care related to STIs.

The interviews were conducted by a nursing student (who had been trained, had experience in conducting this technique, and was a research and extension fellow linked to the project), individually, in a room set aside in the health unit, where the group meetings take place. The interviews lasted between 30 and 60 minutes, were recorded using a voice recorder (with the permission of the participants), and then transcribed in full by the researchers using the Microsoft Word program (version 16.31). They were then returned to the participants for validation, according to the methodological framework followed⁽¹⁰⁾.

The data was submitted to Thematic Content

Analysis, based on the pre-analysis stage, data exploration, and inference and interpretation of the results found⁽¹¹⁾. Thus, in the pre-analysis stage, the researchers organized the interview materials separately and conducted a floating reading of the data collected, which allowed for the formulation of hypotheses and the constitution of the corpus. They then proceeded to explore the material by coding, categorizing, and enumerating what had been collected. Finally, the results were processed and interpreted⁽¹¹⁾. Coding was conducted using NVIVO software, which helped to prioritize categories, making it easier to find the data⁽¹²⁾.

Participation in the research took place after signing an informed consent form and the participants were assured of the anonymity and confidentiality of the information. Anonymity was maintained by identifying them by flower names (chosen by the participants), followed by a number (Rose, 1; Violet, 5; White lily, 11), according to the order of the interviews. The ethical precepts involving research with human beings, set out in Resolution 466/2012 of the National Health Council, were respected. The Research Ethics Committee of the Federal University of Pelotas approved the project under opinion number 6,272,009/2023 and Certificate of Presentation for Ethical Appraisal 71723023.3.0000.5316.

Results

Eleven women took part, aged between 64 and 81. In terms of schooling, five had studied up to the fifth, two up to the third, and two up to the fourth year of elementary school; another two had completed high school. Five were retired, four considered themselves to be housewives, one a craftswoman, and one a confectioner. Regarding race/color, eight declared themselves as white, and three as brown. Concerning religion, five were Catholic, one Evangelical, one Anglican, one Mormon, one Spiritist, and two did not declare. Six were widowed, three divorced and two married.

The data analyzed resulted in four categories: Sexually Transmitted Infections known by the aged;

Different forms of STI transmission; Forms of STI prevention and detection; and Barriers to STI knowledge and care.

Below is the Tag cloud, created with NVIVO, based on the data analysis (Figure 1), where the most cited words in the recording units are highlighted (larger words refer to the highest frequency of citation by the aged women; the similarity of the colors indicates that the word was within the same paragraph, associated with a logical context of content narrated by each aged woman).



Figure 1 – Tag cloud. Pelotas, RS, Brazil, 2023

Sexually Transmitted Infections known by aged women

The participants reported knowing the following STIs: human immunodeficiency virus (HIV), AIDS, syphilis, and gonorrhea. However, there was a lack of knowledge among the aged about the distinction between HIV infection and AIDS syndrome, which are commonly misused as synonyms.

One participant made an inference to warts, referring to the human papillomavirus (HPV). These were infections they had already heard of, and they were unaware of other STIs, as identified in the statements below: *I have heard of HIV, which is AIDS, syphilis, and*

gonorrhea. I cannot remember the others, there are four (Red carnation, 1). I have heard of syphilis, but I think AIDS is also caught through sex (Rose, 7). I know about syphilis (Tulip, 10). Gonorrhea is what we heard a lot about outside, that you had to take care of yourself. My sister-in-law died; she caught this disease that gives you warts inside (Lavender, 3). I know it is AIDS, the main one, but others are sexually transmitted, like gonorrhea (White lily, 11). There are many, including AIDS, gonorrhea, and others that I honestly do not know about (Poppy, 4). Transmissible, AIDS (Bromeliad, 6).

They also talked about other infections such as public pediculosis, often transmitted sexually, but not necessarily, and candidiasis, as an endogenous infection: *Candidiasis. It is an itch we get (Lavender 3). I have heard of pediculosis... (Rose, 7). There are others, right, candidiasis, no, but it is not just sexual candidiasis, more or less like this, I don't know all of them... (White lily, 11).*

Different forms of transmission of Sexually Transmitted Infections

As for the means of transmission of STIs, in general, the aged women reported assertive conceptions of sexual intercourse and injections (sharing a contaminated needle or syringe). However, the misconceptions were related to the transmission of STIs through kissing, saliva, physical contact between people, and contaminated environments (using the toilet in public restrooms). Specifically, some said that HIV is transmitted through contaminated blood: *In the relationship and the blood, HIV (Violet, 5). Through sex, even kissing, I do not know much, and I do not have much information (Jasmine, 8). It is through sex and there are other forms of transmission, like through blood. I do not know if it is saliva, I do not think so. I think it is through blood (White lily, 11). Through sex, even using a public toilet, sitting on a bench. I think the lack of care too, especially public toilets, which are horrible (Orchid, 9). I do not know if it catches in the air if we touch the person and it catches. I do not think so, it is just that I do not understand it. It is not my time, it is now that there are these things about transmitting diseases (Bromeliad, 6). Through sex, and sexual intercourse, which is what I know. I know it can also be transmitted through injections, but I am not sure (Rose, 7).*

Ways of preventing and detecting Sexually Transmitted Infections

The participants' statements highlighted the use of condoms as the main form of prevention for STIs, although one of the interviewees believed that there was no need to use them: *I think it is important to use condoms if you don't have a steady partner. If it is your partner, whose relationship is already there from time to time, it is a firm relationship, I do not think condoms are important. I mean, it is not important until then, because certain things can happen from one person to another, but if it is not a relationship, an ongoing relationship, there is not that trust, you must use a condom* (White lily, 11). *I would use a condom to preserve my health because it is with a condom that you preserve yourself, because the aged, the aged women have no risk of getting pregnant, they have nothing because they do not ovulate. Some people say they do not like using condoms, but I do not know if that is true, there are female condoms too* (Rose, 7). *I do not use condoms at the moment because I'm not active, if I need to, I'll get them from the clinic* (Violet, 5).

The speech of the aged people elucidated that prevention with the use of condoms is often neglected because they give in to their partner's desire not to use them and the confidence of having sex with the same person: *No, I'm 48 [referring to entering the menopause], my period has gone, I've never used a condom* (Marguerite, 2). *And I've never been to a gynecologist for a sex test, I've never had anything, I can't say, the doctor himself said that the aged person who doesn't have sex anymore, doesn't need to have these pap smears, that it's fine, that all sexually transmitted diseases only happen when you have sex. And when your immunity is low, a lot of diseases appear* (Lavender, 3). *I do not use anything, I am only a man, and I do not have any disease, I do not know, this AIDS disease, I do not see it mentioned, it seems like it does not exist anymore, but it does exist* (Bromeliad, 6). *I have never used a condom, because usually men do not want to, they do not like to, and my husband never used one, he did not like it. Yeah, then I had two other partners, but I didn't use them either, one complained that they were too tight and too small. You do not pay attention, once you get the disease, you get scared. I was lucky* (Jasmine, 8).

It stands out that even aged women who are aware of the risks and have more than one partner neglect to use condoms. Another issue raised was re-

lated to the detection of STIs, in which the interviewees' lack of knowledge and confidence in the screening tests available at the health units emerged: *But then, afterward, I was always on the back foot, but I never went to get tested, because I didn't know it was available at the BHU, I found out later* (Red carnation, 1). *I would like to know if it is reliable because it's so quick, isn't it? Because we know about AIDS when people who received transfusions or donated blood were tested. But there was a window, something like that, it was not everyone. And because it was so quick, I thought it was not 100% reliable* (White lily, 11).

Barriers to knowledge and care of Sexually Transmitted Infections

Some factors were identified as barriers to the knowledge and care of aged persons regarding STIs. The lack of approach to sex education in the family and school contexts stood out, resulting in limited subjective experiences, as well as the fact that the participants' parents did not talk about sex and the importance of using condoms: *I never had any guidance on sex or anything, I learned everything from myself. I had no experience with anyone, no one guided me in anything* (Jasmine, 8). *My father was one of those [referring to the fact that he did not talk to his daughters about sex], my mother was [referring to the fact that her mother was more open about it], but then we talked about it [sex], what she and grandma knew. And we were at school, but back then there were not these things like there are today* (Red carnation, 1). *There are certain things I do not talk about with my daughter. It is also the way we were brought up because I am still from a time when they did not even talk about menstruation* (Poppy, 4).

In addition, the interviews reaffirmed the importance of shared information about STIs, especially with young people: *We have to talk more to young people so that young people learn, it's a pity that I didn't know about these things when I was young [related to sex and STIs], everything was very hidden, we didn't know anything in life* (Lavender, 3). *I remember that when I was younger, I had not heard much about it, I heard about it when I was older because when people talk, they do not give younger people the freedom to listen. And I think it is very important for people to be enlightened* (Orchid, 9).

Another barrier that influences knowledge

about STIs concerns taboos related to sex, such as feelings of shame, fear, and prejudice, as well as not feeling comfortable talking about sex or STIs with younger health professionals and carrying out preventive examinations with male professionals: *I wouldn't feel comfortable talking [referring to health professionals] about the subject, because there are so many young people (Poppy, 4). I think most people are afraid [referring to HIV treatment], because of prejudice, because they'll look and say oh, that one has AIDS (Red carnation, 1). Even though I am so upbeat, it is something that scares me [referring to talking about sex] (Jasmine, 8). I used to be ashamed to go for a gynecological exam with a man, but now it's gone, I used to go to the clinic for pre-cancer and I always went with the nurse who died, because all the students came and I was ashamed of them, the kids (Violet 5). I feel uncomfortable when I go to do the pre-cancer stuff, which is what is so bad, if I did it with a woman it would be fine, but it's no use (Bromeliad, 6).*

Issues related to beliefs, religions, and STIs were also highlighted as barriers to knowledge and prevention: *The Bible doesn't forbid sex between two couples and you leave your father and mother and you move in and unite with your husband or wife, whatever and become one flesh, in the Bible it says that sex is good, healthy for those within marriage (Lavender, 3). The sexual relationship between man and woman is to bring children from heavenly parents into the world. So much so that sexual intercourse is valid within marriage. Having sex outside of marriage is against God's law. Because God created man and woman to procreate (Orchid, 9). The question of masturbating, it is forbidden [referring to religion], I see it in the religious lectures I listen to on YouTube, there are lots of lectures and people say [that masturbating is wrong] and then I engrave it in my head (Jasmine, 8).*

The question of religion influencing the potentiation of prejudices or stigmas is identified, as is the perpetuation of the common sense of sexual practices/pleasure as something negative, related to sin.

Discussion

Aged people still face barriers and lack information when it comes to practicing and experiencing sexuality actively. These aspects hinder an approach to safe sexual practice, which can contribute to the spread of STIs among the public⁽¹³⁾.

In this study, it was found that the aged had superficial/limited knowledge of STIs. In this sense, a study with 43 aged people, most of whom were female (74.4%), also identified a consistently low level of knowledge about STIs among the participants. It was also found that the lack of knowledge was more related to viral infections, such as HPV and the human immunodeficiency virus (HIV)⁽¹⁴⁾.

HIV/AIDS, syphilis, and gonorrhea were the STIs most frequently mentioned by the participants in this study. This is in line with research in which the main infections identified were also HIV/AIDS (63.6%), gonorrhea (50.0%), and syphilis (34.1%)⁽¹⁵⁾. In addition, the STIs most known by 18 aged people were gonorrhea and syphilis, followed by Candidiasis and HIV⁽¹⁶⁾.

Concerning how STIs are transmitted, three aged women recognized that HIV is transmitted through blood or injections with contaminated fluids, which proves that there is knowledge on the subject, albeit in a succinct/deficient way. However, others believed that STIs in general, which include HIV, could be transmitted through kissing, physical contact, and using public toilet seats. Similar data was found in a study in the state of São Paulo, where 59% of those interviewed believed that HIV was transmitted by kissing on the mouth, 75% by public toilets, 82% by sharing cutlery, and 69% by mosquito bites⁽¹⁷⁾.

This data highlights the importance of actions to distinguish between STIs and their specific forms of transmission, to avoid an increase in the number of cases, as well as the need to warn about the different forms of diagnosis and prevention. It is necessary to reinforce the point that all information must be shared in a clear, safe way, ensuring that the aged person understands. STIs can be transmitted through vaginal, anal, and oral sex. HIV can also be transmitted through sharing needles, contaminated blood transfusion, and the use of contaminated surgical materials⁽⁶⁾, although transmission via blood transfusion does not currently occur, as there is rigor in the analysis conducted by blood and blood product banks.

As for ways of preventing STIs, the aged parti-

cipants mainly recognized the use of condoms. However, there were reports that they did not need to use them because they weren't in their fertile period, i.e. there was no risk of pregnancy, and because they had a steady partner. In addition, some aged women neglected to use condoms to give in to their partner's desire not to use them. In this sense, the use of condoms is the main form of prevention in any type of sexual relationship⁽¹⁸⁾.

A worrying finding concerns the lack of knowledge about the vaccines against Hepatitis B and HPV, as a form of effective prevention for children and adolescents (9 to 19 years old). Both are part of the Brazilian vaccination schedule, available free of charge through the Unified Health System, and can be found in the vaccination rooms of the Primary Health Care Network.

Another fact worth highlighting about forms of prevention is that aged persons express doubt and lack of confidence about screening tests. Thus, there is a need for health managers and professionals to invest in dissemination and guidance for the aged population, to clarify doubts and insecurities. It is pertinent to address the importance of carrying out the tests, regardless of whether or not they are sexually active. Rapid tests are offered free of charge at health centers and are easy to perform. They are carried out by taking a drop of blood from the fingertip or oral fluid and can detect: Hepatitis B and C, Syphilis, and HIV. The results can be interpreted in approximately 30 minutes⁽⁶⁾.

Barriers were highlighted in this study which compromise the knowledge and care of aged persons concerning STIs. One relates to the lack of approach to sex education in the family (during childhood and adulthood) and at school. In this sense, 40% of the participants in another study looked to television as a way of learning about sexuality, 28% to friends, 12% to health professionals, 10% to the internet, and 10% to the radio⁽¹⁹⁾.

Thus, there is a need for health professionals to get involved by creating health education strategies

that can help aged persons learn about the unusual ways of preventing STIs. Actions should be taken to address sex and sexuality to raise awareness among this population, with a view to health promotion and disease prevention. In this respect, a study highlighted the need for training for health professionals, so that they can expand their knowledge of the subject with aged people⁽⁴⁾.

Another barrier concerns taboos related to sex, which contribute to shame, fear, and prejudice. The aged women who took part in the study did not feel comfortable talking about sex or STIs with younger health professionals or having preventive exams with male professionals. This may be related to the participants' upbringing which, as mentioned above, did not allow discussions on the subject at home and because it favored a relationship of modesty, especially between women and men. It is also related to the fact that sex is a topic that is rarely discussed with aged people and by society, which increases prejudice and makes feelings of fear and shame stand out⁽²⁰⁾.

In this sense, health professionals should promote active listening and avoid judging the reports of aged people, regardless of the subject. They need to provide an environment where they feel safe to share their fears and doubts⁽²¹⁾. We must also work on the misconceptions that still exist in part of society about the lack of need to use condoms by aged people, as evidenced in this study, since not using condoms contributes to an increase in STI cases, which reinforces the need to create educational interventions.

Beliefs and religions were also highlighted as barriers to knowledge and prevention since some aged women said that sexual intercourse between men and women should take place for the sake of the divine formation of new beings, which implies sexual intercourse without the use of condoms. Five interviewees used the Bible to support their beliefs in different life situations. One of the interviewees also highlighted the perpetuation of sexual practice, masturbation, as something negative, related to sin.

It is worth mentioning that each religion deals

differently with sexuality and sex, as well as having its traditions, beliefs, values, and ways of speaking their minds⁽²²⁾. Most of them recommend that sex should take place after marriage. Even today, talking about sex makes many people uncomfortable, especially in the religious sphere. Some religions also advise against the use of condoms, to encourage the emergence of new lives, which can interfere with the health-disease process⁽²³⁾.

Concerning the practice of masturbation as something negative, this thinking has been followed since the medieval age, when individuals who practiced masturbation were considered witches and possessed by demons by religious dogmas. This fact contributed to the lack of knowledge and prejudice that permeated the practice. In this regard, a survey conducted in the state of Santa Catarina, Brazil, showed that 24% of participants believed that excessive masturbation could cause mental confusion and dementia in people over 65; another 57% were unable to answer, revealing a low level of knowledge on the subject⁽²⁴⁾.

Masturbation contributes to personal and sexual development and is a way of exploring one's own body and understanding one's desires. Repressing it predisposes people to feeling sexually frustrated and can lead to internal conflicts. Configuring this practice as something that is religiously forbidden can lead people not to know their bodies and to condemn themselves if the act is conducted. It is worth mentioning that the lack of information about active sexuality is a barrier that interferes with safe sexual practice, which can contribute to the spread of STIs in this specific population.

Study limitations

The recommendations for conducting and reporting qualitative research were followed. However, the fact that the research was conducted in a single setting could be a limitation of the findings. Also, although it was not a selection criterion, the fact that only women took part restricts knowledge and discussion of the issue of sexuality among aged people.

Contributions to practice

The practical relevance of this study is noteworthy since diagnosing the knowledge of aged persons about STIs makes it possible to identify situations of vulnerability, which contributes to the planning and implementation of measures aimed at preventing these infections. In addition, the evidence from this study is relevant because it provides support for the development of health education actions that equip this population with knowledge about the subject, minimizing stigma and prejudice and promoting active aging.

Conclusion

It was found that the aged women who participated in a support group knew about Sexually Transmitted Infections, especially HIV, syphilis, and gonorrhea. However, there was a gap in their knowledge about the distinction between HIV and AIDS, which they usually addressed as synonyms. They also consider the means of transmission to be sexual intercourse, kissing, saliva, physical contact between people and with contaminated environments, blood, and injections. Prevention, in their perceptions, takes place through preventive exams and condom use, which is sometimes neglected because the aged people give in to their partner's desire not to use it and because of the confidence they feel in having sex with only one person.

Authors' contribution

Conception and design or data analysis and interpretation: Gomes AB, Rangel RF, Linck CL. Writing of the manuscript or relevant critical review of the intellectual content; Final approval of the version to be published and Agreement to be responsible for all aspects of the manuscript relating to the accuracy or completeness of any part of the manuscript being adequately investigated and resolved:: Gomes AB, Rangel RF, Linck CL, Luz EMF, Munhoz OL, Ilha S.

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