International Journal of Healthcare and Medical Sciences
ISSN(e): 2414-2999, ISSN(p): 2415-5233
Vol. 4, Issue. 6, pp: 90-98, 2018
URL: http://arpgweb.com/?ic=journal&journal=13&info=aims

Academic Research Publishing Group

Original Research Open Access

Jordanian Patients Knowledge Regarding Sexual Health Following Coronary Artery Diseases

Izzeddin A. Abu Bdair*
Al- Ghad International Collage of Applied Medical Sciences, KSA, Abha

Lubna Abushaikha
School of Nursing, the University of Jordan, Amman, Jordan

Abstract

Background: Sexual health is one aspect of daily life that becomes affected after an individual suffers from coronary artery diseases. Sexual health assessment is an important aspect in assessing general health of patients with coronary artery diseases. Patients often express their concern about sexual well-being after coronary artery diseases but they rarely receive sexual health-related information. **Purpose:** The aim of this study was to assess Jordanian patients with coronary artery diseases toward sexual health and resuming sexual health activities. **Methods:** A descriptive, correlational and longitudinal design was used. A convenience sample of 90 patients with coronary artery diseases was enrolled. The study was conducted at one university-affiliated hospital and one public hospital in Amman. Patients' knowledge about sexual health was assessed using Sex after Myocardial Infarction Knowledge Test- Cardiac version. **Results:** The majority of patients (65.6%) were diagnosed with MI, male (76.7%) and above 45 years (78.9%). Most patients (72.2%) had a CAD for five years or less. Patients acknowledged the importance of sexual health assessment but they rarely receive sexual health information. The results revealed that patients' knowledge was limited regarding certain aspects of sexual health (M=13.74, SD= 3.26) at phase one and most patients (55.6%) had moderate knowledge. The results indicated that patients' knowledge had significantly improved at second phase. **Conclusions:** Sexual health is an important concern for patients with coronary artery diseases that need to be addressed after recovery. Results of the study showed that sexual health remains an important issue for both patients with coronary artery disease and their health care providers. Continuing education for nurses and health education for patients regarding sexual health should be considered in health institutions.

Keywords: Sexual health; Coronary artery diseases; Assessment; Jordan.

1. Introduction

Sexual health is a major issue among patients recovering from serious diseases and disorders, including coronary artery diseases (CADs). According to WHO statistics in 2015, CADs are still the cause number one of death in both the United States and the rest of the developed world [1]. The most recent Jordanian Ministry of Health [2] indicated that cardiac diseases accounted for 36.6% of deaths for both sexes and are stamped the leading cause of death in Jordan. Coronary artery diseases (CADs) have a negative influence on sexual health [3]. These sexual problems include decline sexual function [4], decrease of sexual activity, interest and satisfaction [5] and induce physical discomfort [6].

Sexual activity is defined as "any mutually voluntary activity with another person that involves sexual contact, whether or not intercourse or orgasm occurs" [7]. Sexual activity includes different behaviors such as kissing, hugging, touching, stimulation and intercourse [8]. Bispo, *et al.* [9] defined sexual dysfunction as a decrease in desire or frequency of sexual activity due to organic or psychological problems. Sexual health is viewed as an area of concern that needs to be addressed. Miner and Kim [10] stated that health care providers should recognize the association between sexual dysfunction and cardiac diseases. As a result, sexual health assessment for patients with heart diseases has recently gained more attention in nursing profession.

Sexual problems are highly prevalent among patients with CADs [11]. The rate of sexual health problems varies based on factors such as age, gender, type and severity of the disease and other co-morbidities. Lindau, *et al.* [12] reported that about 50% of male patients and 60% of female patients reported a decrease in frequency of sexual activities one year after acute MI. More than half of men and one fourth of women reported sexual difficulties following newly diagnosed heart diseases [13]. In Jordan, Akhu-Zaheya and Masadeh [14] found that about three-quarters of patients reported that their sexual health was altered [14].

Many physical and psychological factors affect the sexual health of patients with CADs. For example, ageing, being a male, having comorbidity, using β-blocking agents; anxiety and depression were major factors that affect the sexual health of patients with heart diseases [10, 13]. Partners play an essential role in the sexual relationship. Partners may report fear of resuming sexual activity and start taking care of patients instead [15].

Patients with cardiac diseases and their partners are often concerned about how sexual activity might affect their health conditions and about resuming sexual activities [16, 17]. Resuming sexual and intimate relationships is viewed as challenging for patients and their partners [18]. Many MI patients expressed fear of resuming sexual

*Corresponding Author

activity due to the perception that these activities may adversely affect their condition [19]. There is a debate regarding the best time for them to safely resume sexual activities after CADs. According to AHA guidelines, the recommended time for resuming sexual activity is within 1 to 2 weeks for patients with acute MI if their condition is stable, without complications and they show no cardiac distress symptoms during routine physical activities [3]. Still, extra measures should be taken by patients to achieve safe sexual activity. O'Donovan [20] reported that sexual activities in a familiar and comfortable environment with acceptable room temperatures are important conditions for safety. Chen, *et al.* [21] reported that sexual activity in a familiar setting and not after a heavy meal is safe with low risk of another heart attack.

Ample evidence has shown that patients with CADs rarely receive sexual health assessments and information in clinical nursing practices during their hospitalisation [9, 19]. Only 41% of patients with MI and 31% of partners received sexual health assessments during follow-up visits [22]. In Jordan, only one tenth of patients with cardiac diseases received information regarding their sexual health [14].

Bispo, *et al.* [9] found that patients with MI might avoid resuming their sexual life because they are afraid of chest pain, developing another heart attack or even death. However, Dahabreh and Paulus [23] stated that cardiac problems produced by sexual activity are extremely low. To determine the treatment scheme for sexual dysfunction for patients with heart related problems, Jaarsma, *et al.* [24] recommended several actions such as thorough assessment, control of co-morbidities and associated risk factors, relieving psychosocial distress/fear and prescribing sex-enhancing medications. Other helpful strategies are following a healthy lifestyle, regularly exercising within tolerable limits, giving up smoking and adopting a heart-friendly diet. Sexual concerns are highly sensitive matters and can only be investigated by a comprehensive sexual history examination [25]. Appropriate health education to increase awareness of patients post CADs remains the fulcrum of resuming sexual life.

Sexual health counselling is defined as "an interaction with patients that includes providing information on sexual concerns and the safe return to sexual activity, as well as assessment, support and specific advice related to psychological and sexual problems" [26]. Sexual health counselling is an important intervention for relieving anxiety and fear associated with sexual activities, increasing sexual satisfaction/interest and improving the sexual lives of patients [18]. Mosack, *et al.* [27] recommended a thorough sexual assessment for patients with cardiac diseases in order to recognize their special concerns and provide them with sexual health information based on their needs.

Saunamäki and Engström [28] highlighted the importance of addressing patients' sexual health by nurse clinicians. In their study, Byrne, *et al.* [29] showed that cardiac patients (N=382) were rarely educated about sexual health concerns despite their interest in receiving sexual health-related information. It is important to inform patients that sexual activity is a physiological function just like any other daily activity that promotes physical health [21]. Providing patients and their partners with adequate information, guidelines and support regarding sexual health is the best method to help patients resume sexual activity and alleviate physical or psychological burdens [30]. Despite the huge supporting evidence in favour of addressing the sexual health of patients with CADs, few patients are informed regarding their sexual health concerns [10]. The absence of sexual health counselling causes significant negative impacts on the sexual lives of patients [12] and has consequences on the health of patients and their partners [3]. In Jordan, there is no available information or guidelines regarding sexual health assessment for patients with CADs.

Many cultures, including the Arab Islamic culture, consider sexual health related topics to be sensitive or taboo. Some cultures believe that there is no need to talk about sexual matters [31]. In Islam, the main religion in Jordan, the discussion of sexual health with patients is not prohibited as it leads to helping patients to recover their complete state of health. In Islam, sexual health issues have been addressed in the Quran and religious texts due to the importance of this topic to the overall health and wellbeing of individuals. However, there are social restrictions regarding discussing sexual health issues and limiting these discussions to certain conditions such as education and health matters. Furthermore, patients may still ask nurses about sexual health concerns after CADs if they find conditions to be appropriate. It is clear that raising the topic of sexual health in nursing practice and research in Jordan needs to gain more attention.

There is limited research that investigates sexual health of patients with CADs in Jordan. The overall purpose of the study is to assess the level of knowledge of Jordanian patients with CADs about sexual health after cardiac events.

2. Methods

2.1. Design and Settings

This study was conducted using a descriptive, correlational and longitudinal design to assess Jordanian patients' knowledge related to resuming sexual health after CADs. The study was conducted at one university-affiliated hospital and one public hospital in Amman. The data was collected at two sessions with one month apart.

2.2. Ethical Considerations

The study was conducted in accordance to the Declaration of Helsinki as the statement of ethical guidelines (World Medical Association, 1964 revised in 2008). Approval was sought via ethical committees, consent was obtained from recruited participants. The anonymity of participants and confidentiality of responses were maintained. Data were organized by codes where identifying data remained unknown.

2.3. Sample

A non-probability convenience sample of 90 patients diagnosed with CADs were recruited from one university-affiliated hospital and one public hospital. The inclusion criteria for patients were: admitted with a primary diagnosis of CADs; 18 years old and above; married (taking into consideration cultural perspectives as Muslims do not practice sexual activities out of marriage contract; able to read and speak the Arabic language; and agreed to sign the consent form. Potential participants were excluded from the study if they had cognitive problems that interfere with reading or comprehending the questionnaires, those with life-threatening conditions and patients with known physiologic sexual problems.

2.4. Instruments

Age, gender, duration of disease, other co-morbidities, educational level and current work were collected from the patients. The 25-item Sex after MI Knowledge Test – Cardiac Version was used to measure the knowledge of patients about resuming sexual activities after CADs. Four items were removed to fit Arab-Islamic culture as they were related to anal and oral sex, masturbation and exciting rooms since Muslims do not practice these activities. Each item has three options: true, false or do not know. Certain modifications on scoring were applied. The correct response receives a score of 1, and both 'false' and 'do not know' options were treated as incorrect responses with a score of 0. The theoretical range of scores was from 0 to 21, with the higher scores indicating more knowledge on sexual activities after cardiac events.

2.5. Additional Questions

Several additional questions were added to obtain an in-depth understanding of patients' perspectives toward sexual health. The following variables were considered in the study: who should initiate sexual health assessment, the importance of patients' sexual health assessment, preferred source of sexual health information, patients' reaction towards sexual health assessment by nurses and patients' fear or partner avoidance in resuming sexual activities and sexual health changes. All variables were analyzed and discussed.

2.6. Data Collection and Analysis

Patients with CADs were identified on their referral to follow up visits. Medical records were screened to gather the demographic data and history. To ensure privacy, inviting patients were conducted in specialised rooms. The questionnaires were re-collected once the participants had completed them upon their convenient time. Generally, filling out the questionnaires took about 15 minutes.

Sexual health issues are profoundly sensitive in terms of cultural and social contexts. To initiate the discussion on the sexual history of patients with CADs, a general interview was conducted while maintaining the patient's privacy, promoting a comfortable environment and asking clear, direct and relevant questions that began with introductory statements. A male researcher collected data from male patients, and a female assisted in collecting data from female patients due to cultural and religious perspectives. Data was entered and analysed by the SPSS Statistical package version 21. Descriptive statistics were computed to describe the demographic characteristics of patients in form of means, standard deviations, frequencies and percentages for quantitative variables were displayed.

3. Results

This study consisted of 90 patients with CADs, in which the majority (65.6%) were diagnosed with MI. Most participants were male (76.7%) and above 45 years of age (78.9%), with their age ranging from 31-81 years. The education level of patients varied from primary to postgraduate education, while the majority of patients (58.9%) had a secondary education or less. More than half of patients (51.1%) did not have co- morbidities, while the main two co-morbidities were hypertension and diabetes mellitus. Most patients (72.2%) had a CAD for five years or less (Table1).

Table-1. Socio-demographic characteristics of patients in the study (n=90)

Variable	N (%)
Gender	
Male	69 (76.7)
Female	21 (23.3)
Age	
31-44	16 (17.8)
45-54	34 (37.8)
55-64	29 (32.3)
≥ 65	11 (12.2)
Educational degree	
Primary	21 (23.3)
Secondary	32 (35.6)
Diploma	12 (13.3)
Bachelor	18 (20.0)
Post graduate	7 (7.8)
Type of CADs	
MI	59 (65.6)
Angina	31 (34.4)
Co-morbidities	
None	46 (51.1)
DM	5 (5.6)
HTN	22 (24.4)
DM and HTN	17 (18.9)
Length of disease period (years)	
≤5	65 (72.2)
6-10	16 (17.8)
>10	9 (10.0)

The results revealed that patients' knowledge regarding sexual health ranged from zero to 21 (M=13.74, SD= 3.26) at phase one and demonstrated that most patients (55.6%) had moderate knowledge regarding sexual health.

The items analysis revealed that the highest score (92.2) was on the following items: "You should report to your physician a feeling of tightness, fullness or chest pain during sex" and "If you have chest pain during sex, you should stop and rest". In contrast, the lowest score (32.2%) was on the item "Not being able to sleep after intercourse or extreme fatigue the day after intercourse is normal". The current study revealed that more than half of Jordanian patients (54.4%) did not know that medications used to treat CADs might influence their sexual health. More than half of patients (52.2%) reported that they would quit their medications immediately if they do cause sexual health problems.

Regarding patients' knowledge about the appropriate time of safely resuming sexual activities after CADs, the results showed that half of patients (50%) did not know that they could resume sexual activities within a few weeks after CADs. About one third of Jordanian patients (32.2%) did not express their fear of resuming sexual activities to their partners and they did not discuss their feelings to resume sexual activities. Furthermore, most patients with CADs (58.9%) felt angry or helpless if their partners were over-protective of them regarding resuming sexual activities because of their heart condition.

Table-2. A comparison between correct and incorrect answers among patients on sex after Myocardial Infarction Knowledge Test-Cardiac version

	Item	Correct N (%)	Incorrect N (%)	Mean (SD)
1	You should report to your physician a feeling of tightness, fullness, or chest pain during sex.	83 (92.22)	7 (7.77)	0.92 (0.27)
2	If you have chest pain during sex, you should stop and rest	83 (92.22)	7 (7.77)	0.92 (0.27)
3	You should choose your usual position for sex or one that is most comfortable and that does not tire you	79 (87.77)	11 (12.22)	0.88 (0.33)
4	If you are tense or tired, you should not have intercourse until after a good night's sleep.	76 (84.44)	14 (15.55)	0.84 (0.36)
5	Sexual foreplay when you are more relaxed puts less strain on your heart	73 (81.12)	17 (18.88)	0.81 (0.39)
6	It is helpful to be rested before intercourse	72 (80.00)	18 (20.00)	0.80 (0.40)
7	Danger sign to report to the physician is shortness of breath or increased heart rate for more than 15 minutes after intercourse	71 (78.88)	19 (21.12)	0.79 (0.41)
8	A room temperature that is not too hot or cold	67 (74.44)	23 (25.55)	0.74 (0.44)

	is important for sex			
9	A normal response during sex is an increased heart rate, blood pressure, and rate of breathing.	62 (68.88)	28 (31.12)	0.69 (0.47)
10	You should try not to upset your partner with your fears about resuming sex.	61 (67.77)	29 (32.22)	0.68 (0.47)
11	A good way to ease back into sex is to talk with your partner about your feelings about your heart problem while taking a daily walk	61 (67.77)	29 (32.22)	0.68 (0.47)
12	Late evening or the end of the day is the best time to have sex when you are more relaxed.	56 (62.22)	34 (37.77)	0.62 (0.49)
13	Wait 2 to 3 hours after a heavy meal before having sex	54 (60.00)	36 (40.00)	0.60 (0.49)
14	It is normal to feel angry or helpless if your partner is over protective of you because of your heart condition.	53 (58.88)	37 (41.12)	0.59 (0.49)
15	If you think a medicine is causing a problem with sex, you should stop it immediately	47 (52.22)	43 (47.77)	0.52 (0.50)
16	Sex can generally be safely resumed within a few weeks for most heart patients	45 (50.00)	45 (50.00)	0.50 (0.50)
17	It is important to have sex as often as before your heart problem	44 (48.88)	46 (51.12)	0.49 (0.50)
18	A common emotional reaction after a heart problem is depression	43 (47.77)	47 (52.22)	0.48 (0.50)
19	Some medicines used for high blood pressure, anxiety, or depression can affect sex	41 (45.55)	49 (54.44)	0.46 (0.50)
20	Palpitations (rapid heart beating) lasting more than 15 minutes after intercourse are normal.	38 (42.22)	52 (57.77)	0.42 (0.50)
21	Not being able to sleep after intercourse or extreme fatigue the day after intercourse is normal	29 (32.22)	61 (67.77)	0.32 (0.47)

At the second phase of data collection, the mean knowledge score was improved to (M=16.46, SD=2.55) where 63 patients (70%) had good knowledge compared to 28 patients (31.1%) at phase one. To compare between patients' knowledge regarding sexual health at two phases, paired t-test was run. The results indicated that patients' knowledge had significantly improved at phase two (p = .001).

The relationship between patients' demographics and their level of knowledge about sexual health was studied using different statistical tests. In terms of gender differences, an independent t–test was run. The results showed that male patients had more knowledge (M = 14.63, SD = 4.66) than female patients (M = 12.8, SD = 3.82), but the difference was statistically insignificant (p= 0.14). Patients between 36 to 45 years of age had more knowledge compared to younger and older patients. Regarding age, results indicated that there are no statistical differences among various age groups (p = 0.19). Additionally, the relationship between patients' educational level and their level of knowledge was assessed using ANOVA, however, no statistically significant differences exist (p = 0.96).

3.1. Analysis of Additional Questions for Patients

To broaden the understanding of patients' perspectives toward sexual health assessment, several additional questions were investigated. In terms of importance, most patients with CADs (96%) acknowledged the importance of sexual health assessment and showed their interest to receive sexual health-related information. Half of patients (50%) preferred physicians to initiate sexual health assessment, 9% favoured nurses to do this task and 41% reported that initiation of sexual health discussion is the patient's responsibility. The majority of patients (81.1%) preferred physicians as the primary source of information related to sexual health. Patients stated that talking with their primary physician about sexual health is less sensitive due to the nature of the close relationship between them. Few participants (6.7%), mainly female patients, preferred to talk with female nurses about sexual health instructions. Furthermore, 10% of patients used the internet as their primary source of sexual health-related information since it is more private. Another additional question focused on patients' reaction towards nursing assessment of their sexual health. The results showed that most patients (64.4%) voiced their acceptance to receive nursing sexual health assessment. The results revealed that about a third of patients (32.2%) reported being afraid from returning to their routine sexual activities after an experience of CADs. Consequently, about one-quarter of patients (23.3%) reported that their partners avoided resuming sexual activities following the diagnosis of CADs.

Regarding sexual health changes after CADs, 60% of patients had sexual health changes. The main changes included decreased frequency (16.7%), lack of desire (15.6%) and the inability to engage in sexual activities (13.3%); while (12.2%) of patients experienced all these changes. Conversely, 2.2% of patients reported that they had an improvement in their sexual life after CADs; especially after their coronaries were stented and treatment had been started (Table 3).

Table-3. Frequencies and percentages of sexual health-related variables among patients

Variable	N (%)
Who initiated sexual health	
Nurse	8 (8.9)
Physician	45 (50)
Patient	37 (41.1)
Fear from resuming sexual activities	
Yes	29 (32.2)
No	61 (67.8)
Importance of patients sexual health	
Yes	86 (96)
No	4 (4)
Partners avoiding sexual activities	
Yes	21 (23.3)
No	69 (76.7)
Preferred source of sexual health information	
Physician	73 (81.1)
Nurse	6 (6.7)
Internet	9 (10)
Patients' reaction to sexual health	
Prefer	14 (15.6)
Accept	58 (64.4)
Refuse	8 (8.9)
Not interested	9 (10)
Upset	1 (1.1)
Sexual health changes	
Yes	54 (60)
No	36 (40)
Nature of sexual health changes	
None	36 (40.0)
Decrease frequency	15 (16.7)
Lack of desire	14 (15.6)
Lack of ability	12 (13.3)
All	11 (12.2)
Improved	2 (2.2)

4. Discussion

Patients' knowledge regarding sexual health following experiencing CADs was evaluated at two phases. The first phase aimed to obtain baseline data, while the second phase aimed to assess changes in patients' level of knowledge over time. Exposing patients to sexual health concerns might open the door to seeking more sexual health-related information. Evidence confirms that sexual health is an important aspect of quality of life (Levine et al., 2012). Patients in this study acknowledged the importance of addressing their sexual health concerns. Nevertheless, sexual health assessment is rarely examined in Jordan.

The results of knowledge at phase one indicated that patients had limited knowledge regarding certain aspects of sexual health following CADs (M=13.74, SD=3.26). This might be related to the absence of sexual health assessment from health care providers (Byrne et al., 2013). Several studies reported that patients with MI had little knowledge about sexual health [12, 32, 33]. From their perspectives, most patients with heart diseases were not satisfied with the sexual health information they received because they viewed it as insufficient [34-36]. Despite supporting evidence to address the sexual concerns of patients after CADs, few cardiac patients have been assessed for sexual health and concerns [10].

To achieve successful management of CADs, certain medications are prescribed. Several types of these medications have potentially negative influences on sexual health [4, 24]. However, other findings suggested that heart medications are not a significant cause of sexual health problems [3]. Jordanian patients with CADs in the current study had insufficient knowledge about the effect of heart medications on sexual health (45.55%). Patients with CADs must know that they should not quit heart medications if they experience sexual health problems since it could affect their cardiac condition. Patients should be educated to contact their physicians to replace these medications with safer classes and free from adverse effects on sexual function [26]. The AHA (2012) recommended that patients who develop sexual health problems due to prescribed medications should not suddenly quit them; they must report their problems to the physician in order to change the drug or to adjust the dosage. Therefore, nurses should review their patients' medications to examine whether they may affect sexual function and teach patients to report any sexual problems due to medications used during sexual assessment.

The current study showed that 32.2% of Jordanian patients are afraid of resuming sexual activities, and half of patients (50%) did not know that resuming sexual activities after CADs is safe within a few weeks. López-Medina,

et al. [19] reported that many patients with MI expressed their fear from resuming sexual activities. The main reason for this fear is the concern of having another heart attack [9]. Several researchers reported that sexual activities could be resumed safely within a few weeks after CADs and the incident of developing a heart attack due to sexual activities is very rare [16, 21, 23, 37].

The comparison between the two phases showed that patients' knowledge significantly improved at the second phase. These results could be interpreted by increasing patients' awareness regarding the relationship between heart diseases and sexual health, since patients with CADs consider this information relevant to them. These results emphasised the importance of providing patients and their partners with sexual health-related information and guidance to improve their quality of life and to avoid possible complications. Steptoe, *et al.* [38] concluded that providing patients with sexual health-related information might improve patients' sexual health. The results of this study demonstrated that providing patients with CADs with sexual health information and creating the most favourable lifestyle changes could improve their sexual health.

Nurses play a significant role in providing patients with sexual health information that motivates them to resume their sexual health activities by following proper instructions. Moreover, partners have an important role, particularly in sexual relationship. Nurses can include partners into the sexual health assessment and provide them with appropriate information that support patients and encourage them to resume sexual health activities without fear or complications.

Sexual health is an integral part of a patient's well-being. Therefore, assessment of patients' sexual health is an important aspect of holistic nursing care that should be routinely addressed in clinical practice. In this study, patients highlighted the importance of sexual health assessment. Patients with CADs voiced their needs and acceptance of addressing their sexual health-related issues. The results of the current study showed that 96% of patients stated that addressing their sexual health issues are important. Several authors came to similar results in which patients were concerned about their sexual health activities and showed interest to receive sexual health-related information [39, 40].

5. Conclusion

Sexual health is one aspect of daily life that becomes affected after an individual suffers from CADs. Generally, there is paucity of data concerning sexual health assessment for patients with CADs in the Jordanian context. The present study investigated patients with CADs perspectives toward sexual health at clinical practice in Jordanian hospitals. Results showed that patients had limited knowledge regarding certain aspects of sexual health. As nursing care is holistic in nature, nursing assessment of sexual health should be included within the routine plan of care. The results demonstrated that patients are aware of the importance of sexual health discussion; however, it is mostly constrained by discomfort and embarrassment, lack of sexual health assessment guidelines, private rooms and educational materials as well as societal and cultural barriers [41, 42].

5.1. Recommendations and Implications

Promoting interventions in terms of education, training, establishing sexual health care programs, creating culturally appropriate educational materials, providing heart clinics with private rooms for sexual health assessment and overcoming possible barriers are essential to improve sexual health care in the nursing practice [30, 43, 44]. Providing patients with sexual health education to improve their sexual health using appropriate strategies is highly recommended. This study paves the way to conduct further studies to understand patients' sexual health concerns, as well as determining the best ways to address their needs.

Acknowledgement

We would like to show our gratitude to patients who participated in this study for sharing their experience during the course of this research. We are also immensely grateful to the hospital administrators who facilitate our research process.

References

[1] World Health Organization, 2015. "Cardiovascular diseases (CVDs)." Available: http://www.who.int/mediacentre/factsheets/fs317/en

[2] Jordanian Ministry of Health, 2011. *Mortality data*. Amman: Jordanian Ministry of Health Publications.

[3] Levine, G. N., Steinke, E. E., Bakaeen, F. G., Bozkurt, B., Cheitlin, M. D., Conti, J. B., and Stewart, W. J., 2012. "Sexual activity and cardiovascular disease a scientific statement from the American heart association." *Circulation*, vol. 125, pp. 1058-1072.

[4] Steinke, E. E., Hill, T. J., and Mosack, V., 2015. "Medication use and predictors of sexual activity in men and women with CVD." *Journal of the American Association of Nurse Practitioners*, vol. 28, pp. 91-97.

[5] Jaarsma, T., 2007. "Addressing sexual activity in education of heart failure patients." *International Journal of Clinical Practice*, vol. 61, pp. 353-355.

[6] Winter, M. M., Reisma, C., Kedde, H., Bouma, B. J., Vis, J. C., Luijendijk, P., and Mulder, B. J., 2010. "Sexuality in adult patients with congenital heart disease and their partners." *The American Journal of Cardiology*, vol. 106, pp. 1163-1168.

[7] Lindau, S. T., Schumm, L. P., Laumann, E. O., Levinson, W., O'Muircheartaigh, C. A., and Waite, L. J., 2007. "A study of sexuality and health among older adults in the United States." *New England Journal of Medicine*, vol. 357, pp. 762-774.

[8] Stein, R., Sardinha, A., and Araújo, C. G. S., 2016. "Sexual activity and heart patients: A contemporary perspective." *Canadian Journal of Cardiology*, vol. 32, pp. 410-420.

[9] Bispo, G. S., Lima, L. J., and Barros, A. L., 2013. "Cardiovascular changes resulting from sexual activity and sexual dysfunction after myocardial infarction: integrative review." *Journal of Clinical Nursing*, vol. 22, pp. 3522-3531.

[10] Miner, M. and Kim, E. D., 2015. "Cardiovascular disease and male sexual dysfunction." *Asian Journal of Andrology*, vol. 17, pp. 3-4.

[11] Kutmec, C. and Yurtsever, S., 2011. "Effects of sexual function of essential hypertensions in women." *European Journal of Cardiovascular Nursing*, vol. 10, pp. 56-63.

[12] Lindau, S. T., Abramsohn, E., Gosch, K., Wroblewski, K., Spatz, E. S., Chan, P. S., and Krumholz, H. M., 2012. "Patterns and loss of sexual activity in the year following hospitalization for acute myocardial infarction (a United States National Multisite Observational Study)." *The American journal of cardiology*, vol. 109, pp. 1439-1444.

[13] Rundblad, L., Zwisler, A. D., Johansen, P. P., Holmberg, T., Schneekloth, N., and Giraldi, A., 2017. "Perceived sexual difficulties and sexual counseling in men and women across heart diagnoses: A nationwide cross-sectional study." *The Journal of Sexual Medicine*, vol. 14, pp. 785-796.

[14] Akhu-Zaheya, L. M. and Masadeh, A. M., 2015. "Sexual information needs of Arab Muslim patients with cardiac problems." *European Journal of Cardiovascular Nursing*, pp. 1-8.

[15] Dalteg, T., Benzein, E., Fridlund, B., and Malm, D., 2011. "Cardiac disease and its consequences on the partner relationship: a systematic review." *European Journal of Cardiovascular Nursing*, vol. 10, pp. 140-149.

[16] Lange, R. and Levine, G., 2014. "Sexual activity and ischemic heart disease." *Current Cardiology Reports*, vol. 16, pp. 1-9.

[17] Mosack, V., Hill, T. J., and Steinke, E. E., 2017. "Predictors of change in sexual activity after cardiac diagnosis: Elements to inform sexual counseling." *Journal of Health Psychology*, vol. 22, pp. 925-993.

[18] Byrne, M., Doherty, S., Fridlund, B. G., Mårtensson, J., Steinke, E. E., Jaarsma, T., and Devane, D., 2014. "Sexual counselling for sexual problems in patients with cardiovascular disease." *The Cochrane Library*, pp. 1-12.

[19] López-Medina, I. M., Gil-García, E., Sánchez-Criado, V., and Pancorbo-Hidalgo, P. L., 2016. "Patients' experiences of sexual activity following myocardial ischemia." *Clinical Nursing Research*, vol. 25, pp. 45-66.

[20] O'Donovan, K., 2012. "Resuming sexual activity after myocardial infarction." *British Journal of Cardiac Nursing*, vol. 7, pp. 535-543.

[21] Chen, X., Zhang, Q., and Tan, X., 2009. "Cardiovascular effects of sexual activity." *The Indian Journal of Medical Research*, vol. 130, pp. 681-688.

[22] Brännström, M., Kristofferzon, M. L., Ivarsson, B., Nilsson, U. G., Svedberg, P., and Thylén, I., 2014. "Sexual knowledge in patients with a myocardial infarction and their partners." *Journal of Cardiovascular Nursing*, vol. 29, pp. 332-339.

[23] Dahabreh, I. J. and Paulus, J. K., 2011. "Association of episodic physical and sexual activity with triggering of acute cardiac events: Systematic review and meta-analysis." *Journal of the American Medical Association*, vol. 305, pp. 1225-1233.

[24] Jaarsma, T., Fridlund, B., and Mårtensson, J., 2014. "Sexual dysfunction in heart failure patients." *Current Heart Failure Reports*, vol. 11, pp. 330-336.

[25] Hardin, S. R., 2007. "Cardiac disease and sexuality: Implications for research and practice." *Nursing Clinics of North America*, vol. 42, pp. 593-603.

[26] Steinke, E. E., Jaarsma, T., Barnason, S. A., Byrne, M., Doherty, S., Dougherty, C. M., and Moser, D. K., 2013. "Sexual counseling for individuals with cardiovascular disease and their partners: A consensus document from the American heart association and the esc council on cardiovascular nursing and allied professions (CCNAP)." *Circulation*, vol. 128, pp. 2075-2096.

[27] Mosack, V., Twyla, J. H., and Elaine, E. S., 2015. "Sexual concerns of cardiac patients: A psychometric analysis." Available: https://onlinelibrary.wiley.com/doi/abs/10.1111/ijn.12291

[28] Saunamäki, N. and Engström, M., 2014. "Registered nurses' reflections on discussing sexuality with patients: responsibilities, doubts and fears." *Journal of Clinical Nursing*, vol. 23, pp. 531-540.

[29] Byrne, M., Doherty, S., Murphy, A. W., McGee, H. M., and Jaarsma, T., 2013. "The CHARMS Study: cardiac patients' experiences of sexual problems following cardiac rehabilitation." *European Journal of Cardiovascular Nursing*, vol. 12, pp. 558-566.

[30] Jaarsma, T., De Geest, S., Mårtensson, J., Moons, P. M. N. T., Smithh, K., and Thompson, D., 2010. "Sexual counselling of cardiac patients: nurses' perception of practice, responsibility and confidence." *European Journal of Cardiovascular Nursing*, vol. 9, pp. 24-29.

[31] Nicolai, M. P., van Bavel, J., Somsen, G. A., de Grooth, G. J., Tulevski, I. I., Lorsheyd, A., and Elzevier, H. W., 2014. "Clinical investigation: Erectile dysfunction in the cardiology practice—a patients' perspective." *American Heart Journal*, vol. 167, pp. 178-185.

[32] Andersson, E. K., Borglin, G., and Willman, A., 2013. "The experience of younger adults following myocardial infarction." *Qualitative Health Research*, vol. 23, pp. 762-772.

[33] Nilsson, U. G., Svedberg, P., Fridlund, B., Alm-Roijer, C., and Thylén, I., 2012. "Sex knowledge in males and females recovering from a myocardial infarction: A brief communication." *Clinical Nursing Research*, vol. 21, pp. 486-494.

[34] D'Eath, M., Byrne, M., Doherty, S., McGee, H., and Murphy, A. W., 2013. "The Cardiac Health and Assessment of Relationship Management and Sexuality study: a qualitative inquiry of patient, general practitioner, and cardiac rehabilitation staff views on sexual assessment and counseling for cardiac patients." *Journal of Cardiovascular Nursing*, vol. 28, pp. E1-E13.

[35] Mosack, V. and Steinke, E., 2009. "Trends in sexual concerns after myocardial infarction." *Journal of Cardiovascular Nursing*, vol. 24, pp. 162-170.

[36] Southard, N. Z. and Jill, K. M. S. N., 2009. "The importance of assessing sexuality: a patient perspective." *Clinical Journal of Oncology Nursing*, vol. 13, p. 213.

[37] Assari, S., 2014. "Intercourse avoidance among women with coronary artery disease." *The Journal of Sexual Medicine*, vol. 11, pp. 1709-1716.

[38] Steptoe, A., Jackson, S. E., and Wardle, J., 2016. "Sexual activity and concerns in people with coronary heart disease from a population-based study." *Healthcare Delivery, Economics and Global Health*, Available: http://heart.bmj.com/content/heartjnl/early/2016/04/28/heartjnl-2015-308993.full.pdf

[39] Byrne, M., Doherty, S., McGee, H. M., and Murphy, A. W., 2010. "General practitioner views about discussing sexual issues with patients with coronary heart disease: a national survey in Ireland." *BMC Family Practice*, vol. 11, p. 40.

[40] Fridlund, B., 2009. "Healthy sexual life after a cardiac event: What do we know and what do we do now?" *European journal of Cardiovascular Nursing*, vol. 8, pp. 159–160.

[41] Barnason, S., Steinke, E., Mosack, V., and Wright, D. W., 2013. "Exploring nurses' perceptions of providing sexual health counseling for patients with cardiac disease: Implications for evidence-based interventions." *Dimensions of Critical Care Nursing*, vol. 32, pp. 191-198.

[42] Doherty, S., Byrne, M., Murphy, A., and McGee, H., 2011. "Cardiac rehabilitation staff views about discussing sexual issues with coronary heart disease patients: A national survey in Ireland." *European Journal of Cardiovascular Nursing*, vol. 10, pp. 101-107.

[43] Goossens, E., Norekvål, T. M., Faerch, J., Hody, L., Olsen, S. S., Darmer, M. R., and Moons, P., 2011. "Sexual counselling of cardiac patients in Europe: culture matters." *International Journal of Clinical Practice*, vol. 65, pp. 1092-1099.

[44] Saunamäki, N., Andersson, M., and Engström, M., 2010. "Discussing sexuality with patients: nurses' attitudes and beliefs." *Journal of Advanced Nursing*, vol. 66, pp. 1308-1316.