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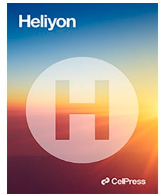

Lived sexual experience of health workers on the Iranian frontline of the fight against the COVID-19 pandemic: A qualitative content analysis

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A R T I C L E I N F O

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A B S T R A C T

Background: Lifestyle changes due to the COVID-19 pandemic may affect individuals' sexual lives and probably their sexual function. The present study aimed to explain the sexual lived experiences of health workers on the Iranian frontlines of the fight against the COVID-19 pandemic.
Materials and methods: The present study was qualitative research using the conventional qualitative content analysis method. It was conducted in the city of Ramsar, Iran, in 2022. The data were collected using 12 in-depth personal interviews and a purposive sampling method. Lundman and Granheim's method was used to analyse the data.
Results: The analysis of the data in the first phase of the research led to 60 initial codes, 7 subcategories, 3 main categories (concerns about health risks, sexual dissatisfaction, and sexual facilitators and barriers), and one theme (unhealthy lifestyle due to sexual dissatisfaction).
Conclusion: The present study revealed new and different dimensions of the sexual experiences of health workers on the frontlines of the fight against the COVID-19 pandemic [concerns about health risks, sexual dissatisfaction, sexual facilitators, and sexual inhibitors]; these dimensions are based on the Iranian context and culture that can be considered to enhance sexual pleasure and the physical and mental health of health professionals that have an impact on improving patients' and people's health status in society.

1. Introduction

Beta-coronaviruses are the source of COVID-19 disease [1]. Due to its rapid transmission, it emerged as the most highly contagious infection within the coronavirus family. The World Health Organisation officially declared it as a pandemic on March 11, 2020 [2]. In February 2020, COVID-19 reached Iran, according to the official report [3]. To combat the spread of the COVID-19 virus, governments

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have imposed severe restrictions that would typically be intolerable for individuals under normal circumstances [4]. Despite popular opposition in several countries, the public has accepted these unusual and limited restrictions [5]. Restrictions on mobility and leisure activities and social isolation are some of these interventions [6]. The COVID-19 pandemic has had an effect on multiple facets of life, including health, education, governance, politics, culture, religion, family dynamics, social interactions, psychological well-being, and the economy [7].

The COVID-19 pandemic and quarantine measures have been extensively studied to understand the physical and psychological impacts [6,8,9], but there has been little research on the pandemic's sexual implications. However, limited research has focused on the sexual implications of the pandemic. Nonetheless, available evidence showed that COVID-19-related lifestyle modifications may affect a person's sexual life and sexual function. In this regard, some studies have revealed decreased sexual intercourse, sexual satisfaction, the risk for female sexual dysfunction (RFSD), sexual dissatisfaction, and sexual dysfunction [6], increased sexual fantasies, especially in women [10], decreased sexual function (SF), and decreased marital satisfaction (MS) [11], as well as increased "sexual desire and irritability," "intercourse", "sexual interests and attitudes," "virtual sexual activities," "dating," and "sexual probing." It has a bad effect on their health and quality of life, which is one of the consequences of individuals not engaging in sexual activity while the COVID-19 epidemic is going on [11,12]. Additionally, during the COVID-19 epidemic, satisfying sexual relationships may help to improve mental, communicative, and sexual health [12], as well as life quality [11] and general health status [13]. They may also help reduce worry, depression, and psychological pain. Age, adequate family income, the spouse's occupation, loss of employment, place of residence, and age of pregnancy [14] are factors affecting people's sexual function during the pandemic. Other factors include living with parents, individual stress, anxiety, depression levels, marital satisfaction, the quality of the couple's relationships, and overall general health status [15,16].

Most studies have focused on women or couples [6]. Several studies [17–19] have examined the quantitative effects of the COVID-19 pandemic on people's physical, mental, and occupational health. Human-to-human transmission is the primary source of disease among healthcare professionals [20,21]. The spread of the new coronavirus disease is heavily dependent on hospitals [22,23]. Healthcare workers who are at the forefront of fighting the COVID-19 pandemic face substantial hazards [24,25], and frontline responders are exposed to significant risks as a result of the scarcity of essential protective gear worldwide [26]. Workplace issues led to marital problems [18,27,28], occupational burnout, ineffective social relationships, marital problems, mental distress and negative emotions, work pressure, a lack of mental health professionals and psychological skills, inadequate preparedness for disease response, a lack of specialised knowledge, job conflict experience, a decrease in interpersonal relationships, the stigma of the coronavirus, disagreement, and conflict. The COVID-19 sickness has caused a shock to the healthcare systems of the majority of countries throughout the world, resulting in increased working hours and the cessation of several personal and leisure activities for nurses [27,29,30]. Indeed, nurses have been at the forefront of patient diagnosis, treatment, and care. As a consequence of this, excessive work pressure and dealing with the dangers of sickness for medical professionals and their families have led to additional psychological challenges. A significant degree of psychological dysfunction, including stress, anxiety, and even depression, has been observed by healthcare professionals, especially in nurses [31,32]. Due to the risk of infection and the associated social pressure, many of healthcare professionals do not want to work during the illness epidemic and have shown significant signs of psychological dysfunction, including stress, anxiety, and even despair. Ne'mati et al. noted that COVID-19 is a worry for nurses and their families in this situation [33,34]. Healthcare workers, such as nurses, might have sexual and psychological issues. It is crucial to take measures seriously to assess and identify the groups that are disproportionately affected by the impacts of the COVID-19 pandemic [35]. During the COVID-19 epidemic, healthcare professionals have reported instances of physical, verbal, and sexual assault and considered leaving their profession [36]. At the onset of the COVID-19 pandemic, healthcare workers, particularly those in nursing, experienced excessive emotional burden due to feelings of victimization, the fear of rejection by others, and the possibility of emotional separation from their families. This tremendous emotional burden had a detrimental impact on their ability to provide care effectively [37]. The spread of the COVID-19 disease and concerns people's concerns about physical contact may be negatively impacted by during sexual behaviours. The degree of sexual desire, the frequency of weekly sex, the length of foreplay, and the length of coitus all dropped among health professionals. The effect of working in a COVID setting on sexual functioning of health professionals has not been researched [38,39] in comparison to the pre-pandemic period [40]. Also, the research found that the COVID-19 pandemic frontline workers' sexual experiences were negatively impacted by their fears of contracting the disease, being a carrier, and having a sexual partner who is sick. The societal order has been upended by the COVID-19 pandemic, which is beyond a medical epidemic. New cultural and social connections have been made as a consequence of COVID-19 [19]. The best methods for eliciting social reactions to the circumstance are qualitative procedures. We can extract and understand people's impressions of how meanings form and whether they are healthy or harmful using these techniques [41,42]. On the other hand, one of the greatest methods to recognise them is to understand and recognise behavioural and human phenomena through those who have directly or indirectly experienced them. We can gain a grounded understanding of fundamental components, allowing us to predict and exercise control. Through a qualitative technique in human studies [43].

2. Materials and methods

2.1. Study design

This study used a qualitative approach and used the content analysis to examine the data conducted in Ramsar.

2.2. Settings

The population consisted entirely of medical personnel who were actively involved in the battle against COVID-19 in Ramsar in 2022. The qualitative examination in this study employs the content analysis approach. Care should be taken when choosing research participants to ensure that they can express their opinions on the subject at hand. Purposive sampling, a subtype of the more broad non-probability sampling, is thus virtually always used in investigations of this kind [44]. Therefore, purposive sampling was the method used in the research to achieve this objective. The participants were selected from a group of people who could explain how they understood the idea of sexual encounters among medical professionals during the COVID-19 epidemic and who was also open to participating in the study and sharing their stories in 12 in-depth interviews. The study's researchers were not employed by the places of business of the participants. After securing the ethical code, the researchers travelled to the Ramsar City health network and requested permission to interview front-line combatants in the COVID-19 war at its networked health and treatment facilities. After that, the researchers visited the medical treatment facilities and made a list of the employee's contact information and demographic details before calling and inviting them to participate in the study. Based on the inclusion criteria, the researchers then invited qualified volunteers to participate in a face-to-face interview. The study's objective was first described to the participants before obtaining informed consent. Data collection continued until reaching the point of data saturation. The quantitative information from previous studies was then contrasted with the qualitative results. The inclusion criteria for the primary samples (i.e., healthcare professionals fighting COVID-19 on the front lines) included working in hospitals (internal ward, surgery, ICU, and emergency department) and health centres (family, disease control, and environmental health departments), being married, and being free of any physical or mental conditions that might affect them. The exclusion criteria for this study included health professionals who had voluntarily quitted their job and decled to take part in the study.

2.3. Data collection

In the initial step of this study, the fundamental framework was determined via non-structured interviews with three health professionals. Subsequently, relevant texts and articles were reviewed and used. The individuals were then interviewed using semi-structured interviews. A broad guide to questions with a checklist was produced to conduct the interviews. Table 1.

The main subjects of the interviews were then modified in light of the responses, and more questions were asked of the participants if needed. The researchers decided to conduct the interviews in the hospital's consultation room with the related faculty's consent. The study's objectives were discussed with the participants before each interview, and they were assured that the information they provided would remain private. After obtaining the participant's consent, the interviews were recorded.

Because sexual issues are often kept private and because of religious and cultural norms, researchers of the same sex conducted the interviews. The interviews were then recorded, categorised, and written down. The questions were also revised and altered as necessary. Processing the data included comparisons and ongoing coding, and notes were taken. The data-gathering process was iteratively repeated until no new information or insights emerged. The researchers continued the data collection procedure until reaching the point of saturation. The in-depth interviews were done by the researcher in a serene environment that provided the individuals with the requisite level of mental security. The study's participants were made aware that they were under no obligation to respond to the questions and might withdraw at any moment. With their consent, the participants allowed a Samsung Android phone to be used to record the interviews. The participants' phone numbers were recorded with the allotted code for each participant to maintain their anonymity, and the interviews were marked for future study and access to the participants. By successfully connecting with the participants and directing them towards the problem, an effort was made to gather detailed information about them. The researcher used queries like "Would you provide an example?" and/or "Could you explain more?" to elucidate the responses. By repeating the questions and accentuating certain details or summaries of the participants' replies, the researcher further tried to guarantee the accuracy of the data and add credibility to the conclusions. Participants were encouraged to add any topics or experiences that had not been covered during the meeting by answering questions like "Would you want to contribute anything?" or "Should I have asked any other questions?" at the end of each session. Participants' permission was also sought for any follow-up calls or interviews. Immediately after each session, a summary of the field notes was made and used to support the data. The interviews were then transcribed verbatim. The characteristics and status of the person were additionally included. The researcher was able to check the participants' comments with the help of transcription and their body language cues. The qualitative study was continued until the point where no new code, category or idea was developed or till conceptual saturation was reached [41]. In the current research, saturation was reached after 10 interviews. However, to confirm and validate the findings, two additional interviews were conducted.

Table 1
The guide questions.

Questions:
1. What sexual experiences have you had throughout this time?
2. Is there a qualitative or quantitative difference in your interactions?
3. What was your relationship like with your spouse? Is there a difference?
4. Has your concern about sharing the infection with your partner harmed your relationship?
5. Has your spouse's connection with you suffered as a result of your worry about passing the virus to them?
6. Are you happy with your marriage? [45]
7. Do you have an intimate relationship with your spouse? [46]

2.4. Data analysis

To determine the involvement of health professionals fighting the COVID-19 pandemic on the front lines, the current qualitative study was carried out utilising the traditional content analysis approach. When the theoretical explanation of a phenomenon is inadequate, conventional content analysis was utilised to characterise the phenomenon in investigations. In traditional content analysis, participant utterances were utilised as the primary data source, from which codes and categories are derived inductively and directly. Data was gathered and examined repeatedly throughout the qualitative analysis process, enabling the extraction of categories and themes. To get fresh insight and comprehension, the researcher immerses themselves in the data [47]. The goal of the current study was to characterise how health professionals working on the front lines of the COVID-19 pandemic saw the situation. The traditional qualitative content analysis seemed to have helped the researcher characterise the circumstances influencing the sexual experiences of healthcare professionals. The eight-step qualitative content analysis method developed by Granheim and Lundman [48] was used to assess the study's data. This approach of eight steps for processing and analysing the data is methodical. The first phase was getting the data ready and turning it into text. Selecting the unit of analysis was the second step. In this stage, the whole text was seen as the unit of analysis, while the smaller sections were viewed as the units of meaning. In the third phase, categorization was done. The categories in the current research were inductively created from the raw data. To elicit participants' views and opinions and distinguish between the developing groups, the researcher constantly compared them. Since the categories in a qualitative content analysis have clearly defined borders, it was attempted to make each category as different from the others as possible by giving it as much internal homogeneity and exterior heterogeneity as possible. Testing and confirming the code in a sample text was the fourth stage. Other members of the study team reviewed samples of the coded text at this stage, and the accuracy and validity of the categories and coding of the sample were assessed. It improved the data's validity. Encoding the whole text was the sixth stage. The whole text was encoded when a decision was made about the encoding of a sample text. The researcher regularly checked and controlled the coding to guarantee agreement between the extracted codes based on the researcher's inference and the views of the study participants and the research team. The coding stability was examined in the sixth phase. The accuracy of the coding was reviewed once more once the whole text had been coded. The data were coded in the sixth phase. Categories were created as a result of this approach. Using inferences from the data, the researcher constructed meaning structures at this stage. The qualities and dimensions of the topic under research were established in this phase. The relationships between categories were established, and the underlying themes were described and examined in light of the whole body of information. Reporting on how to examine the data and results was the eighth stage. The coding methodology, analytic approach, and techniques utilised to boost study accuracy were all disclosed to make the research reproducible. The data analysis was completed by all authors. The study project titled "The Sexual Experiences of Health Workers on the Frontline of the Fight against the COVID-19 Pandemic in Health Centres of Ramsar: A Qualitative Content Analysis" includes this article.

2.5. Trustworthiness

To determine the validity and reliability of the qualitative data obtained from content analysis, criteria such as credibility, dependability, confirmability, and transferability [49] were used. In the process of this research, several methods, including member check and peer check, were used to improve the reliability of the data. When the researcher did not find the interviews to be relevant and the participant's goal was not well grasped, participants were provided with feedback and frequently endorsed during the interview. In addition, participants were asked, either in person or over the phone, to explain the underlying codes and ambiguities in their interviews. The entire transcript of the interviews was also submitted to the research team, along with the coding and the first classes. The research team gave comments that both agreed with and praised the way the implementation, coding, and initial grades were done. To increase the dependability of the data in this study, different strategies, such as a peer-review process by several participants and investigation of the data by the research team, were used. Throughout the review, the statements that were vague for the researcher were repeated several times, and the participants were asked to confirm them, so the transcriptions were given to three participants to confirm the written content in terms of compatibility with their statements.

In addition, in person or via telephone, the participants were asked to confirm the main codes of their interviews and clarify the vague statements. The data were collected at around the same time and under the same circumstances. The findings have to be consistent, rational, and continuous if stability can be present [42]. In this study, attempts were made to determine the stability of the results by providing feedback to the participants and reviewing it with the research team and two experienced researchers who were experts in qualitative research. In this study, observer reviews were used for verification. In this regard, the interviews, codes, and extracted categories were reviewed by several experts in the field of qualitative research. To increase the transferability of the results, the researcher asked for the participants' experiences. We tried to include participants of all ages and educational, cultural, and social statuses. Such a variation in resources contributes to the transferability of results to other conditions. In addition, the researcher tried to compare the findings of the present study with the findings of other studies to increase the transferability of the results. A detailed description of the study, participants, methodology, and results helped the transferability of the results. To improve the transferability of the results, the researchers also reviewed the work report and approved the stages.

2.6. Ethical considerations

The study was approved by the Health College, Babol University of Medical Sciences [ethical code IR.MUBABOL.HRI.REC.1400.136]. Before performing the interviews, the participants were orally explained the purpose of the study, the participants'

rights, being free to participate in the study or withdraw at any time, and the confidentiality of the information in all steps of the study. Written consent forms were obtained.

The time and place of the interviews were determined based on the agreement between the participants and researchers. Researchers assured all participants that the information collected would be kept confidential. The researcher was the only person aware of the identities of the participants. At each point in time when the participants expressed a desire to end the recording, the recording was halted, and the participants' words were transcribed and recorded in written form for analysis. After typing the interviews were transcribed and transferred onto paper, the audio recordings of the interview was securely deleted. Participants were informed that participation was voluntary and that they were free to leave the study at any time. To ensure confidentiality, information was stored in a secure environment (Participants were anonymised and allocated a code number to maintain anonymity and confidentiality). If the participant can't answer certain questions, the interviewee accepted his or her. The participants have also been given the guarantee that their identities would not be disclosed in the publication of the research findings, even though some of their comments and conversations may be relayed verbatim. Due to the absence of relationship between the data and the participant profiles presented in the reports and findings, it would not be feasible to identify the specific individuals who participated in the study.

3. Results

In this study, 12 interviews were performed (10 interviews with nurses working in the inpatient wards of patients with COVID-19 in the hospital). Among them, eight of the interviewees were female, and the others were male. The minimum work experience of the participants was 3 years, and the maximum work experience was 23 years (see Table 2).

The data was analysed using traditional qualitative content analysis, which resulted in 60 initial codes, 7 subcategories, 3 major categories, and one theme. Because of the huge number of retrieved codes, only seven codes were provided in Tables 3 and 4.

The results were analysed, and the main themes were "unhealthy lifestyle due to sexual dissatisfaction" and three main categories: "concerns about health risks", "sexual dissatisfaction" and "sexual facilitators and barriers ".

In this part, the categories are discussed and supported by the participants' statements.

3.1. Main category: concerns about health risks

Concerns about health risks were defined by the participants as "unmanaged negative feelings" and "come from feelings of intercourse during the COVID-19 pandemic."

Unmanaged negative emotions include "difficulties of dealing with the disease," "negative feelings related to the coronavirus," and "extreme preventative measures.

Regarding the "extreme preventative measures", participant #7 stated: "My spouse is an employee, but a non-medical one, and was afraid to be affected by the disease, so he was not so interested in sex".

Regarding the "difficulties of dealing with the disease", participant #1 stated, "Since COVID was known, even many people found problems in their daily work.'

Regarding the "negative feelings related to the coronavirus", participant #2 stated: 'My husband was sick (suffering from other chronic diseases). I was always thinking that my husband would not get the COVID disease from me. '.

Regarding the "lack of sexual pleasure when having sex at the beginning of the disease", participant #1 stated: 'That feeling was there before Corona, and it was before and after the relationship, and it had affected the feeling of pleasure. '.

3.2. The main category: sexual dissatisfaction

Participants defined "sexual dissatisfaction" as "marital conflict", "maladaptive relationships," and "sexual dissatisfaction".

Regarding the "husband's aggression due to the lack of intercourse during the outbreak of the disease", participant #1 stated: 'I have heard that husbands get aggressive." Regarding the "intolerance of the lack of intercourse during the outbreak of the disease",

Table 2
Demographic characteristics of the participants (n = 12).

Number	Sex	Marital status	Spouse's occupation	Work experience (in years)
1	Female	Married	Non-medical employee	23
2	Female	Married	Non-medical employee	13
3	Female	Married	Non-medical employee	21
4	Female	Married	Non-medical employee	15
5	Female	Married	Non-medical employee	4
6	Female	Married	Non-medical employee	7
7	Female	Married	Non-medical employee	8
8	Female	Married	A nurse in CCU	17
9	Male	Married	Nurse	4
10	Male	Married	Housewife	3
11	Male	Married	Non-medical employee	4
12	Male	Married	Nurse	5

Table 3
The codes and subcategory extracted from the lived sexual experiences of health workers on the frontline of the fight against the COVID-19 pandemic (n = 12).

Examples of Semantic units	Codes	Initial categories	Subcategory
Example: Ever since COVID-19 was known, many people have found problems in their daily work. (What to eat, what not to eat, what to do.)	The difficulty of people dealing with all issues after the COVID-19 Creating problems in people's daily work Since the corona was known It is more difficult to prevent covid at the beginning of this disease	The difficulties of dealing with the disease.	Unmanaged negative emotions
Example: Family, friends, acquaintances, worried about not being a carrier	The feeling of stress related to Corona People's doubts about how to do everyday things since the start of Covid Feeling worried about the person being a carrier Worry about transferring the disease to the spouse	Negative emotions relevant to COVID-19	
Example: Disinfect everything since covid was known.	Extreme disinfection of everything Spouse's infection with covid-19 is the reason for reducing marital relations The negative impact of the death of a family with covid-19 on sex The negative impact of the psychological aspect of the possibility of contracting a disease on the marital relationship Fear of being a carrier of the spouse prevents sexual intercourse	Extreme preventative measures	
Example: we were worried to have sex.	Feeling worried	Anxious negative feelings about having sex with your spouse	Feelings of intercourse during the COVID-19 pandemic.
Example: Being afraid to have sex.	Feeling afraid		
Example: I was always afraid of the stigma of transferring the sickness to the spouse.	Feeling stigma	Negative feelings about having sex with your spouse	
Example: being reluctant to have sex	Feeling reluctant		
Example: That feeling that was there before Corona, and it was before and after the relationship, and it had affected the feeling of pleasure.	Lack of sexual pleasure		
Example: But I could hear from the corner that even men were becoming aggressive.	Men's sense of aggression	Violent of men	Marital conflict
Example: They even protested very strongly.	Violent protests by men		
Example: If you don't get close to me, I will think of something else to satisfy myself). (I can't bear it.	Intolerance of men to interrupt sex	Man protests to his wife for sexual dysfunction	
Example: Men get caught up in small things. (They get caught up in anything.)	Men are caught up		
Example: I have no sin. He chose me himself. This is my job.	No guilt Feeling about not having sex with your spouse	Communication disorder with spouse	Maladaptive relationship
Example: Our relationship with our spouses had been disrupted.	Disruption of communication with spouse Divorce emotional divorce due to the termination of sexual relations		
example: We were not satisfied with married life.	Disruption of communication with spouse Dissatisfaction with married life Weakness of the family foundation The feeling of being a stranger to the spouse afraid of each other	Feeling unsatisfied with married life	
Example: Sexual intercourse was much less.	Reduce sex time Very little sexual contact during the onset of covid disease	Reduced sexual intercourse	Sexual dissatisfaction
	Feeling less desire to have sex At the time of the start of the covid disease Long-term separation of the couple's sleeping place	Avoiding sex with your spouse	
Example: Recognising the disease and observing the principles of prevention is the key to returning life to normal.	Recognising the disease and observing the principles of Prevention Observing health protocols that facilitate sex	–	Sexual facilitators
Example: Feeling more relaxed after the COVID-19 vaccination, facilitating factors in returning life to normal.	COVID-19 vaccination		
Example: My husband had contracted covid virus. We were not close at all for a month. Little by little, he returned to the normal routine.	Refusing to have sex because of the wife's covid-19 disease	–	Sexual intercourse inhibitors

(*continued on next page*)

Table 3 (*continued*)

Examples of Semantic units	Codes	Initial categories	Subcategory
Example: A strict (obsessive) personality is an obstacle to sexual relations during the outbreak of COVID-19.	The obsessive personality of a spouse is an obstacle in sexual relationships during the outbreak of covid-19		
Example: When I was working in the ward, we took care of him for two to three days; he had no symptoms; after that, it was confirmed that he was a COVID patient. We were worried about transferring it to ourselves. Did I, who was in contact with my children, sleep on the same bed with my wife, or maybe I was in the same house? Did I transfer it to my wife and children or not? It was always on my mind, and I was constantly waiting for symptoms of COVID to appear in myself, my children, and my wife. Fortunately, because we were observing, we did not witness this incident, but we were disappointed.	Fear of transmitting the disease to the spouse due to contact with patients infected with the coronavirus		

Table 4
The subcategory, category and theme extracted from the lived sexual experiences of health workers on the frontline of the fight against the COVID-19 pandemic (n = 12).

Subcategory	Category	Theme
Unmanaged negative emotions Feelings of intercourse during the COVID-19 pandemic. Marital conflict Maladaptive relationship Sexual dissatisfaction	Concerns about health risks Sexual dissatisfaction	Unhealthy lifestyle due to sexual dissatisfaction
Sexual facilitators Sexual intercourse inhibitors	The Sexual facilitators & barriers	–

participant #1 stated, "If you don't get close to me, I will think of something else to satisfy myself. I can't tolerate it. '.

Regarding the subcategory of communication problems with the spouse, participant #2 stated, "We had problems with our spouses." Regarding the "dissatisfaction with marital life, participant #2 stated: 'We were not satisfied with married life.'

Regarding the subcategory of reduced intercourse, participant # 1 stated: 'The desire for sex was not high during the COVID-19." Regarding the "reduced intercourse, participant #5 stated: 'Our female colleagues said that they were not allowed to sleep in the bedroom or bed for several months. '.

3.3. The main category: the sexual facilitators & barriers

The participants defined the "sexual facilitators" as "recognising the illness and following the principles of prevention as the elements to restore life to normal circumstances" and "feeling more relaxed after the COVID-19 immunisation." Both of these statements are true. Participant #1 stated: 'The information about the disease gradually increased, and we were happy that there was no need to follow the instructions I was following: personal hygiene, washing hands before doing any activity. Some activities have become routine, and all are following the instructions. Some, but not all, people felt safe by following the protocols of the Ministry of Health. So, they returned, to some extent, to their normal lives and did their routine activities. '.

Regarding "feeling more relaxed after the COVID-19 vaccination", participant #1 stated: 'Getting the vaccine reduced this stress to some extent. There is more peace." Regarding "recognising the disease and observing the principles of prevention as the factors to return life to normal conditions", participant #1 stated, "While it was possible by observing all these things (following health protocols), the problems (sexual problems) could be solved.'

The participant defined the term "sexual inhibitors" as the following: 'spouse infected with COVID-19 illness," "fear of transferring the disease to the spouse due to contact with patients infected with the coronavirus," and "spouse's mental problems are an inhibitor to having sex." Participant #1 stated: 'I was working in the ward and taking care of patients who were diagnosed as COVID-19 patients later. So we felt stressed. We were worried about a sore throat or headache. I was worried if I had been infected with the virus or had transmitted it to my husband or my children. I was always concerned about the disease's signs or symptoms in myself, my husband, and my children. However, fortunately, we haven't experienced such a bad event because we have observed the protocols, but we were always worried. It has had an unconscious effect on our souls. '.

Regarding the "spouse infected with COVID-19 illness", participant #1 stated, "My husband had contracted the Coronavirus. We were not close at all for a month. Little by little, he returned to his normal routine. " Regarding the "spouse's mental problems being an inhibitor to having sex", participant #1 stated: 'My personality is such that I don't take it too hard. '.

4. Discussion

The sexual experiences of healthcare workers who were on the front lines of the COVID-19 epidemic were identified in the present study using qualitative content analysis. The research found that sexual unhappiness could lead to the following harmful lifestyles:

In this study, "concerns about health hazards" were defined as "unmanaged unpleasant sensations" and "feelings of sexual relations during the emergence of COVID-19." The COVID-19 pandemic resulted in "difficulties in coping with the illness," "bad sentiments associated with COVID-19," and "extraordinary precautionary efforts." There had been an increase in the number of nations that have declared states of emergency following the discovery of the COVID-19 pandemic around the world and the implementation of strict quarantine measures to deal with those people due to the fear of dying from the disease, spreading bad news and rumours, interfering with daily activities, reducing social relations, and dozens of other conditions related to these conditions. Wellbeing for the body and mind, they are affected by the COVID-19 epidemic, and as a consequence of these feelings, they are also coping with unrestrained negative emotions and social attitudes. The results showed that unmanaged negative feelings (difficulties and problems dealing with all issues during the post-COVID-19 period, problems arising in people's daily activities since the outbreak of COVID-19, and problems preventing COVID-19 at the beginning of the disease) were the secondary categories of health risks. These results were in agreement with those of Maison et al., Varma et al., and Spinelli et al. Coronavirus disease, the most significant global health issue, has endangered human health. Since COVID-19 interrupted life as we know it on Earth and provided substantial challenges for humanity, its unknown origins at the beginning of the sickness had a profound effect on human existence. In addition to endangering human life, it also made daily living challenging [50,51]. Humans often use a range of coping methods as a strategy when dealing with a difficult event or emergency. However, one of the reasons for not using suitable coping mechanisms, mismanaging unpleasant emotions, and facing the following challenges in forming acceptable sexual relationships is an overly gloomy prognosis of future events: The results of this study indicate that one of the uncontrollable negative emotions is that which is related to COVID-19 (such as uncertainty, anxiety, stress, and avoidance). This research supports Pietromonaco et al.'s findings [52]. Furthermore, Torabi Zonouz et al. showed that in vulnerable individuals, stress brought on by COVID-19 may result in mental disorders such as depression, anxiety, obsessive-compulsive disorder, phobias, and interpersonal sensitivity [53]. During the early stages of the epidemic, Argentinians' attitudes were investigated by Johnson et al. via a survey. The results demonstrated people's uncertainty, fear, and anxiety, which were similar to the present study's findings [54]. Such activities have become a crucial component of our lives and lifestyles as a consequence of social isolation and the need to be healthy. As a consequence, a loss of social connections may lead to stressful circumstances, including isolation, anxiety, depression, and other mental diseases, as well as health hazards and other issues that have an impact on both individuals and society [52]. Because of the COVID-19 epidemic and quarantine, people were less active, which contributed to mental health problems such as sadness, anxiety, and job stress [54]. The dread of the COVID-19 illness among individuals, as well as its repercussions on their health, psychological well-being, and adaptability, is a worrying trend that is being highlighted by these data. This pattern demonstrated the necessity for individuals to develop coping mechanisms and increase their social support to cope with, diminish, and overcome their negative emotions and sexual issues. The results of the present study indicate that one of the most uncomfortable feelings is the need for stringent preventative measures, which makes many medical professionals avoid sexual activity out of concern that they may infect their spouses, making them unhappy in their marriages. This outcome was in line with what Karagoz and colleagues had discovered. Male and female sexual activity decreased throughout the outbreak [55]. The couples were also dissatisfied with their sexual behavior, according to Osur et al. [6], Cocci et al. [56], and Ibarra et al. [57]. In a process-oriented paradigm, Pollard et al. has shown how the COVID-19 pandemic may affect sexual, relational, and individual performance as well as reduce the adaptability of couples (sexual pleasure, communication) [58]. The impact of anxiety brought on by the COVID-19 sickness on romantic relationships was examined by Rodrigues et al. [59].

One of the main risk factors for developing COVID-19 is having a chronic illness, such as diabetes. Because the efficacy of different COVID-19 treatments was unknown [60], this will result in avoiding sexual relations with partners who have chronic illnesses, which was consistent with the findings of our study. The fear of contracting the virus and passing the disease to the spouse, as well as the extreme preventive measures that degrade people's sexual quality and function, could have an impact on sexual function and dimensions, which is relevant to nurses' important role in preventing and controlling the virus and infection. A person's anxiety about contracting the virus and spreading it to their offspring might also have an impact on their sexual function and growth. In the present study, the main category was "sexual unhappiness," which also included the subcategories "marital conflict," "maladaptive relationship, " and "sexual dissatisfaction." The results showed that the subcategories of "sexual unhappiness" (aggression, fighting, intolerance, and resistance to a lack of intercourse by husbands) included marital problems. Since the COVID-19 outbreak and the onset of social alienation in the United States, Luetke et al. claim that Americans have experienced escalating romantic conflicts, which have been followed by changes in their private and sexual lives [61]. The family facility has had certain issues as a consequence of COVID-19. Marital conflict has resulted from the long-term isolation of families during the COVID crisis, the occupational risks faced by frontline combatants fighting COVID-19, and its unintended effects on their marital relationships. As a result, it is necessary to identify the factors influencing these conflicts and find suitable solutions to deal with them. Van Gelder et al. have shown that increased behavioural antagonism between couples may result from a decreased probability of coronavirus infection [62]. According to the results of the current study, "maladaptive relationship" was another subcategory of "sexual dissatisfaction" (such as issues in the relationship with the spouse, dissatisfaction with sexual life, a weak family foundation, feeling strange to the spouse, feeling afraid of each other, feeling bad about life, divorce, and emotional divorce because there was no intercourse and the husband's affairs to meet his needs). In a process-oriented paradigm, Pollard et al.'s study showed how changes brought on by the COVID-19 pandemic affect people's sexual, relational, and personal performance as well as reduce couples' flexibility (sexual enjoyment and communication) [58].

According to Panzeri et al. [63], some female participants reported reduced arousal, contentment, and pleasure during sexual activity. Similar outcomes were observed by Hensel et al. [64]. When working on the front lines of the COVID-19 pandemic, fear of coronavirus infection can negatively affect married people's sexual function and reduce their marital quality of life, making prevention of the pandemic's negative mental effects, paying more attention, and performing interventions to improve people's sexual function seem necessary. The coronavirus pandemic has increased marital fights and narrowed couples' tolerance for differences, in addition to causing stress and despair in those who were together for extended periods. This is one way that crises may affect family ties. People in Corona quarantines lacked the necessary skills to manage the new communication environment, which presented them with a never-ending bombardment of inquiries and depressing material. People in this situation were likewise inundated with negative information. Families should be taught communication and listening techniques, as well as ways to relax during stressful situations, to help them better manage the impacts of stress. The results of the current study were in agreement with those of Gouvernet et al. [65] and suggested that "dissatisfaction with sex" was another subcategory of "sexual dissatisfaction" (examples include having fewer sex acts during the disease's outbreak, feeling less desire to have sex, and sleeping in separate rooms for an extended period). Additionally, according to Fischer et al., sexual problems increased during the COVID-19 pandemic while sexual pleasure decreased in comparison to the period before the implementation of prophylactic measures [66]. Having sexual contact with another person puts partners in the closest possible physical contact, making it likely that the coronavirus may spread via both breathing and physical touch. Sexual contact is not the only way that the coronavirus can spread. As a consequence, it could change the frequency of sexual activity and cause sexual resentment, especially in couples who are actively battling COVID-19. A significant and unfavourable correlation between worry over infecting one's partner and female sexual function was found by Minaei Moghaddam et al. The mean sexual function score of men and females was significantly lower in terms of sexual intercourse fear and working in a health facility [67]. Particularly among couples battling COVID-19 on the front lines, the fear of catching the disease may negatively impact a married person's sexual function and lower the quality of their marriage. This necessitates greater focus and interventions to enhance people's sexual performance, which in turn necessitates more focus and interventions to enhance the quality of married life. "Sexual facilitators" was one of the main categories in the present investigation. The study's conclusions state that recognising the illness, adhering to disease prevention recommendations, and feeling better at ease after receiving the COVID-19 vaccination were all sexual facilitators. The "sexual inhibitors" category was another important one. The codes for this group were resistance to sexual activity because of concern for infecting the husband, obstructionist rigidity during the COVID-19 crisis, and concern for infecting the spouse because of interaction with COVID-19 patients. The results of Pedrenho Neto et al. [68], Mohamed et al. [69], Masoudi et al. [70], Guzel et al. [71], and Culha et al. [72] were in agreement with this conclusion. Concerning the COVID-19 pandemic, the abrupt onset of a potentially fatal sickness may strain medical professionals serving on the front lines of the conflict. Physical tiredness, insufficient personal equipment, social isolation, loss of support, increased infection risk, and increased work demands may all hurt one's physical and mental well-being. Nurses are concerned about a lack of understanding regarding COVID-19 illness, infection with the coronavirus, and being sick or transferring the virus to their spouses and family. The anxiety caused by the perceived lack of understanding and uncontrollability of the hazards will be lessened by the proper management of staff and human resources, as well as the management of protective equipment and specific training for COVID-19 patients. The fear of COVID-19 disease, on the other hand, is typified by a lack of management and organisational support, high treatment costs, and rising work stress [73]. Sexual function and marital quality might both suffer from the fear of contracting the virus [68]. Marriages cannot exist without sexual activity, which has an impact on the quality of their lives. Attention should be given to this significant problem in couples' relationships in this unique circumstance of the pandemic, which has unknowns in its numerous dimensions, to notice its impacts and avoid its damages. On the other hand, the inability to manage the illness and its repercussions is one of the factors contributing to the dread of developing the illness. Efficient steps may be taken to lessen the anxiety of developing the illness and enhance people's sexual function by offering acceptable solutions, such as the administration of an efficient COVID-19 vaccination. However, it appears that increased knowledge of the condition, preventative measures, and immunisation may be helpful steps in lowering disease anxiety among medical professionals working on the front lines of the COVID-19 pandemic as well as enhancing their marital and sexual relationships.

5. Strengths and limitations of the study

One of the limitations of this research was that sexual matters and associated concerns are taboo in Iranian society. The higher numbers of female participants was a serious limitation. Other operational constraints of this research were the participants' anxiety and worry about sharing their sentiments and views; the process of receiving satisfaction from them; and the necessity to win the participants' confidence in the area of maintaining the confidentiality of information. Interviewing participants at their place of work is a significant limitation; this may have impacted how comfortable the participants felt and thus how free they felt to discuss a personal matter. The study's strength was gathering fresh and unusual features of the sexual experiences of health professionals on the front lines of the COVID-19 pandemic, as well as findings based on the Iranian setting and culture. The qualitative study of the sexual experiences of health professionals on the frontlines of the COVID-19 outbreak was the first of its kind in Iran. The strengths of the study include investigating the influence of occupational risks on health professionals on the front lines of the COVID-19 pandemic on the sexual relations of workers and conducting research throughout the course of the COVID-19 pandemic.

6. Conclusion

Using qualitative content analysis, this research was carried out to assess the sexual experiences of health professionals on the frontlines of the COVID-19 pandemic. In this study, the researcher discovered concerns about health risks (i.e., unmanaged negative

feelings, problems caused by the outbreak of the COVID-19 crisis), facilitators and inhibitors (facilitating factors in returning sexual intercourse to normal and inhibitors of intercourse), and marital dissatisfaction (marital conflict, maladaptive relationships, and sexual dissatisfaction). In light of the unavoidable impact that the COVID-19 pandemic will have on the sexual function of those on the frontlines of the pandemic, it is advised that suitable coping mechanisms be identified and taught, as well as that marriage therapy be sought out. It is advised that researchers apply qualitative content analysis rather than quantitative research to assist them in explaining the facts impacting the sexual experiences of workers and hearing the voices of individuals about their living situations. To better understand the unhealthy lifestyles that health professionals who are on the front lines of the COVID-19 disease fight are leading, more research on people from various cultural backgrounds is necessary. This is necessary to come up with acceptable solutions to respond to the current circumstances. The results of this research have the potential to improve health in all areas (physical, mental, communicative, and sexual), as well as quality of life and overall health. They can also lessen the psychological discomfort that health professionals—whose own health has an impact on the health of their patients and the health of society as a whole—experience.

Author contribution statement

Fatemeh Mohammadkhah, Fakhreddin Chaboksavar, Fatemeh Alhani, Amina Mahmoudian, Arash Ziapour, Abdolhosein Emami Sigaroud, Zahra Jannat Alipour: Conceived and designed the experiments; Performed the experiments; Analysed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Data availability statement

Data will be made available on request.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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