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## **Omissions in care for sexual health in cardiology and gastroenterology : perspectives of physicians and patients**

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### **Citation**

Nicolai, M. P. J. (2014, November 27). *Omissions in care for sexual health in cardiology and gastroenterology : perspectives of physicians and patients*. Retrieved from <https://hdl.handle.net/1887/29887>

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**Title:** Omissions in care for sexual health in cardiology and gastroenterology : perspectives of physicians and patients

**Issue Date:** 2014-11-27

# 3

## WHAT DO CARDIOLOGISTS KNOW ABOUT THE EFFECTS OF CARDIOVASCULAR AGENTS ON SEXUAL FUNCTION?

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*The Netherlands Heart Journal, 2013 Dec;  
21(12):540-544.*

## INTRODUCTION

Since the late 1980s a rapid increase in the number of prescriptions for the treatment and prevention of cardiovascular disease (CVD) began.

The class of antihypertensive agents is the second most commonly prescribed classed of medication, exceeded only by antidepressants [1]. In this time of high life expectancies, this therapy will be received during a substantial part of patients' lives [2]. The side effects induced by cardiovascular drugs are strongly associated with an impaired quality of life [3], affecting both patients and their partners [4]. Some classes of cardiovascular drugs have been described to cause sexual dysfunction. Diuretics and  $\beta$ -blockers can give rise to a decrease in libido, difficulty attaining or maintaining an erection and ejaculation problems [5-7]. However, recent literature describes beneficial effects on sexual health for third generation  $\beta$ -blockers [8], Angiotensin II Receptor Blockers (ARBs) [9-12] and statins [13]. Existing data of experimental, observational and clinical studies consistently point towards similar effects of antihypertensive drugs in male and female sexual function [14-16]. As many as 70% of hypertensive patients who experience side effects are non-compliant with their antihypertensive medication and have a 40%-60% higher rate of therapy discontinuation, compared to patients whose quality of life is unaffected [17;18]. Since non-adherence with antihypertensive therapy can be life threatening, it is of great importance for cardiologists to be aware of side effects that may be caused by drugs they prescribe, including effects on patients' sexual function (SF). Of course, cardiovascular drugs improving symptoms and survival should not be withheld due to concerns about their potential impact on SF [19]. But whenever possible, multiple alternative options are available in order to provide patient-centered care (these options are described in Chapter 3). Information about cardiologists' practice patterns concerning switches in medication in order to improve patients' SF is not yet available. Neither is it known whether cardiologists are aware of the different effects of cardiac drugs on SF. However, cardiologists will only be able to provide medicinal therapy with an optimum balance between efficacy and quality of life and to provide patients with sufficient information regarding the prescribed therapy if they have knowledge about these effects.

A recent report from our group revealed that Dutch cardiologists did not routinely discuss SF and a considerable number (41.9%) of the respondents indicated a need for training to increase their knowledge to be able to discuss sexual matters with patients [20]. Accordingly, we hypothesised that information about the several effects of cardiovascular agents on SF has not yet permeated the cardiology practice. Therefore, aim of this study was to evaluate to what extent cardiologists are aware of the potential negative, neutral or beneficial effects that cardiovascular drugs can have on SF and whether this knowledge is

actively used in patient care. We made use of additional data obtained during the National survey among cardiologists assessing their awareness, knowledge and practice patterns regarding sexual dysfunction in cardiac patients. Results of this survey, in combination with the review (chapter 4), will provide cardiologists and residents in cardiology with the necessary information to be able to provide holistic healthcare.

## METHODS

### Study design and Sample

A national cross-sectional questionnaire survey was set among all active Dutch cardiologists and residents in cardiology (1054) who were members of the Netherlands Society of Cardiology (NVVC) in the autumn of 2011. However, some addresses from the society were out of date, leading to a total of 980 questionnaires which could be sent to the work addresses of NVVC members.

### Survey and Procedure

The study methodology was identical to previously reported evaluation of Dutch cardiologists, evaluating their inquiry into patients' SF [20]. The questionnaire was designed by the authors, based on a review of the literature in the area. A multidisciplinary expert panel, with experience in developing surveys, checked the questionnaire for comprehensiveness and quality. The survey was pilot tested with 40 anonymous pilot questionnaires which were distributed to cardiologists and residents in cardiology from the LUMC. Of the pilot questionnaires, 23 were completed and returned (response rate 57.5%). To improve the suitability and comprehensiveness of the questionnaire, it was adjusted according to the remarks made by the responding cardiologists. The questionnaire comprised 31 questions focusing on current practice in addressing sexual health and knowledge about (side) effects of the eight main classes of cardiovascular drugs. Questionnaires were accompanied by a letter explaining the nature, scope, objectives and contents of the questionnaire and total anonymity was ensured. A free post return envelope was added, as well as an opt-out possibility. Cardiologists not interested in participation could answer a question regarding the reason(s) not to participate and return the questionnaire empty. Reminder letters were sent to non respondents 2, 5 and 7 month after the initial mailing.

Results about cardiologists daily practice patterns regarding assessment of SF can be found in chapter 2.

## Data analysis

Means of numerical demographic values and answers to the questions were analysed with frequencies. Bivariate associations between demographic information and the categorical data were calculated using the Pearson chi-square procedure, for ordinal variables Armitages' trend test was used. Associations between numerical data and demographics of the respondents were analysed with the independent sample t-tests. Two-sided *P* values < 0.05 were considered statistically significant. Some questions with more than one possible answer and with open answers were grouped together for analysis. Data were analyzed by SPSS release 20 (SPSS Inc., Chicago, IL, USA).

## RESULTS

### Demographics

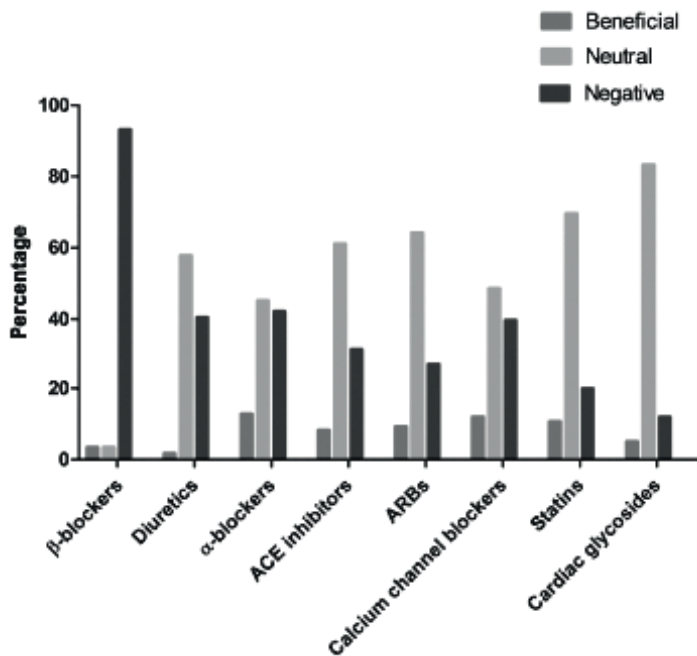
Of the 980 eligible participants, 528 surveys were returned, yielding an unweighted response rate of 53.9%. Seven participants were eliminated because they were not participating in a clinical setting or because they were physician assistants. A total of 98 questionnaires were eliminated because they were empty or incomplete for more than 60% and 16 because they lacked answers to the most important questions. Reasons mentioned for the inability to fill in the questionnaire (*n*=114) were: not interested (*n*=4), no time (*n*=2), or not enough experience in the field (*n*=2). Others indicated they were only working with specific patient groups such as children or pregnant women and therefore were not able to fill in the questionnaire (*n*=5). However, most cardiologists that indicated unwilling to participate, gave no reason for this (*n*=101). In total 78.4% of the returned surveys were analyzed (*n*=414). Mean age of the respondents was 45.5 years old ( $\pm 9.60$ ), 75.8% was male, 80.9% was cardiologists and 19.1% was resident. Female respondents were significantly younger than male respondents (mean  $42.3 \pm 8.37$  resp.  $46.6 \pm 9.75$ ;  $p < 0.001$ ), consequently more female respondents were residents ( $p < 0.001$ ). Demographic characteristics of non-respondents were not available for analysis due to the anonymous design of the survey. The personal and practice characteristics of respondents are summarized in Table 1 of chapter 2.

### Knowledge about sexual side effects

More than one fourth (27.5%) of respondents stated they have 'not much' of the knowledge necessary to discuss SF with patients, 2.0% said to have no knowledge about this at all. The majority of cardiologists reported to have 'some' (65.1%) and only 5.4% said to have 'a lot' of the necessary knowledge to discuss sexual problems with patients.

Respondents were asked to note which effect on SF they thought was caused by each class of cardiovascular drugs (positive, neutral or negative). For  $\beta$ -blockers 93.1% of the cardiologists believed that it has negative effects on SF. Significant more female physicians thought that  $\beta$ -blockers have a positive effect on SF compared to male physicians (9.1% resp. 1.6%;  $p<0.001$ ). Regarding diuretics, respondents gave more diverse answers; 57.7% said it has a neutral effect and 40.5% knew it has a negative effect on SF. The majority (64%) indicated ARBs to have a neutral effect on SF, only 9.2% knew this class can have beneficial effects on SF. Cardiologists' answers regarding the presumed effects of cardiovascular drugs on SF were illustrated in Figure 1. No significant differences between male and female physicians were seen.

**Figure 1.** Effects of eight classes of cardiovascular medication on the sexual function as presumed by the responding cardiologists, shown in percentages



Based on answers of at least 400 cardiologists (in training) per category

Counseling about sexual side effects

The majority of the responding cardiologists (76.6%) stated to counsel their patients regularly or often about sexual side effects of cardiovascular drugs. Fifteen percent said to inquire about sexual problems when a patient recently started with cardiac medication and 74.4% when a patient recently started using a  $\beta$ -blocker. On the contrary, only 19.3% of the respondents inquired regularly or often about PDE-5 inhibitor use, while 43.6% said to inform patients about the possibility to use a PDE-5 inhibitor after a myocardial infarction (MI) or in patients with heart failure. Furthermore, 48.2% of the respondents said to change medications regularly or often in an attempt to improve SF (Table 2). Significant differences were seen regarding this statement; cardiologists stated to do this significantly more often than residents ( $p<0.001$ ). Finally, the more knowledge about SF a cardiologist thought they had, the more often they changed medication in an attempt to improve SF (linear-by-linear association,  $p=0.002$ ), and the more often they counseled patients about effects and use of erection potentiating medication (linear-by-linear association,  $p=0.032$  and  $p<0.001$ , respectively).

Table 2. Counseling and informing of male patients with erectile dysfunction

How often do you counsel patients regarding erectile function (EF) after MI or with heart failure about:	Never n (%)	Seldom n (%)	Regularly n (%)	Often n (%)	n* (total)
The use of nitrates with pain	42 (10.4)	112 (27.1)	145 (35.1)	104 (25.8)	403
Effects of medication on EF	15 (3.7)	80 (19.7)	292 (49.6)	110 (27.0)	407
The use of PDE5-inhibitors	27 (6.7)	202 (49.8)	154 (37.9)	23 (5.7)	406
How often do you:	Never n (%)	Seldom n (%)	Regularly n (%)	Often n (%)	n* (total)
Inform about erection potentiating agents	93 (22.9)	234 (57.6)	59 (14.5)	20 (4.8)	406
Change medication to improve sexual function	17 (4.2)	193 (47.7)	176 (43.5)	19 (4.7)	405

\*n differs because the questions were not answered consistently, some were skipped or forgotten.



## DISCUSSION

This study indicates that cardiologists are not fully aware of the effects cardiovascular drugs can have on SF. Although the majority of responding cardiologists stated to inform patients about sexual side effects from the medication they prescribe, their knowledge of these effects seems incomplete. Most cardiologists designated negative effects on SF to  $\beta$ -blockers, although third-generation  $\beta$ -1 blockers have been shown to have beneficial effects on SF. Furthermore, the lion's share of respondents thought no effects on SF were to be expected from most other classes of cardiovascular drug, underestimating that most classes of cardiovascular drugs either have a beneficial or a negative effect on SF. Interestingly, more experience as a cardiologist was positively associated with informing about SF and counseling about side effects, suggesting that more education about sexual health in cardiologists' training could improve awareness and thus quality of patient care on this point.

This was the first survey among cardiologists assessing their knowledge about (side) effects of cardiovascular agents and their practice patterns regarding switching of medication in order to resolve or avoid sexual dysfunction. Findings should be considered in the light of potential study limitations. First, the self-reported character may have led to response and selection bias although the response rate was sufficient and the demographics found were comparable with the national figures. Second, we made use of a non-validated questionnaire, since validated questionnaires about this subject are not available. Third, the questionnaire was designed to obtain information about cardiologists' knowledge and practice patterns concerning both male and female SF. Most trials investigating effects of cardiovascular drugs on SF are specifically designed to measure effects on erectile function since this is a common problem which is easy to measure with one of the available validated questionnaires [21]. And, because Erectile dysfunction has been shown to be a sentinel marker for risk of cardiovascular disease [22] it has received full attention in the past years, while very little attention was paid to female sexual dysfunction. Respondents may therefore answered the questionnaire with erectile dysfunction in mind which may have led to an upward distortion of the results.

Our data still indicate that there is room for improvement regarding cardiologists' knowledge about the sexual (side) effects of cardiovascular drugs. To improve compliance of therapy in cardiology, patients should be properly informed about the side effects that can be expected from a drug and equally important, patients should have the possibility to discuss a switch in medication with their physician when sexual dysfunction occurs. Large clinical trials about the effects of switching are lacking and have to be conducted in the near future. However, available data from observational studies and clinical trials

point consistently towards significant benefits for SF when prior antihypertensive therapy is switched to either Nebivolol or an ARB (Chapter 3) as significant improvements were observed in orgasmic function and intercourse satisfaction, along with benefits in sexual desire and frequency of sexual intercourse [23;24]. From an different angle, the American Heart Guideline [25] states that sexual dysfunction has not been associated with the use of ACE inhibitors, ARBs and calcium channel blockers. Cardiologists should be aware that these drugs classes can be prescribed safely.

Obviously, patients' health and cardiac condition take precedence above SF. In young patients with chronic heart failure for example, especially those awaiting heart transplantation, the use of  $\beta$ -blockers is of the utmost importance to improve survival and should not be withheld in order to preserve SF. In addition, without even taking the co-morbidities into account, heart failure itself often leads to deterioration in the physical condition of a lack of condition and to erectile dysfunction independent of the medication used [26]. Choices for medicinal treatment should always be balanced between cardiologists' expert judgments and patients' wishes. But while guidelines highly recommend routine assessment of SF before initiation of antihypertensive treatment [27], our results showed that inquiry about SF is not yet routine in the cardiology practice. A significant number of Dutch cardiologists lacked the knowledge to be able to provide accurate information about the effects cardiovascular agents can have on SF. Experience and sufficient self-perceived knowledge about sexual health appeared to be crucial factors for inquiring and dealing with medicinal effects on SF. Therefore, education about these (side) effects in cardiologists training could be useful to enable cardiologists to deal with patients presenting with sexual dysfunction during treatment with cardiovascular agents.

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