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Change in sexual activity after a cardiac event: the role of medications, comorbidity, and psychosocial factors

Elaine E. Steinke, PhD, APRN [a,*], Victoria Mosack, PhD, APRN [a,1], Twyla J. Hill, PhD [b,2]

[a] School of Nursing, Wichita State University, Wichita, KS, 67260-0041, USA
[b] Department of Sociology, Wichita State University, Wichita, KS, 67260, USA

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ABSTRACT

Aim: The aim of this study was to examine change in sexual activity before and after cardiac diagnosis in men and women by medication class.
Background: Decline in sexual activity after cardiac diagnosis frequently occurs, with adverse effects of medications believed to play a role, although literature by subclass of drugs are conflicting.
Methods: Mixed methods approach was used to evaluate cardiac patients' ($N = 211$) self-reported medications and changes in sexual activity before and after cardiac diagnosis via mailed survey. Chi square, logistic regression, and thematic analysis were used.
Results: First and third generation beta blockers, class 1 calcium channel blockers, vasodilators, diuretics, and loop diuretics adversely affected sexual activity. Significant predictors of change in sexual activity were number of medications, education level, and income; the overall model predicted 25.7% of the variance in sexual activity.
Conclusions: Sexual assessment and discussion of sexual concerns and side effects of medications by nurses are important to support sexual function.

1. Introduction

Change in sexual activity after a cardiac event is frequently reported, often with decreased levels of sexual activity when compared to prior to cardiac diagnosis. This is commonly reported across a variety of cardiac diagnoses, including post-myocardial infarction (MI), coronary artery bypass surgery (CABG), heart failure (HF), and implanted devices (Levine et al., 2012; Steinke et al., 2013). For some patients and their partners, psychological reactions, such as fear about a cardiac event may preclude them from resuming sexual activity, while others may experience adverse effects from medications and medical comorbidities (Cutitta et al., 2014; Mosack, Hill, & Steinke, 2015). Further understanding of the reasons for change in sexual activity is needed to design nursing interventions to promote sexual health and quality of life.

2. Background

2.1. Changes in sexual activity

Decline in sexual activity frequency and satisfaction has been reported in the literature, and sexual counseling interventions with cardiac patients were first described in 1976, although intervention studies continue to be relatively few in number (Steinke et al., 2013). Reasons for change in sexual activity patterns are often attributed to fear and anxiety related to a repeat cardiac event, particularly for those post-MI. Recent studies suggest that changes in sexual activity persist, despite evidence that shows sexual activity for most cardiac patients is safe (Levine et al., 2012). Lindau et al. (2014) studied MI patients in the United States and Spain, comparing 1 year prior to 1 month post-MI. For those sexually active prior to MI, 63% of men and 54% of women returned to sexual activity post-MI, although rates were considerably lower than before MI. In an earlier study, these authors compared sexual activity 1 year before and after MI to determine loss of sexual activity, finding that those sexually active before MI tended to return to sexual activity by 1 year after, although rates were somewhat lower, showing a 4% decline for women and 6% for men (Lindau et al., 2012). Of note, patients who did not receive sexual counseling at hospital discharge, loss of sexual activity was more frequently reported, with the adjusted relative risk for women as 1.44 and 1.79 for men, illustrating the importance of nurses initiating sexual discussions.

Anxiety and fear about sexual activity causing an MI or chest pain are frequently reported, and in a small study, fear of sexual activity among CABG patients was strongly related to low sexual interest and motivation to engage in sexual activity (Reese, Shelby, & Taylor, 2012). These findings are similar to those reported by Lai, Hsieh, Ho, and Chiou (2011) who found that sexual quality of life declined post-surgery with less sexual desire, frequency of sexual activities, and sexual response.

Two other common cardiac conditions for which sexual activity may be impacted is living with an implantable cardioverter defibrillator

* Corresponding author at: School of Nursing, Wichita State University, 1845 Fairmount, Wichita, KS, 67260–0041. Tel.: +1 316 978 5740; fax: +1 316 978 3094.
E-mail addresses: Elaine.Steinke@wichita.edu (E.E. Steinke), Victoria.Mosack@wichita.edu (V. Mosack), Twyla.Hill@wichita.edu (T.J. Hill).
[1] Tel.: +1 316 978 5756; fax: +1 316 978 3094.
[2] Tel.: +1 316 978 7151; fax: +1 316 978 3281.

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(ICD) and HF. In a clinical trial of ICD patients, sexual activity declined from 66.7% before to 51.8%, 6 months after implant (Berg et al., 2013). Cutitta et al. (2014) reported that most patients (64.6%) reported the ability to resume sex, but sexual activity was avoided by 51%. Similar to prior reports, lack of sexual interest, erectile dysfunction (ED), partner overprotectiveness, and fear of the device firing during sexual activity contributed to changes in sexual function (Berg et al., 2013; Palacios-Ceña et al., 2011). Heart failure as a chronic condition also impacts sexual function, with sexual problems experienced by approximately 60% of patients, and up to 81% reporting ED specifically (Jaarsma, Fridlund, & Mårtensson, 2014). Reasons for change in sexual activity include decreased physical endurance; anxiety and depression; metabolic imbalances; comorbid conditions such as diabetes and anemia; traditional cardiac risk factors such as smoking, alcohol use, and obesity; and medications. In a study of 792 HF patients, 48% reported sexual problems at 1 month after a HF hospital admission, and 70% reported continued sexual problems at 18 months after admission, particularly for younger men (Hoekstra, Jaarsma, Sanderman, van Veldhuisen, & Lesman-Leegte, 2012).

2.2. Medications and sexual function

While medications can contribute to sexual problems and changes in sexual activity patterns, it has been posited that newer medications may cause fewer sexual side effects. In general, typical side effects include ED, decreased libido, and orgasmic problems. A systematic review of the effects of cardiac medications on sexual function illustrated that while certain medications and drug classes cause sexual problems, a few drugs have been identified that support sexual function (Nicolai et al., 2014). Beta blockers have been linked with ED, particularly for first or second generation drugs. In contrast, the beta blocker nebivolol has been shown to positively affect sexual function (Bäumhakel et al., 2011). Diuretics as a class have been strongly linked with sexual dysfunction in multiple studies. This is particularly true for thiazide diuretics, for which impotence, decreased libido, and ED have been reported (Bäumhakel et al., 2011). The aldosterone antagonist spironolactone causes breast tenderness, gynecomastia, and ED in men, and menstrual irregularities in women (Nicolai et al., 2014). Cardiac glycosides may contribute to ED, although the mechanisms are not well understood.

Studies of angiotensin converting enzyme inhibitors (ACEI), angiotensin receptor blockers (ARB), and calcium channel blockers (CCB) indicate either neutral or positive effects as related to sexual function (Nicolai et al., 2014). The effects of ACEIs may vary by the specific drug; for example, captopril in some reports improved sexual function, lisinopril and atenolol produced only a temporary decline in sexual activity, and enalapril caused a significant decline in sexual activity in one study (Nicolai et al., 2014). Within the class of ARBs, valsartan and losartan supported sexual function, while other ARBs appear to have neutral effects on sexual function. Similarly, CCBs do not appear to cause sexual dysfunction in most studies (La Torre, Giupponi, Duffy, Conca, & Catanzariti, 2015). Statins are frequently prescribed to many cardiac patients and are not believed to significantly affect sexual function, with the exception of those patients with severe endothelial dysfunction, for which ED may be more likely (Nicolai et al., 2014).

Drugs are usually not taken in isolation, and cardiac patients often take drugs from different classes, which together might impact sexual function. For example, drugs that significantly contributed to ED in HF patients were from the classes of cardiac glycosides, ACEI, beta blockers, and diuretics (Zeighami Mohammadi, Shahparian, Fahidy, & Fallah, 2012). As this brief overview of cardiac medications illustrates, some classes of drugs may cause sexual side effects more than others. Less clear is the extent to which different sub-classes of these drugs or newer versus older generations of drugs may affect sexual activity and function.

2.3. Study aim

This study used a mixed methods approach to examine change in sexual activity before and after a cardiac diagnosis in men and women. The primary aim was to examine the influence of medications on change in sexual activity by drug class, and sub-class or generation using quantitative analysis. Secondly, descriptive qualitative analysis was used to further understand the reasons for the change in sexual function and for further interpretation of quantitative data (Polit & Beck, 2012) (p. 505). Both approaches add new understanding of change in sexual activity, and nurses and advanced practice nurses are well positioned to formulate educational and management strategies to enhance cardiac patients sexual quality of life.

3. Methods

This study is a sub-analysis of data from a cross-sectional, descriptive study of 336 cardiac patients in the Midwestern United States, and for which specific medication data were available. Of these, 211 participants provided a list of self-reported medications and responded to questions regarding any changes in sexual activity from before the cardiac diagnosis until the present time via a mailed survey. This study was approved by three institutional review boards (IRB), a university and two medical centers. An accompanying letter with the survey described the study aim, methods, risks, and benefits in accordance with IRB requirements. Return of a completed survey indicated assent to participate in the study, and prospective participants were directed to keep the covering letter with information about the study and contact information. Reminders were sent at 1 and 3 weeks after the initial mailing.

3.1. Sample

Inclusion criteria for the parent study were cardiac patients discharged from the medical center in the past year, fluency in English, and aged 25 years and more. Younger participants were not eligible as they may have been less likely to be in a stable sexual relationship. Prospective participants were selected based upon a cardiac diagnosis within the diagnostic codes of coronary artery disease, acute coronary syndrome, angina pectoris, MI, HF, CABG, ICD, and/or pacemaker. Lists of potential participants meeting inclusion criteria were obtained from each medical center.

3.2. Measures

Data for the current analysis were derived from a sociodemographic questionnaire that included an open-ended question where participants listed specific medications taken on a regular basis. Medications from the list provided were categorized by drug class and sub-class or generation, if applicable, and a total count of drugs taken was tallied. For those participants listing medications, these were coded as 'yes' (1) or 'no' (0) to indicate presence or absence of drugs within each class. Drugs identified as first, second, or third generations were coded accordingly as 1, 2 or 3 for analysis. Similarly, drugs within a sub-class were assigned a number, for example for diuretics, 1 = potassium sparing, 2 = thiazide, and 3 = loop.

For sexual activity, two items from the seven-item Sexual Activity and Heart Disease Questionnaire were used. The following questions were: "Thinking back to before you were told you had a heart problem, how often did you have sexual intercourse (vaginal, finger, or anal penetration, or oral sex)?" Participants chose from the responses of "more than twice a week," "twice a week," "once a month," or "not at all" to designate level of sexual activity. This question was compared to reported sexual activity in the last two months using the same response set. Responses from the questions on medications and sexual activity comprised the primary outcome data for this quantitative analysis.