Omissions in care for sexual health in Cardiology and Gastroenterology

Perspectives of physicians and patients

Proefschrift

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1 GENERAL INTRODUCTION

Sexuality, in sickness and in health

It is nowadays increasingly recognized that sexual health is important to overall health and well-being (1). For both men and women, satisfaction with the sexual life is strongly associated with quality of life in many aspects. It is associated with a positive outlook on life in general, family life, financial wellbeing and better physical health. Furthermore, it is a very important factor for a loving relationship (1;2).

But, as with all good things in life, it can also be harmed. The other, dark side of sexuality is that it can lead people (mostly men) to commit sexual offences such as rape, child pornography and incest. In contrast to the positive effects a healthy sexual life can have for peoples' mental and physical health, sexual abuse highly impacts victim's mental and physical condition, often affecting them for the rest of their lives (3;4). It is commonly known that sexual abuse, especially childhood sexual abuse, often results in sexual dysfunction in later life too (5).

Women have been documented to experience sexual abuse more frequently than men (6) and subsequently experience lower levels of sexual interest and frequent anorgasmia, especially after abuse that involved penetration and force or recurrent sexual victimization (7).

Sexual abuse in men is recently more reported, especially since this topic got a lot of attention due to the reports concerning abuse in the Roman-Catholic church. However, due to the negative feelings associated with being overpowered by a woman or the fear of being labeled homosexual when the abuse is perpetrated by a male, sexual abuse remains underreported in men. Associated sexual difficulties in men that experienced sexual abuse are erectile dysfunction (ED, also known as impotence), premature ejaculation and low sexual desire (8).

Sexual dysfunctions in itself have been shown to negatively impact quality of life, psychological well-being and marital/partnership satisfaction (9;10).

Life time prevalence of adult sexual abuse, in the broadest sense of the term, in modern western societies is estimated up to 10% for males and up to 25% for females (11-13).

According to the British national survey of sexual attitudes and lifestyle among individuals in a sexual relationship for the past year, 18% of men and 17% of women reported that their partner had sexual difficulties. Of men and women in the oldest age group (65-74 years), 43% of women and 31% of men reported sexual dysfunction in the past year (14).

But, in spite of these high prevalence rates, we know from the literature that sexual abuse and sexual dysfunction are frequently underdiagnosed, and untreated (15-18). Multiple factors are accountable for the fact that these subjects are not routinely discussed in clinical practice. On the one hand, patients seldom dare to initiate discussion about

sexual abuse or 'even' sexual dysfunction spontaneously in clinical settings (14;19). On the other hand, physicians may feel several barriers raising either of these subjects. Due to the fact that physicians still seem to trust in the concept that disease has something to do with survival and self-preservation and that sexuality comes in the second instance, when the disease problem is resolved. However, both dimensions go together as integral parts of patients' lives. In a patient-centered approach the global dimension of health and sexuality both have to be taken into account (20).

Sexual health in disease

Improvements in medical care have allowed individuals with chronic disease to survive and live longer. This greater life expectancy with disease has led healthcare providers to change their focus from 'survival' to improving 'quality of life'.

Sexuality is a phenomenon in which biological and psychological factors interact; therefore, both physical condition and psychological well-being are cornerstones of sexual health.

Figure 1 presents a basic conceptual framework about the association of chronic disease and sexuality.

As shown in Figure 1, physical condition and psychological functioning are interrelated. For example, the prevalence of pain in patients with a depressive disorder and, vice versa, the prevalence of depression in patients with pain are much higher compared to the prevalence's of patients without a depression and without pain respectively (21).

As well, the relationship with a sexual partner should be taken into account because this relationship plays an important role in adaptation to the disease state, thereby impacting psychological well-being and sexuality.

Furthermore, to control the symptoms of the disease or to prevent further progress, patients should comply with the prescribed treatment regimen. Noncompliance to (drug) treatment is nonetheless a well-known problem in medical practice, which often contributes to the burden of disease.

As shown in Figure 1, compliance may be affected by changes in the physical condition. On the one hand, the conviction of the patient that a condition is 'asymptomatic' may lead to non-compliance with therapy, whereas insight about the necessity of treatment or the feeling of control may promote compliance (22). On the other hand, experience of medication induced adverse effects (such as sexual dysfunction) often leads to non-compliance with therapy (21;23).

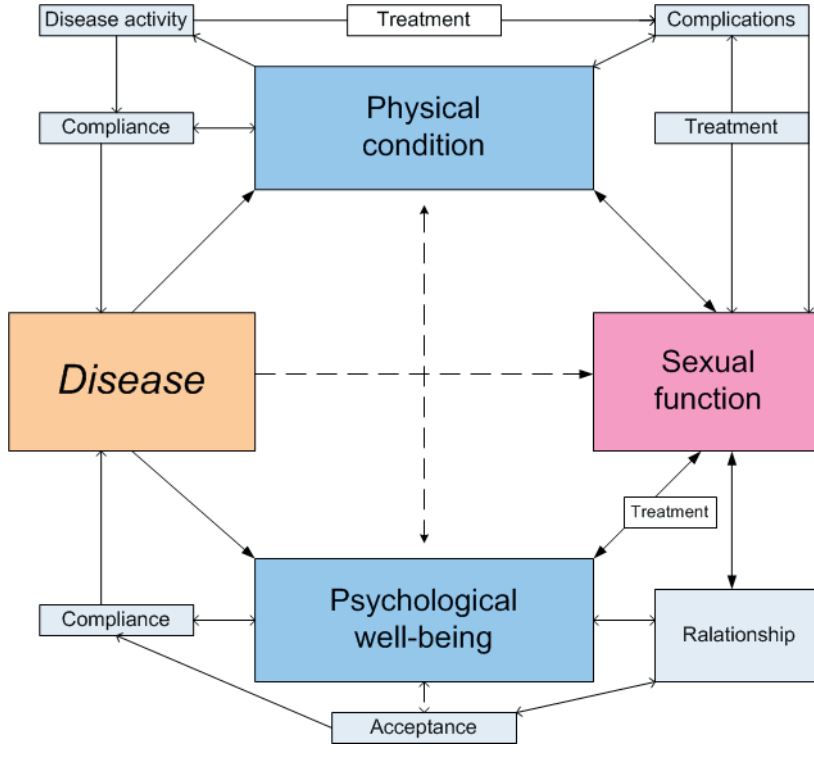
At last, disease activity may have a direct or indirect influence on sexual functioning. Apart from this, short term and long term complications may affect sexuality independent from the primary disease activity.

This framework displayed in Figure 1 is applicable in both physical and mental disease and provides insight into the process by which disease-related psychological and relational factors impact sexual functioning and well-being of patients, necessary to place this thesis in the right context.

This thesis

In this thesis two seemingly different subjects will be discussed, however, both can be placed in the categories quality of life, quality of care, sexual health and patient centeredness. In part I, care for sexual dysfunction in cardiovascular disease is evaluated and in part II, care for sexual abuse in the gastroenterology practice is assessed. Both parts can be read separately and are not interrelated. But as mentioned before, both comprise clinical problems that are commonly seen and both are written with the same goals in mind: improvements for quality of life and quality of care.

Figure 1. A conceptual framework about the impact of disease on sexual functioning and sexual well-being



Source: Verschuren, J.E.A. et al. Journal of Sex Research, 47:2-3,153-170

Sexual health in cardiovascular disease

The age-adjusted mortality rates of cardiovascular disease (CVD) in Western Europe lay between 170 and 240 per 100.000 (24). Men and women in countries with higher development status (measured in terms of gross domestic product per capita) experience CVD events at an older age and die much later than in less developed countries. For example, in Australia, France, and Sweden, the median age at death from ischemic heart disease averages 85 years in women and 77 years in men. Men in these countries experience an acute myocardial infarction (MI) more than a decade before their median age at death (25).

CVD causes mass disability: within the coming decades the disability-adjusted life years (DALYs) estimate is expected to rise from a loss of 85 million DALYs in 1990 to a loss of ~150 million DALYs globally in 2020, thereby remaining the leading somatic cause of loss of productivity (26).

A less obvious problem which often comes hand in hand with CVD is sexual dysfunction. Sexual dysfunctions are very prevalent among both men (prevalence 50-75%) and women (prevalence 43-87%) with CVD compared to those without CVD (27-29). Reasons for this association include the vascular causes, the use of antihypertensive agents and the psychological problems such as depression, anxiety for cardiac events and changes in the relationship due to the disease (30).

Especially erectile dysfunction (ED), defined as the persistent inability to achieve and maintain an erection to permit satisfactory sexual intercourse, is commonly associated with cardiovascular disease, with prevalence rates ranging between 47 and 75% in studies (31-33). Due to the prolonged life expectancy of patients with CVD and the aging of the population, the projected prevalence of ED for the year 2025 is expected to rise to 322 million men worldwide (34).

ED and CVD share the same risk factors such as age, dyslipidemia, hypertension, diabetes, smoking etc. Endothelial dysfunction is believed to be the pathophysiologic link. Frequently, the clinical consequences of ED frequently manifest 2-3 years before the consequences of coronary atherosclerosis. The last years mounting research has been investigating this link and ED was shown to be an independent marker of increased CVD risk (32;35-37), commonly preceding clinical coronary artery disease (38), and peripheral arterial disease and stroke (39).

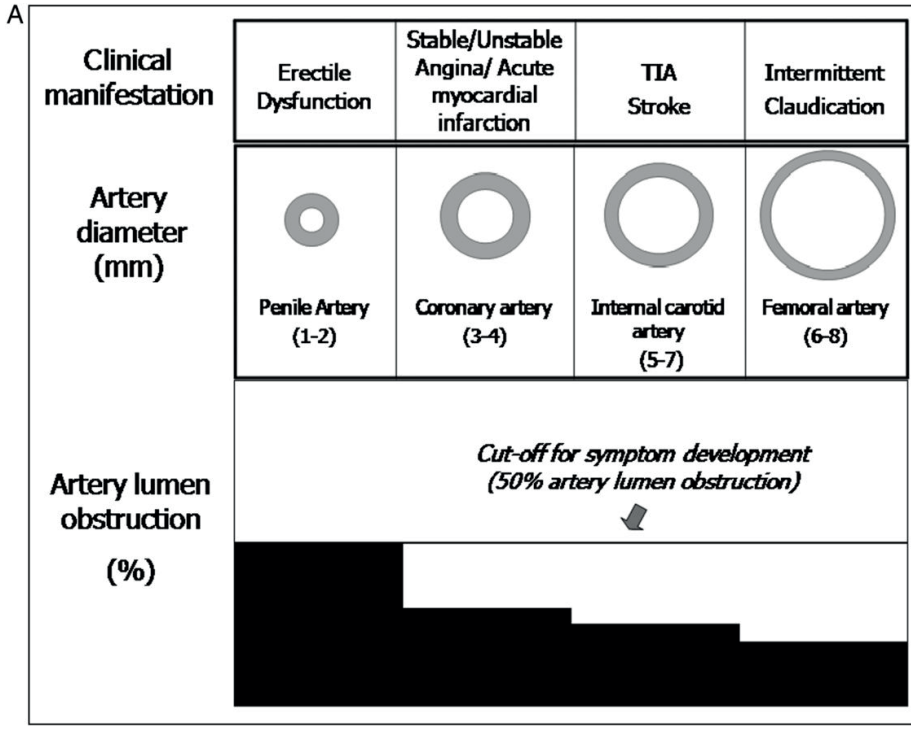
The artery-size hypothesis (40) is the proposed mechanism explaining why patients frequently report ED before coronary artery disease is detected. The lumen of the penile arteries (1–2 mm) is considerably smaller than that of the coronary (3–4 mm), carotid (5–7 mm), and femoral (6–8 mm) arteries, endothelial dysfunction or plaque burden that

significantly impairs circulation in the penile arteries may be associated with sub clinical plaque disease of the larger vessels. Thus, atherosclerosis sufficient to trigger ED may not be sufficient yet to cause ischaemic symptoms in other vascular beds (see Table 1).

A very important finding, which may be extrapolated to female sexual dysfunction such as vaginal dryness and dyspareunia as well (41). However, research in this context has focused predominantly on ED and has almost completely neglected female sexual dysfunction (FSD) and other male sexual dysfunctions. In fact, the patients' side of the story did not receive much attention at all. For patients the fact that ED may predict cardiovascular disease is obviously not the only relevant aspect of it. Obviously, the ED in itself is important for most patients as well. This side of care for patients with CVD remains understudied and FSD in CVD from the female patients' point of view has virtually not been highlighted at all.

Still, both care for ED, FSD, other sexual difficulties, such as counseling about safely restarting sexual activity after a cardiac event, and counseling about adverse effects of antihypertensive agents are all very important issues to address in the cardiac clinic.

Figure 2. The 'artery size' hypothesis



Source: Vlachopoulos C et al. Eur Heart J 2013;34:2034-2046

Sexual abuse and gastrointestinal disease

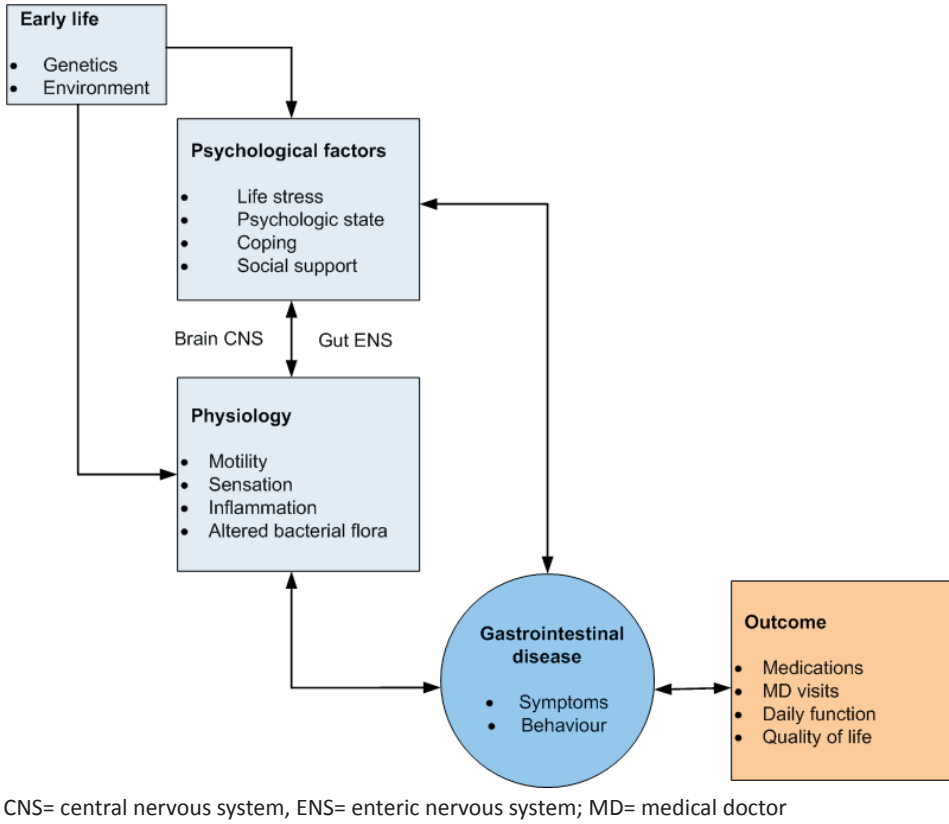
Many studies have documented that striking numbers of patients presenting with functional gastrointestinal complaints have endured sexual abuse. In 1990, Drossman et al. found that 38.5% of patients who presented to a university-based gastroenterology practice reported a history of sexual abuse (13). Only 17% of patients with an SA history had previously informed their physicians about the abuse, and almost one third had never discussed it with anyone. Patients that reported a history of SA were more likely to report chronic pelvic pain (odds ratio, 4.0) and multiple other somatic symptoms (odds ratio, 7.1). Furthermore, they had more lifetime surgeries (odds ratio, 2.8) compared to patients who did not report SA (42). The high prevalence of sexual abuse in patients with irritable bowel syndrome (IBS) and other gastrointestinal symptoms (GI) was shown repeatedly (43-50). Significantly higher levels of sexual abuse have been reported in patients with pelvic floor disorders (51-53). Patients with chronic pelvic pain were found to have experienced significantly higher levels of sexual abuse; this was often accompanied by significant levels of psychiatric dysfunction (46;54). Furthermore, it has clearly been shown that sexual abuse is a common concomitant of functional gastrointestinal disorders.

The exact relationship between functional gastrointestinal disorders and a positive abuse history remains to be defined completely; however, several studies have found evidence of physiologic disturbance outside the gastrointestinal tract. For example, in women with chronic pelvic pain, chronic dysfunction of the hypothalamic-pituitary-adrenal axis, a positive abuse history, and a diagnosis of posttraumatic stress disorder was correlated (55;56). Severity of abuse has been correlated positively with deteriorating health status, as measured by significantly more days in bed, greater pain severity, and psychological problems as well as poorer functioning in activities of daily life (48).

Research comparing the brains of abused children and control subjects, showed that abuse seems to induce a cascade of molecular and neurobiological effects that alter the development of specific areas in the brain. These areas include the limbic system, left hemisphere, corpus callosum and cerebellar vermis. The limbic system is the brain's emotional processing center and includes the amygdala and hippocampus. MRI scans also revealed an association between early maltreatment and the reduction in the size of the adult left hippocampus or amygdala (57).

In Figure 3, a bio psychological model was laid out to conceptualize the pathogenesis and clinical expression of (functional) gastrointestinal symptoms. This model proposes that early-life factors (e.g. genetic factors, GI infection and family environment) may be factors associated with susceptibility towards functional gastrointestinal symptoms. Abuse history has an amplifying effect on the experience and clinical expression of these symptoms, which may be associated with greater 'body awareness' due to earlier trauma. Psychosocial factors as noted may further amplify the symptom experience and clinical state, leading to adverse health outcomes, including increased physician visits, referral to gastroenterologists, specialized centers and, when severe, disability (58).

Figure 3. Conceptual relationship of abuse history and other psychosocial co-morbidities on gastrointestinal symptoms and adverse health outcomes



CNS= central nervous system, ENS= enteric nervous system; MD= medical doctor
Adapted from Drossman D, Am J Gastroenterol. 2011 Jan; 106(1): 14-25 in combination with Tanaka Y, J Neurogastroenterol Motil. 2011 Apr; 17(2): 131-139.

Sexual abuse is of course a highly sensitive topic and therefore patients may find it difficult to start talking about it. Thus, the importance of taking an abuse history cannot be overstated for patients presenting with chronic gastrointestinal or any other chronic unexplained medical complaint. To aid general practitioners and gastroenterologists in inquiring about sexual abuse, reviews of the literature and guidelines how to approach this topic have been published (4;59;60) as well as an instrument to measure abuse severity (49). However, these recommendations have never been tested in normal outpatient settings. Until now, we are even unaware whether attention is paid to SA in the day to day gastroenterology practice. But without attention for sexual abuse, no one will ever put the knowledge about its impact for patients with gastrointestinal symptoms or the valuable recommendations from the literature actually into practice.

Outline of the thesis

The aim of this thesis was to evaluate to what extend cardiologists and gastroenterologists succeed in the provision of patient-centered healthcare with regard to sexual health.

To be more specific: this investigation was aimed to identify the lacunas in the cardiology practice regarding attention and care for sexual health and in the gastroenterology practice regarding attention and care for victims of sexual abuse. In order to obtain the required information to meet these aims, the problem was approached from two sides: the specialists' point of view and the patients' point of view.

In part I, the cardiologist and the cardiac patient are evaluated regarding the omissions in care for sexual health in cardiology.

In part II, the gastroenterologist and the colonoscopy patient are surveyed regarding the omissions in care for sexual abuse victims in gastrointestinal disease.

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Part I

CARDIOLOGY & CARE FOR SEXUAL HEALTH

2 DISCUSSING SEXUAL FUNCTION IN THE CARDIOLOGY PRACTICE

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INTRODUCTION

Sexuality is one of the core dimensions of the human experience and an important determinant of well-being [1]. With the current high life expectancy in the Western world, people have higher expectations of being able to achieve and sustain satisfying sexual relationships into older age [2]. Next to the urologist and the gynecologist, of all medical specialists especially the cardiologist will be confronted with sexual problems in their patient population. There is a large body of evidence supporting the concept that, of the physical causes, erectile dysfunction (ED) is predominantly a vascular disease, with the same risk factors as coronary artery disease (CAD). Consequently, men with ED have a higher incidence of CAD and peripheral vascular disease than is present in the general population, and men with CAD have a similarly increased incidence of ED (50-75%) [3]. In women, the processes of vascular endothelial dysfunction may lead to impairment of the genital blood flow which is essential for appropriate female sexual function, especially sexual arousal [4]. In a survey among 2,763 postmenopausal women with Coronary Heart disease (CHD), 65% of the 39% sexual active women complained of at least one sexual problem (5). Furthermore, in heart failure patients, between 47% and 73% reported a marked loss in sexual interest and 48% to 76% a marked decrease in frequency of sexual activity caused by their illness [5;6].

Sexual problems in patients with heart disease and their partners may as well arise from the fear of a cardiovascular event or sudden death during sexual activity[7] and due to loss of self-esteem, anxiety and depression, commonly seen after cardiac events [8]. Furthermore, cardiovascular drugs such as digoxin, diuretics, and β-blockers may negatively affect sexual function [9]. It must not be understated that sexual dysfunction is an important cause of relationships problems, effecting partners' sexual life as well [10].

Open and frank discussion about sexuality between physicians and patients is fundamental for addressing treatable causes of sexual dysfunction [11]. Sexual advice is an essential part of cardiac rehabilitation since sex is a normal part of life's activities. Already thirty years ago Jackson postulated: "It should now be routine policy to advise the patient and spouse on sexual activity, whether they be post infarction or regularly attending with angina pectoris. The vast majority of patients with ischaemic heart disease can enjoy normal sexual relations without risk" [12]. Current guidelines state that cardiologists need to raise the subject pro-actively, pointing out that it is a problem within the vascular arena [13]. Yet, still little is known about the attitude of cardiologists towards the discussion of sexual function with patients. This knowledge is crucial to optimise strategies to increase sexual health and well-being in cardiac patients. Therefore, we performed a study to evaluate cardiologists' attitudes and practice patterns with regard to their inquiry about sexual function in men and women of all ages in day-to-day practice.

METHODS

Study design

A national cross-sectional questionnaire survey on cardiologists set in the Netherlands.

Participants

The sampling frame was all active Dutch cardiologists and residents in cardiology (1,054) who were members of the Netherlands Society of Cardiology in the autumn of 2011. Because some addresses were out of date, a total of 980 questionnaires were sent to their work addresses.

Survey and Procedure

The questionnaire was designed by the authors, based on a concise review of the literature in the area. A pilot study was performed at the Cardiology department of the Leiden University Medical Center; 40 anonymous pilot questionnaires were distributed and 23 were completed and returned (response rate 57.5%). The questionnaire was adjusted according to the comments of these cardiologists and residents. A copy of the questionnaire can be viewed in the appendix.

The questionnaire comprised 31 questions focusing on:

1. Level of knowledge and awareness of sexual problems in cardiac patients
2. Current practice in addressing sexual problems in patients
3. Presumed responsibility for sexual healthcare
4. Perceived barriers to address sexual issues. Twenty barriers were listed and cardiologists were asked to rate their agreement with each barrier.

The questionnaire was accompanied by a letter explaining the objectives of the study. A free post return envelope was added, as well as an opt-out possibility. Cardiologists who were not interested in participation could answer the first question of the survey regarding the reason(s) not to participate and return the questionnaire empty. Reminder letters were sent to non-responders 2, 5 and 7 month after the initial mailing.

Data analysis

Quantitative data were analyzed by SPSS release 18 (SPSS Inc., Chicago, IL, USA).

The internal consistency of the questionnaire was measured using Cronbach's coefficient α. Means of numerical demographic values and the answers to the questions were analyzed 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 analyzed 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.

RESULTS

Questionnaire reliability

Total scores for items regarding cardiologists knowledge about sexual matters demonstrated high internal consistency (Cronbach's α= 0.84). Cronbach's alpha for the subscales regarding counseling about sexual activity ranged from 0.64 to 0.81.
The Likert scale measuring cardiologists' frequency of asking about sexual health (item 6) had an alpha of 0.5 when compared to item 8 (estimated percentage of discussing sexual health), this is due to the different scales used; ordinal scales cannot be compared to continues scales. The internal consistency between the items concerning cardiologists' barriers for asking about sexual health were acceptable to good (Cronbach's α ranging from 0.68 to 0.75).

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 and 16 because they were incomplete (>10% missing data). The 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), some respondents gave no reason (n=101). In total 78.4% of the returned surveys were analyzed (n=414). Mean age of the respondents was 45.5 years old (SD 9.6) and 75.8% was male. Of these respondents 80.9% were cardiologists and 19.1% were residents. The female respondents were significantly younger then male respondents [mean 42.31 (SD 8.37) resp. mean 46.56 (SD 9.75); p<0.001], consequently significantly 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.

Table 1. Respondent characteristics (n=414)

Age, years	**n(%)**
≤ 45	208 (50.2)
> 45	206 (49.8)
Sex[a]	
Male	314 (76.0)
Female,	99 (24.0)
Function[a]	
Cardiologist	335 (80.9)
Resident	79 (19.1)
Type of clinic/practice	
Tertiary referral center (or university hospital)	90 (21.8)
District general teaching hospital	174 (42.2)
District general hospital	148 (35.9)
Time of practice in cardiology	
0-11 month	18 (4.3)
1-2 years	30 (7.2)
3-5 years	80 (19.3)
6-10 years	106 (25.6)
11-15 years	49 (11.8)
15 years or more	131 (31.6)

[a] n differs because the questions were not answered consistently, some were skipped or forgotten.

Asking about sexuality and responsibility

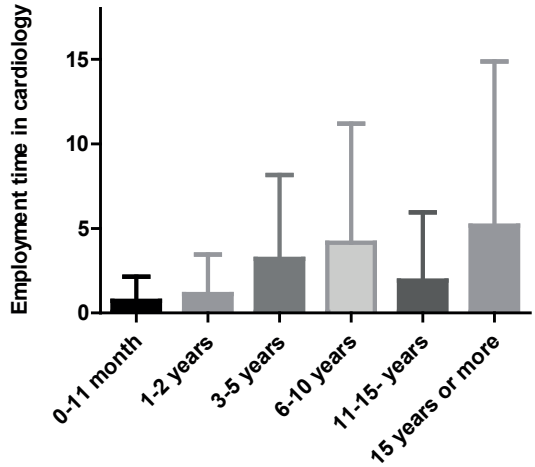
To the question: "how often do you discuss sexual health with your patients?" 2.9% of the cardiologists answered 'never', 29.6% said 'rarely', 48.7% said 'sometimes', 16.9% said 'regularly' and 2.0% said 'often'. Cardiologists inquired significantly more often about sexuality than residents (linear-by linear association, $p<0.001$). No significant differences were seen between male and female physicians. To the question 'In how many patients do you think sexual life changes due to their cardiac condition?' the mean estimated percentage of the respondents was 32.2% (SD 19.7). In an estimated 10.8% (SD 13.0) of the patients sexuality was discussed in the past year. An estimated 2.2% (SD 4.2) was referred to another healthcare professional for treatment of sexual problems (Figure 1).
According to 38.5% of the respondents, cardiologists do have the responsibility to discuss sexual matters with their patients; 20% did not know who is responsible. In contrast, 41.5% stated that the care for patients' sexual quality of life is somebody else's responsibility: almost seventy percent (69.4%) of the respondents answered that the general practitioner

is responsible for this part of patient care and 51.6% stated that the patient must initiate conversation about it (multiple answers were possible). Furthermore, 16.9% pointed to the psychologist, 9.3% to the rehabilitation doctor, 8% to the nurse and 5.8% to the social worker.

Knowledge

When it comes to knowledge, 27.5% of the respondents thought they have 'not much' of the knowledge necessary to discuss sexual function with patients, 2% stated to have no knowledge about this at all. The majority of the cardiologists (65.1%) stated to have 'some' and 5.4% to have 'a lot' of the necessary knowledge to discuss sexual problems with their patients. Experienced doctors were significantly more confident about their knowledge on sexual function (linear-by-linear association, p=0.015). Twenty-eight percent of the respondents stated that a lack of knowledge is a reason not to inquire about sexual problems and 35.2% stated that a lack of training is one of the reasons they do not ask (Table 3). Almost 27% (~26.6%) of the respondents did not know if there was a specialist in their own medical center where they could refer patients with sexual dysfunction to.
To the question: "Do you need training to increase your knowledge, so you will be able to discuss sexual matters with your patients?" 41.9% of the respondents answered affirmative. Sixty-three percent indicated that it would be helpful to have a directory of the healthcare professionals where they can refer patients with sexual problems to. Regarding the need for training, no significant difference between male and female physicians or between cardiologists and residents was observed. However, the more experienced the cardiologist was the less he/she stated the need for training or for a referral directory (linear-by-linear association, p=0.014 and p=0.052 respectively).

Figure 1. Frequency of discussing sexual health versus years in practice as cardiologist



Counseling and informing

Half of the responding cardiologists stated to counsel their patients regularly about the sexual side effects of cardiac medication. Fifteen percent stated to inquire about sexual problems when a patient recently started with cardiac medication; in 74.4% when a patient recently started with a β-blocker. On the contrary, only 19.5% of the respondents inquired regularly or often about the use of PDE5 inhibitors. More than two third of the respondents seldom (49.4%) or never (20.1%) advised patients about when to resume sexual activity after myocardial infarction or heart failure. In patients between the age of 20 and 35 year and in patient older than 76 year, cardiologists asked about sexual function less often than in patients between the age of 36 and 75 year. Cardiologists informed about sexuality significantly more often in case of male patients than in female patients (p=0.0001). For more data about sexual counseling, see Table 2.

Table 2. Counseling and informing of patients about sexuality, n(%)

How often do you counsel patients after MI or with heart failure about	**Never**	**Seldom**	**Regularly**	**Often**	**n[a] (total)**
When to resume sexual activity	82 (20.1)	201 (49.4)	95 (23.3)	29 (7.1)	407
Warning signals to report during sexual activity	80 (20.0)	175 (43.6)	90 (22.4)	56 (14)	401
Effects of cardiac medication on sexual function	15 (3.7)	80 (19.7)	201 (49.5)	110 (27.1)	406
The use of PDE5-inhibitors	27 (6.7)	201 (49.6)	154 (38.0)	23 (5.7)	405
How often do you inform about					
Sexuality in male patient after a myocardial infarct or heart failure	27 (6.7)	221 (54.4)	139 (34.2)	19 (4.7)	406
Sexuality in female patient after a myocardial infarct or heart failure	147 (36.2)	221 (54.4)	34 (8.4)	4 (1.0)	406
The use of PDE-5 inhibitors in males in the outpatient clinic	94 (23.1)	234 (57.4)	59 (14.5)	20 (4.9)	407
How often do you inform about sexuality in the follow age-categories					
20-35 years	107 (27.1)	200 (50.6)	71 (18.0)	17 (4.3)	395
36-50 years	38 (9.6)	227 (57.2)	112 (28.2)	20 (5.0)	397
51-65 years	33 (8.2)	231 (57.7)	120 (29.9)	17 (4.2)	401
66-75 years	80 (19.9)	232 (57.7)	77 (19.2)	13 (3.2)	402
≥76 years	168 (41.7)	202 (50.1)	26 (6.5)	7 (1.7)	403

[a] n differs because the questions were not answered consistently, some were skipped or forgotten.

Reasons not to inquire about sexual function

The respondents were asked to indicate to what extent they agreed with a list of reasons for retaining from asking about sexuality (Table 3). The reason most respondents agreed with (53.7%) was: “the patient does not ask about it”. A difference was seen between younger physicians (≤ 45 years old) and older ones; younger physicians agreed with this statement significantly more often (linear-by-linear association, p=0.036).

The second reason not to discuss sexual function was: “I do not have an angle or motive to start about it”, 45.9% agreed. A time constraint was mentioned by 42.9%. Furthermore 35.2% agreed with ‘a lack of training on dealing with sexual problems’ and 33.8% with “reasons related to language and ethnicity”. The reasons agreed with the least were “feelings of shame”(5.7%), “no connection with the patient”(6.2%), “age difference between me and the patient”(6.4%) and “fear of offending the patients”(7.4%) (Table 3). Significantly more female physicians mentioned a lack of time to be the reason not to discuss sexual function, compared to their male colleagues (linear-by-linear association p=0.034). Furthermore, significantly more female than male physicians agreed that the fear of offending a patient is a reason not to ask (linear-by-linear association, p=0.009).

Table 3. Reasons not to inquire about sexual function

Reasons to retain from asking about sexuality	I totally disagree n(%)	I disagree n(%)	Neutral n(%)	I agree n(%)	I totally agree n(%)	n* (total)
Patient does not ask about it	20 (5.0)	55 (13.7)	111 (27.6)	174 (43.3)	42 (10.4)	402
No angle or motive for asking	24 (6.0)	92 (22.8)	102 (25.3)	164 (40.7)	21 (5.2)	403
Not enough time	31 (7.5)	87 (21.5)	113 (27.9)	133 (32.8)	41 (10.1)	405
Not enough training	10 (2.5)	104 (25.6)	149 (36.7)	122 (30.0)	21 (5.2)	406
Language or ethnicity reason	27 (6.6)	130 (31.9)	115 (28.3)	119 (29.2)	16 (3.9)	407
Cultural or religious reasons	29 (7.1)	136 (33.3)	112 (27.5)	117 (28.7)	14 (3.4)	408
Old age of the patient	30 (7.5)	146 (36.3)	109 (27.1)	110 (27.4)	7 (1.7)	402
Not enough knowledge	16 (3.9)	106 (26.1)	170 (41.9)	100 (24.6)	14 (3.4)	406
Somebody else's responsibility	25 (6.1)	121 (29.7)	154 (37.7)	85 (20.8)	23 (5.6)	408
Patients is too ill	41 (10.1)	197 (48.5)	105 (26.1)	57 (14.0)	5 (1.2)	406
Presence of third parties	42 (10.4)	178 (44.1)	123 (30.4)	54 (13.4)	7 (1.7)	404
Sexuality is not an issue for the patient	37 (9.2)	170 (42.1)	144 (35.6)	50 (12.4)	3 (0.7)	404
Sex is a private matter	45 (11.2)	175 (43.5)	132 (32.8)	43 (10.7)	7 (1.7)	402
I feel uncomfortable with it	47(11.7)	210 (52.1)	106 (26.3)	36 (8.9)	4 (1.0)	403
Patient is not ready for it	45 (11.1)	220 (54.2)	105 (25.9)	31 (7.6)	5 (1.2)	406
Afraid to offend the patient	53 (13.2)	242 (60)	78 (19.4)	28 (6.9)	2 (0.5)	403
Age difference	74 (18.1)	259 (63.5)	49 (12)	24 (5.9)	2 (0.5)	408
No connection with the patient	59 (14.7)	234 (58.4)	83 (20.7)	21 (5.2)	4 (1.0)	401
Feelings of shame	57 (14.2)	228 (56.9)	93 (23.2)	23 (5.7)	0	401

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

DISCUSSION

The key findings of this study were that cardiologists did not routinely discussed sexuality with their patients and the majority did not feel responsible for this part of patient care. Forty-two percent of the respondents, however, indicated that they would benefit from training regarding sexual dysfunction in the cardiology practice.

This survey was one of the first to evaluate cardiologists' attitudes and practice patterns regarding the assessment of sexual health. A limitation of the study was that physician responses were self-reported which may have resulted in overestimation of physician history-taking practices. Attempts were made to reduce this bias by making the survey anonymous. A non-validated questionnaire was used in which cultural and religious components were not taken into account. Test-retest reproducibility of the questionnaire was not tested; therefore nothing can be said about the stability of the used instrument. Nevertheless, the internal consistency of the important items of the questionnaire was tested adequate to good. Our response rate was comparable to that of other postal questionnaires [14] and the demographics found were comparable with the national figures. However, non-respondents may have different beliefs and practice patterns than respondents which may have caused a non-response bias. In the real situation therefore, cardiologists may pay even less attention to patients' sexual health. The lack of interest in responding to the questionnaire may itself indicate the low priority assigned to sexual history taking by many physicians, this may have caused a selection bias.

The results of this study revealed that a large group of cardiologists did not feel responsible for their patients' sexual health. More than half of the respondents expected the patient to take the lead in discussing sexual function; and almost 70% percent pointed to the general practitioner as the responsible physician. Literature supports this finding, showing that more than 65% of hypertensive men with ED remain undiagnosed even though the majority states a wish for treatment [15;16].

Seventy percent of the respondents informed patients after a myocardial infarction or heart failure never or seldom about when to resume sexual activity. Yet, especially these patients should receive adequate information, since many have groundless fear for a cardiovascular event or sudden death during sexual intercourse [17;18].

Less than 20% of the cardiologists' informed about PDE5-inhibitor use in their patients. However, the guidelines recommend assessing PDE5-inhibitor use in all cardiac patients since these drugs are widely used nowadays and abundantly available on the internet. Its combined use with nitrates is absolutely contraindicated as it can lead to unpredictable falls in blood pressure[19].

The findings of this study are disappointing because already in 1981 it was postulated that cardiologists should routinely advise their patients on sexual activity[12]. The first Princeton Consensus Conference convened in June 1999 to develop recommendations for the clinical management of sexual function in men and women with known cardiovascular disease [20]. A second and third conference in 2004 and 2010 followed to update and deepen these recommendations [21;22]. In 2001 the role of the cardiologist in assessing sexual function was already reviewed [23] and in 2002 the British consensus identified the questions to ask to smooth the consultation when assessing erectile dysfunction [24]. Last year *Circulation* published the American Heart Association Scientific Statement to synthesize and summarize data relevant to sexual activity and heart disease in order to provide recommendations to foster physician communication with patients about sexual activity [25]. Regrettably, our study showed that cardiologists are still not alert to the fact that assessing sexual function is part of their remit.

Several factors can be indicated to cause cardiologists' lack of routine in assessing sexual health. Firstly, almost 30% of the cardiologists stated to lack the necessary knowledge and 35% stated to have missed adequate training in dealing with sexual dysfunction. Almost half of the respondents indicated the absence of an angle to raise the subject as a reason not to raise it. Experienced cardiologists discussed sexual function significantly more often than their younger colleagues. Accordingly, literatures showed that physicians' previous training in communication is the strongest predictor for sexual history taking [26]. Unfortunately, a recent review showed that sexual medicine education for medical students, residents, physicians and other healthcare professionals is still non standardized and inadequate in most centers [27].

Second, time constraints of the consultation were cited by 43% of the cardiologists as the barrier for inquiring about sex. These constraints may be overcome by the organization of nurse- or physician assistant office hours. And patients can always be referred to a specialist in sexual healthcare, such as the gynecologist, the sexologist or the urologist. Sixty-three percent of the respondents stated they would be helped with a list of sexual healthcare professionals where they can refer their patients to.

Finally, multiple other reasons for avoiding the discussion about sex were indicated. Some were related to the cardiologists' perception of patients' feelings and others gave arguments which were related to their own feelings concerning sexuality. However, none of these reasons can be considered as valid, since physicians' personal feelings and attitudes should never get into the way of patient care.

CONCLUSION

Over the last 30 years, recommendations and guidelines have been pointing out the importance of assessing sexual function in patients with cardiovascular disease. In spite of this, cardiologists still do not routinely discuss patient's sexual function in their daily practices. This study suggests that physicians' experience in the field plays an important role in discussing sexual matters and that sexual healthcare can be improved with more education on the subject. A directory of the available healthcare professionals for the referral of patients with sexual dysfunction was indicated as mandatory.

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

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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 β-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 β-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 extend 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

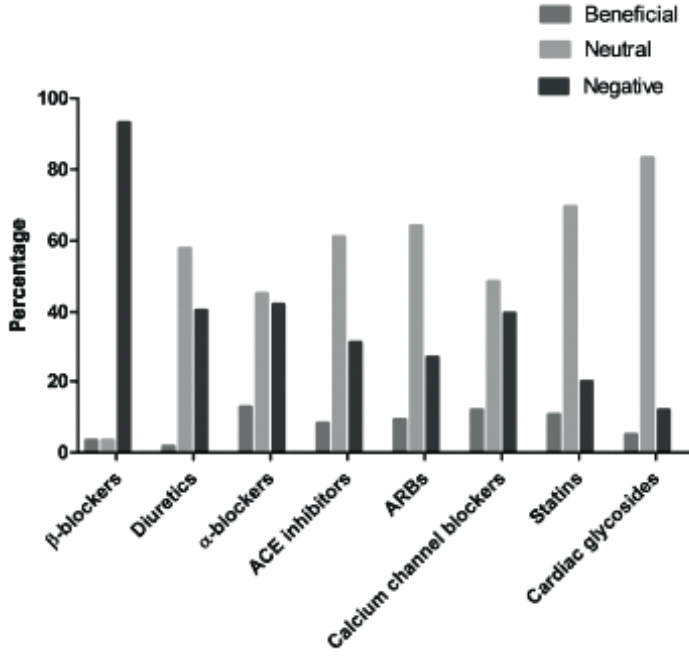
Of the 980 eligible participants, 528 surveys were returned, yielding an unweighted response rate of 53.9%. Seven participants were eliminated because they were not participating in a clinical setting or because they were physician assistants. A total of 98 questionnaires were eliminated because they 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 (± 9.60), 75.8% was male, 80.9% was cardiologists and 19.1% was resident. Female respondents were significantly younger then male respondents (mean 42.3 ± 8.37 resp. 46.6 ± 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 β-blockers 93.1% of the cardiologists believed that it has negative effects on SF. Significant more female physicians thought that β-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 β-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 then 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 β-blockers, although third-generation β-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 let 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] is 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 β-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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4 REVIEW OF THE POSITIVE AND NEGATIVE EFFECTS OF CARDIOVASCULAR DRUGS ON SEXUAL FUNCTION

A proposed table for use in clinical practice

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INTRODUCTION

In the US, the class 'lipid regulators' was the most prescribed drugs class in 2010 with 255.5 million prescriptions, beta blockers (plain and in combinations) and ACE inhibitors followed on the second and third place with 191.5 million and 168.7 million prescriptions, respectively [1]. In this era of high life expectancies, this therapy will be received during a substantial part of patients' life [2]. The side effects induced by antihypertensive drugs, including sexual dysfunctions, are strongly associated with an impaired quality of life [3]. 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 [4]. Some classes of antihypertensive drugs have shown to cause sexual dysfunction, but others have been described to have beneficial effects on sexual health. Physicians and especially cardiologist and general practitioners should be aware of these possible effects of the medication they prescribe, because it makes them able to minimise sexual side effects and maximise quality of life and compliance with therapy. However, previous data obtained by our research group (part I) showed that cardiologists seem to lack the sufficient knowledge about the effects cardiac medication can have on sexual function [5].

With this review we aimed to provide a practical overview of the available literature regarding the effects of eight widely used classes of cardiovascular agents on sexual function. A clear overview table applicable for both male and female patients was provided for use in clinical settings.

METHODS

Data sourcing

A review of the literature was assessed using PubMed and MEDLINE, searching for articles from 1970 to 2012. The search strategy involved the (MeSH) terms 'sexual dysfunction', 'erectile dysfunction', 'sexual side effects', 'side effects', 'sexual adverse effects' and 'adverse effects' consecutively in combination with the MeSH terms: Adrenergic Beta Antagonists, Angiotensin-Converting Enzyme Inhibitors, Angiotensine Receptor Antagonists, diuretics, Calcium Channel Blockers, hydroxymethylglutaryl-CoA Reductase inhibitors, Digoxine and more general terms: 'antihypertensive agents', 'beta blocker', 'beta receptor antagonist', 'diuretic' , 'α1-adrenoceptor antagonist', 'Angiotensin Converting Enzyme inhibitor', 'Angiotensin Receptor blocker', 'calcium channel blocker', 'digoxin', 'heart glycosides', 'statins' and 'nitrates'. The last search was conducted in March 2013. The reference list was hand-searched and all relevant studies and reviews were read and reviewed.

Study selection

All clinical studies reporting about effects on male or female sexual function in relation to a cardiovascular agent were included. These included: animal studies, observational studies, small clinical studies, meta-analyses and randomized controlled trials. Studies not published as full-text articles, single case reports and opinion articles were excluded, as well as articles not written in English. Hard copies of all relevant articles were obtained and read in full. Since the purpose of this review was to provide a positive overview table listing the effects of the eight most widely used cardiac drugs classes for use in clinical practice, we used randomized controlled trials (RCT), double-blind cross-over studies and questionnaire based prospective and retrospective studies in human males and females for the overview tables (Tables 1 and 2).

RESULTS

Table 1. Overview of studies* showing effects of antihypertensive agents on sexual function in (human men and women

Effect on sexual function	Beneficial	Neutral	Negative
β-blockers	**Nebivolol:** Doumas et al., 2006 Brixius et al., 2007	Medical Research Council, 1981 Wassertheil-Smoller et al., 1991 Rosen et al., 1994 Neaton et al., 1995 Grimm et al., 1997 Perez-Stable et al., 2000 Franzen et al., 2001	Bauer et al., 1978 Hogan et al., 1980 Suzuki et al., 1988 Fogari et al., 1998 Buchardt et al,. 2000 Fogari et al., 2001 Llisteri et al., 2001 Fogari et al., 2002 Ko et al., 2002 Fogari et al., 2004 (♀) Doumas et al., 2006 (♀) Cordero et al., 2010 Ma et al., 2012 (♀)
Diuretics		Croog et al.,1988 Prisant et al. 1999 Doumas et al., 2006 (♀)	Bulpitt et al., 1973 Hogan et al., 1980 Medical Research Council,1981 Curb et al., 1985 Wassertheil-Smoller et al., 1991 Chang et al;, 1991 Duncan et al., 1993 Rosen et al., 1999 Grimm et al., 1997 Ogihara et al., 2000 Epstein et al., 2011
α-blockers	Grimm et al., 1997	Lowe et al., 1994 Fawzy et al., 1995 Lepor et al., 1997 Buchardt et al,. 2000 Llisteri et al., 2001 McConnell et al., 2003 Kirby et al., 2003 De Rijke et al., 2004	

Table 1. continued

Effect on sexual function	Beneficial	Neutral	Negative
ACE inhibitors	Croog et al.,1986 DiBianco et al., 1991 Gupta et al., 1995 Mancini et al., 1996 Gupta et al., 1998	Croog et al.,1988 Suzuki et al., 1988 Fletcher et al., 1990 Steiner et al., 1990 Pelmer et al., 1992 Grimm et al., 1997 Fogari et al., 1998 Doumas et al., 2006 (♀)	Llisteri et al., 2001
ARBs	Fogari et al., 2001 Llisteri et al., 2001 Dusing et al., 2003 Yamamoto et al., 2003 Della Chiesa et al., 2003 Fogari et al., 2004 (♀) Ma et al., 2012 (♀) Chen et al., 2012 Segal et al., 2012	Suzuki et al., 1988 Rosen et al., 1994 Fogari et al., 1998 Fogari et al., 2002 Bohm et al., 2010 Doumas et al., 2006 (♀)	
Calcium channel blocker		Suzuki et al., 1988 Morrisette et al., 1993 Omvik et al., 1993 Kroner et al., 1993 Grimm et al., 1997 Ogihara et al., 2000 Burnier et al., 2007 Doumas et al., 2006 (♀)	Tanner et al., 1988
Statins	Saltzman et al., 2004 Herrmann et al., 2006 Dogru et al., 2008 Gokkaya et al., 2008 Dadkhah et al., 2010	Mastalir et al., 2011 Trivedi et al., 2012	
Cardiac glycosides		Kley et al., 1982 Kley et al., 1984 Bellman et al., 1984	Stoffer et al., 1973 Neri et al., 1987 Gupta et al., 1995

* Randomized controlled trials, double-blind crossover studies and questionnaire based prospective studies.

1. β-blockers:

Several reports have shown serious side effects on sexual function due to the use of (centrally acting) β-blockers; in particular erectile dysfunction (ED) and loss of desire have been reported [12;14;16;44]. One of the proposed mechanisms by which β-blockers may induce sexual dysfunction is inhibition of the sympathic nervous system, which is involved in the integration of erection, emission and ejaculation, in the regulation of luteinizing-hormone secretion and in the stimulation of testosterone release [45]. Indeed, several studies showed a depression in testosterone level in patients receiving a β-blocker [18]. In contrast, in other more recent trials no significant adverse effects on sexual function were found with metoprolol [46], propranolol [47], acebutulol [18] and atenolol [8]. In the few studies concerning sexual function in female patients with antihypertensive treatment, metoprolol seems to negatively affect female sexual function index scores (FSFI) [20], especially in comparison with ARBs which seem to ameliorate FSFI scores [48;49]. After reviewing 15 trials involving 35.000 subjects, Ko et al. reported that the frequency of sexual dysfunction with β-blockers was 21.6% and 17.5% in the placebo group. In addition, β-blockers were associated with an increased risk of reported impotence in men (RR, 1.22; 95% CI, 1.05-1.41). Risk of withdrawal due to a sexual dysfunction was substantially increased (RR, 4.89; 95% CI, 2.98-8.03); however, the annual absolute increase in risk of withdrawal was only 2 per 1000 patients (95% CI, 0-5) [19]. Silvestri et al. showed that knowledge and prejudice about side effects of beta-blockers can produce anxiety, which may cause erectile function [50]. A critical review used this study to underpin their doubts about the sexual side effects of β-blockers [51]. All in all, the final word has not been said about the effect of β-blockers on sexual function, yet the majority of studies about regarding this topic point to negative effects of first- and second-generation β-blockers. The guidelines regarding management of ED published by The British Society for Sexual Medicine highly recommend routine assessment of sexual function prior to initiation of antihypertensive treatment [52]. Furthermore, if patients present with sexual dysfunction during treatment with β-blockers a switch to Nebivolol, a novel third-generation β-1 blocker with a greater degree of selectivity for β-1 adrenergic receptors, might be a solution. Nebivolol appears to have a very low risk of sexual side effects compared to other agents in its class [6;53;54]. In a study designed to compare the effects of metoprolol and Nebivolol in erectile tissue (MR-NOED), Nebivolol was even shown to significantly improve erectile function of hypertensive patients due to nitric oxide modulation [7]. In concordance with the recent review by Baumhakel et al., we can conclude that selective β-blockers might impair erectile function. However, considering the strong correlation and pathophysiological link between endothelial and erectile function, beta-blockers with beneficial effects on nitric oxide synthase and oxidative stress can improve erectile function [55].

2. Diuretics:

Diuretics are considered one of the most implicated classes regarding sexual dysfunction. Although the mechanism remains ill defined [56], striking results with respect of drug treatment in male hypertensive patients were obtained in the Medical Research Council Trial [57], a single blind study on the basis of
23,582 patients-years. In this trial the prevalence of impotence was measured by questionnaires after 2 years of treatment with propranolol, bendroflumethiazide or placebo. Impotence was mentioned in 10.1% of the placebo group, in 13.2% of the propranolol group and in 22.6% of the bendroflumethiazide group. Incidence of withdrawal from randomized treatment because of impotence (rates per 1000 patient-years) was 0.89 in the placebo group, 5.48 in the propranolol group and 19.58 in the bendroflumethiazide group. The TOMHS trail (The Treatment Of Mild Hypertension Study) a 4-year follow up, double-blind RTC in 557 men and 345 women, showed that chlortalidone at a dose of 15 mg/day may also be suspected to negatively affect sexual function in men [11]. In the Trail of Antihypertensive Interventions and Management (TAIM), erection-related problems worsened in 28% of patients receiving chlortalidone, in 11% of patients receiving atenolol and in 3% of patients receiving placebo [8].
Smaller studies pointed to hydrochlorothiazide and chlortalidone causing loss of libido and ED [58;59]. However, sex-life satisfaction was similar for treatment with hydrochlorothiazide (alone or in combination with atenolol) and the more modern treatment with candesartan alone or in combination with the calcium antagonist felodipine [60]. In one of few studies addressing sexual function in women thiazide diuretics may be associated with decrease in vaginal lubrication [61]. In addition, although an effective anti-aldosterone agent, spironolactone has a tendency to produce undesirable sexual adverse events; at standard dose, breast tenderness, gynaecomastia and erectile dysfunction can occur in men, whereas menstrual abnormalities may occur in premenopausal women [62]. These adverse effects are due to binding of spironolactone to progesterone and androgen receptors and represent a substantial reason for drug discontinuation [63]. In the treatment of hypertension, when compared with spironolactone, the selective mineral corticoid receptor antagonist eplerenone provides a reduced incidence of gynecomastia [64]. The potassium-sparing diuretics amiloride and triamterene do not seem to affect sexual function [62].

3. α-adrenergic antagonists:

Since α-adrenergic antagonists are first-line therapy for benign prostate hyperplasia (BPH) but only second line agents for the treatment of hypertension (doxazosine and terazosin), most knowledge regarding sexual adverse effects α-adrenergic antagonists comes from BPH-studies. A recent systematic review on the effect of α1-adrenoceptor antagonists on male sexual function was performed by van Dijk et al.[65]. They showed α-adrenergic antagonists used as treatment for hypertension does not seem to adversely effect sexual desire. The net effect of α-adrenergic antagonists on erectile function is likely to depend on the balance between pro-erectile effects in the brain and the penis and anti-erectile effects as a result of blood pressure lowering mechanisms. A 4-year RCT comparing doxazosine in the treatment of hypertension showed that α-adrenergic antagonists were not associated with ED; it may even improve pre-existing sexual dysfunction [11].
Ejaculatory dysfunction, predominantly an ejaculation and decreased ejaculate volume, is associated with tamsulosin and silodosin, which are superselective α_{1A}-adrenergic receptor antagonists. Ejaculatory dysfunction is rare with α_1-adrenergic receptor antagonists that are not selective for the α_{1A}-adrenergic receptor subtype, namely alfuzosin, doxazosin, and terazosin [66;67]. In conclusion, the α-adrenergic antagonists prescribed as second-line antihypertensive treatment does not seem to affect erectile function or ejaculatory function.

4. Cardiac glycosides

In a community-based epidemiologic study of 1709 men, analysis of data on multiple cardiovascular medications, digoxin use had the highest association with complete ED [68]. The mechanism of action is not completely understood. Early studies linked sexual dysfunctions to hormonal alterations observed with digoxin use [69;70]. Later studies failed to confirm a relationship with digoxin use and changes in serum hormone levels [71-73]. Another theory proposed is the digoxin-associated inhibition of the corpus cavernosum smooth muscle sodium pump activity, which promotes corporeal contraction and impedes nitric oxide induced relaxation, leading to ED [68].

5. ACE inhibitors

Angiotensin-converting enzyme (ACE) inhibitors, particularly captopril, have been associated with improved sexual function [46;51,52]. It has been suggested that potential favorable sexual side effects of captopril were secondary to improved cardiac function; however, sufficient data to support this hypothesis do not exist [74]. The TOMHS trail

showed a significant decrease of sexual activity rate through 24 month in men taking enalapril, compared to placebo [11]. But, in a comparing study between the ACE inhibitor lisinopril and the β-blocker atenolol, lisinopril only caused a temporary decline in sexual activity. After 4 weeks of treatment the sexual intercourse rate was reduced but tended to recover with ongoing treatment. Atenolol on the other hand caused a chronic worsening of sexual function [17]. The fact that ACE inhibitors work through other channels than the sympathic nervous system in lowering blood pressure might in part explain their reduced impact on sexual function. Furthermore, ACE inhibitors have been reported to reverse endothelial dysfunction by preventing the effects of angiotensin II, prolonging the half life of nitric oxide and decreasing degradation of bradykinin. This latter is a potent stimulator of nitric oxide and prostacyclin release and may therefore benefit erectile function [34]. It can be concluded that ACE inhibitors have no effect, or may even have a positive effect on sexual function, but its precise role remains to be elucidated.

6. Angiotensin II receptor antagonists (ARBs)

Multiple studies showed beneficial effects of ARBs on sexual function. In a cross-over study comparing atenolol with valsartan, valsartan increased sexual activity significantly compared with atenolol (which significantly reduced sexual activity); however, these changes were not significant compared with placebo [18]. Compared with carvedilol, long-term therapy with valsartan was significantly associated with improved sexual activity [16]. Dusing et al. reported reduction in ED with improved orgasmic function, intercourse and overal sexual satisfaction in a group of 2550 hypertensive patients treated with valsartan [75].

Angiotensin II is synthesized in the corpus cavernosum, it is involved in detumescence of the corpus cavernosum, and produces oxidative stress in the penile endothelium, thereby possibly promoting the development of ED [76]. In hypercholesterolemic apolipoprotein E knockout mice, endothelial function of the corpus cavernosum as a surrogate for ED was improved in tandem with a reduction in aortic plaque load by ARB treatment [77]. Observational studies showed an increase in sexual activity in hypertensive subjects or patients with metabolic syndrome, treated with an ACE inhibitor or ARB compared to patients with other therapies such as β-blockers [15;76;78]. No differences were seen between use of ramipril, telmisartan or a combination of the two and there was no evidence for adverse effects of both treatments on erectile function [61]. The beneficial effects on sexual function were confirmed in a study among 2202 hypertensive patients, reporting an increase of sexual intercourse per week when treated with Valsartan. A recent double-blind randomized study among 1549 patients in which 400 participants

received ramipril, 395 telmisartan and 381 a combination of the two, no benefits of ARBs on erectile dysfunction has been proven [79]. It has to be marked however that ARBs were added on top of previous multidrug regime in high-risk patients and thus conclusions regarding the effects of ARBs monotherapy cannot be drawn [80]. In recent randomized trials, Irbesartan use after nerve-sparing prostatectomy in patients with normal preoperative erectile function was shown to improve erectile function recovery [81]. Losartan seemed to have positive effects on erectile function as well [82]. Concerning female sexual function, Valsartan has been shown to improve sexual desire and sexual fantasies, while atenolol significantly worsened these items [49]. Likewise, women treated with the combination Irbesartan-Felodipine showed significant higher
FSFI scores than those treated with the Metoprolol-Felodipine combination [48].
Overall, ARBs seems to have beneficial effects on sexual function and, if possible, should be used in treatment of patients complaining of sexual side effects of other cardiovascular agents, or in men with pre-existent ED.

7. Calcium Channel Antagonists

These agents increase dilatation and lower blood pressure by reducing calcium entry into the smooth muscle of the blood vessels [83]. Due to this mechanism of action, calcium antagonists are not expected to cause sexual dysfunction [44]. Indeed, in the TOMHS trail, amlodipine did not appear to affect sexual function [11], neither did nicardipine [84], nifedipine or diltiazem in other studies [85;86]. In two early studies, gynecomastia and problems with ejaculation occurred in patients who received calcium channel blocker therapy, probably related to hyperprolactinemia [14;87]; this was never investigated in later studies. In a double blind comparative study in 451 patients of both sexes, patients were allocated either to treatment with the calcium channel blocker amlodipine or with the ACE inhibitor enalapril for 50 weeks after a 4 week placebo run-in. Sexual function was not different between the two groups [85]. Taken together, the available data suggest that calcium channel antagonists do not a detrimental effect on sexual function.

8. Statins (3-hydroxy-3-methylglaryl-coenzym A reductase inhibitors)

Cholesterol is the biochemical precursor for testosterone. An experimental study and a RCT showed reduced testosterone in men using a statin although the average effect is modest [88;89]. Studies in small samples or with lower statin doses did not show significant changes in average testosterone levels [90]. An *In vitro* study demonstrated statin effects on human testicular testosterone synthesis [91] and in animals effects on the morphology and function of Leydig cells have been seen after statin administration [92]. In

a prospective observational study among 93 men it was suggested that ED following statin therapy is more likely in patients with severe endothelial dysfunction due to established cardiovascular risk factors including age, smoking and diabetes [93]. On the other hand, statins have been reported to improve erectile function when the cohorts had no other cardiovascular risk factors accept for untreated ED [94-96]. Furthermore, statins seem to increase the beneficial effects of sildenafil through endothelial function benefits [97-100]. These endothelial function benefits may rely on the antioxidant effects of statins [[101;102], which clearly predominate over the pro-oxidant effects [103]. On the whole, evidence shows that statins can have a beneficial effect on erectile function because the beneficial effects seem to be more powerful than the negative effects on the testosterone level [104].

Table 2. Practical overview of the effect of commonly prescribed cardiac drugs classes on sexual function

Drug	Effect
β-blockers*	-
Cardiac Glycosides	-
Diuretics†	-
α-blockers	±
ACE inhibitors	±
Calcium channel blockers	±
Angiotensin Receptor Blockers	+
Statins	+

Information from randomized controlled trials, reviews, double-blind cross-over studies and prospective questionnaire studies in men and women;

* Except for Nebivolol, this seems to have positive effects;

† Except for potassium sparing diuretics, which do not appear to cause sexual adverse effects;

- = negative effect, ± = no effect, += positive effect

DISCUSSION

Based on absence of hard data coming from randomized controlled studies, the Second Princeton Consensus Management Recommendation state that 'a change in class of antihypertensive medication rarely results in the restoration off sexual function' [105]. However, the available data point towards significant benefits in sexual function when switching prior antihypertensive therapy [4;75;78;106]. This review demonstrated that significant improvements in male and female sexual function can be achieved when cardiovascular drug treatment is switched to either Nebivolol or an ARB and that use of statins can improve sexual function. Also, several lines of evidence indicate that older-generation beta blockers, digoxin and diuretics can indeed deteriorate sexual function. This knowledge should become incorporated in cardiologists and general practitioners practices, because it is necessary to be able to offer patients a tailor–made medical treatment, to avoid or diminish side effects and therewith improve compliance with therapy.

For this review we used RCTs next to double blind crossover studies, observational- and questionnaire studies. The impact of the studies was not scored or indexed for; consequently, definite conclusions can not be inferred from this review. It should be kept in mind that more than two-third of the hypertensive patients require combination therapy of at least two drugs to reach their blood pressure goals. Therefore, combination therapy or therapeutic strategies will have to be compared in the future with respect to their effects on sexual function [56]. Nevertheless, hard data from large randomized controlled trials regarding the switch of cardiovascular drugs in monotherapy or multidrug regimens for the benefit of sexual function are lacking. This review can be helpful for cardiologists, urologists, general practitioners and other healthcare professionals who deal with patients complaining from sexual dysfunction during treatment with cardiovascular agents. The overview table shows clearly which effects were found in the numerous studies that were performed until now.

Poor adherence in antihypertensive drug therapy is a critical contributor to unsatisfactory blood pressure control rates and erectile dysfunction has been shown to contribute to poor adherence [4]. Management of sexual dysfunction induced by hypertension and its related medication represents a challenge in the everyday clinical practice. For patients presenting with sexual dysfunction during cardiovascular drug therapy, lifestyle modification and switching medication according to the information conveyed above should be the first line of action unless the current treatment is absolutely indicated [107]. Since ARBs are now generic, it should be considered to use them as first line therapy in men in which erectile function is important (most men); rather then relying on switching

in the case they are brave enough to mention ED. If there is no advantage for treatment of ACE-inhibitors above ARBs, we suggest ARBs should be considered as fist line therapy, instead of allowing sexual dysfunction to happen and then prescribe a (self-funded) PDE-5 inhibitor, because this is not a satisfactory solution for most patients. However, in males with persisting erectile dysfunction (and despite the use of ARBs) PDE-5 inhibitors should be offered as the next step, since they exert beneficial effects through improved adherence. It was shown that hypertensive men with erectile dysfunction are more likely to initiate rather than discontinue, and add rather than reject antihypertensive medication when receiving PDE-5 inhibitors [108].

Literature about effects of antihypertensive drugs in female sexual function is limited, but findings from small observational and clinical studies point towards similar effects of antihypertensive drugs in male and female sexual function [4;20;109]. Female cardiac patients presenting with sexual dysfunction, should receive the same treatment and advice as male patients concerning lifestyle modifications. And, if not contraindicated ARBs should be considered as first line therapy in females too, as literature points to benefits of ARBs compared to beta-blockers in female sexual function. If these measures are insufficient, a referral to a sexologist or a gynaecologist can be the considered.

As was seen in the evaluation of cardiologists concerning their knowledge and practice patterns in regard to sexual dysfunction [110] and the sexual side effects of cardiovascular medication [5]. Cardiologists lack sufficient knowledge and training to provide solutions and advises necessary to ameliorate patients sexual function and with that, to ensure adherence to cardiovascular treatment. In our opinion, appropriate education of cardiologists and other involved healthcare professionals is needed to overcome this problem. Furthermore, sexual effects of cardiovascular medication in both male and female dysfunction are a broad area for future research; in the meanwhile the proposed overview table can be of help in the clinical setting.

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5 ERECTILE DYSFUNCTION IN THE CARDIOLOGY PRACTICE

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INTRODUCTION

Erectile dysfunction (ED) and cardiovascular disease (CVD) share common risk factors including age, hypertension, metabolic syndrome and atherosclerosis. Consequently, ED has been shown to be a powerful predictor of future cardiovascular events, myocardial infarction (MI), cerebrovascular events and all-cause mortality. And it shows a trend to increase risk for cardiovascular mortality. The predictive ability of ED is higher in younger ED patients despite the fact that probability of ED increases with age and it most likely identifies a group of patients with early and aggressive vascular disease [1-3]. These findings support implementation of ED assessment into clinical practice and stress the need to establish standardized methods to diagnose ED. Back and Forth, ED is very common in patients with CVDs; prevalence rates up to 75% in men with chronic stable coronary artery disease (CAD) have been shown [4]. Furthermore, a number of medications have been associated with an increased risk for ED, including first- and second generation β-receptor blockers, and thiazide diuretics [5]. Knowing that sexual activity is considered an important component of patients' and their partners' quality of life, independent of age [6;7]. A large body of research in the past decades has led to recommendations and guidelines for safe management of cardiac patients regarding sexual activity and the treatment of ED [8-11]. Recently a consensus document from the American Heart Association and the ESC Council on Cardiovascular Nursing and Allied Professions was published to synthesize and summarize current evidence related to sexual counseling in CVD and to provide direction to health care professionals is sexual counseling [12]. However, despite the abundance of evidence and guidelines, application of this knowledge in clinical practice has been limited[5;13-15]. This appears to be due to a lack of training in raising and discussing the subject sexual dysfunction [15]. Furthermore, it is unknown whether male patients have specific needs and wishes concerning sexual health counseling. Various interventions may improve management of ED in cardiology, some more timely and costly than others. We aimed to assess the burden of ED in a multi centered cross-sectional cohort of males visiting outpatient cardiology clinics in the Netherlands and to assess patients' attitude towards sexual health care in cardiology. We sought to identify male patients' view of possible improvements in sexual healthcare and the preferred forms of sexual counseling in the cardiology practice. Presenting a range of easy-to-use options, our results may contribute to the improvement of patient centered healthcare in cardiology.

METHODS

Setting and participants

In February 2013, a total of 650 surveys were mailed to a cross sectional cohort of adult male patients that consulted a cardiologists in one of two participating 'Cardiology Centers of the Netherlands' (CCN) (G.A.S, I.I.T., CCN location Amsterdam or G. J. d. G., CNN location Voorschoten) between January 2011 and January 2012. Furthermore 200 questionnaires were randomly distributed to adult male patients visiting the outpatient cardiology department of the Leiden University Medical Center (academic hospital) or the Diaconessen Hospital Leiden (local general hospital) between May 2012 and January 2013. The questionnaires were accompanied by a letter explaining the nature, scope, objectives and contents of the questionnaire and ensuring total anonymity. An information sheet indicating participation was voluntary and ensuring confidentiality was provided with each survey. People unwilling to participate could mark the consent form stating their unwillingness; a question was added to obtain their reason(s) not to participate. In the two other outpatient clinics, the questionnaires were distributed by the secretary in closed envelopes. Patients were asked to fill out the questionnaire at home and return it by mail in the provided freepost envelope.

Two independent researchers (M.P.J.N and J.v.B.) were responsible for the processing of the questionnaires. The returned questionnaires could not be traced back to patients' records. Because of this anonymous design, reminders could not be sent out to non-respondents. The protocol was approved by the institutional Committee for Medical Ethics (MEC) at the Leiden University Medical Center and the boards of the three other participating centers. No extramural funding was used to support this work.

All patient presenting with chest pain, hypertension, arrhythmias, dyspnea, dizziness and vascular problems, aged older than 18 years and the ability to understand the Dutch or English language (appendix) were included. While aiming to obtain information about a cross sectional cohort of male patients visiting the outpatient cardiac clinic; patients visiting for a regular check up or medical inspection in which no cardiac problems were found were also included. Because of this design, data from both sexual active and sexually inactive men were obtained. Study flow chart is displayed in Figure 1 to accurately indicate sources and methods of selection of participants.

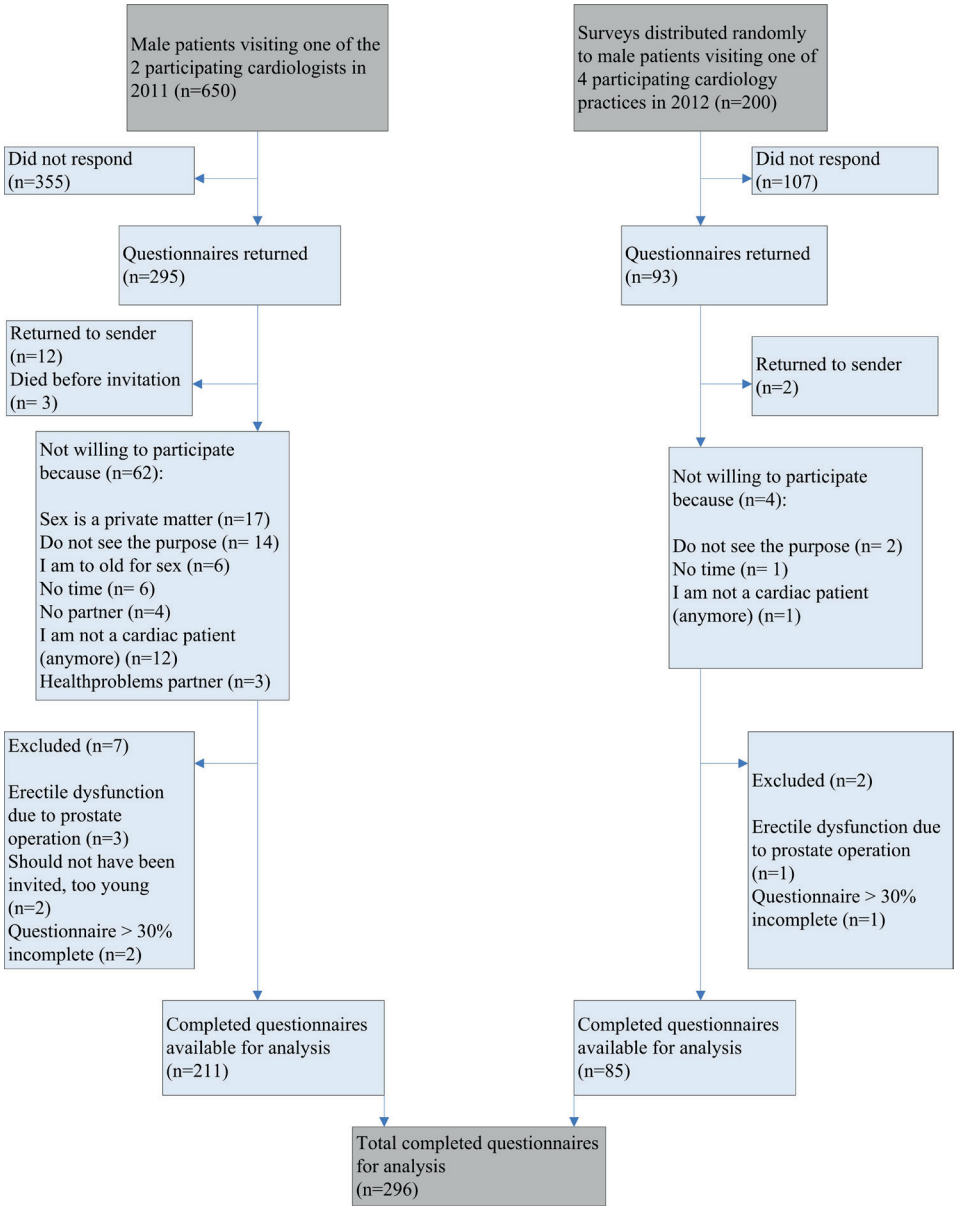
Survey Instrument

Established, validated questionnaires about sexual function and quality of life were used to develop a 25-item gender-specific survey directed towards male patients with all possible indications for consulting a cardiologist. The survey consisted of three sections and was developed to address several aspects of ED, ED-related distress and to gain insight into patients needs regarding availability of sexual health care. The first part was designed to obtain demographic information including the reason(s) for consultation. To obtain information about erectile function, the validated *Sexual Health Inventory for Men* (SHIM) was used for the second part of the questionnaire. Of the SHIM, we used the abbreviated international index of erectile function (IIEF-5) which is a widely used scale for screening and diagnosis of ED and severity of ED in clinical practice and research [16]. Several questions from the validated Female Sexual Function Index were added to obtain information about sexual dysfunction- related distress in life and relationship [17]. Furthermore, information about use of phosphodiesterase inhibitors was obtained. The last part of the questionnaire was designed by our research group in order to assess patients' opinion about discussing sexual health in the cardiology practice, to identify if more attention to ED would be welcomed and, if so, in which form this would preferably be. A multidisciplinary expert panel with experience in developing surveys checked the questionnaire for comprehensiveness and quality. Furthermore, the survey was pilot tested with 10 males consulting one of the participating centers to assess its suitability and comprehensiveness and was adjusted according to the remarks made.

Data Analysis

Results were summarized by reporting responses on all survey items. Frequencies of demographic characteristics, health behaviors, chronic conditions, and aspects of sexual function were presented. Prevalence of ED was based on IIEF-5 score of <21, and severity of ED was assessed following the guidelines [18] with mild 17-21; mild to moderate 12-16; moderate 8-11 and severe 1-7. Numerical demographic values were summarized as mean (SD). Differences in numerical data between demographic groups were analysed with independent sample t-tests, χ^2 tests were used to assess association between categorical respondents' characteristics and categorical responses. Bivariate correlations were used to correlate IIEF-5 scores with bother-scores. Statistical significance was defined as $p<0.05$, all tests were 2 sided, and confidence intervals were defined as 95%. Analyses were conducted using SPSS release 20 (SPSS Inc., Chicago, IL, USA).

Figure 1. Study flow diagram



RESULTS

Demographic data

Mean age of the 296 respondents was 62.9 years (±11.1). For 86.1% of these men, a cardiac diagnose was made. The other 13.9% came for cardiac screening or check-up, and no cardiovascular problems were found. Of the respondents, 16.1% used one, 26.5% used two, and 29.9% used 3≥cardiac agents (see Table 1).

Erectile function and sexual activity

ED, as defined by an IIEF-5 score of <21, was prevalent in 165 (65%) of the 255 men that completed the IIEF-5 questionnaire. Of these, 240 had been sexually active in the past year and 15 had been sexual inactive. An IIEF-5 score <21 was significantly associated with current and former smoking (linear-by-linear association, p=0.001) and body mass index (BMI) >25 kg/m^3 (p=0.007). The prevalence of ED increased with age starting from age 40 (Figure 2).

Almost three quarters of patients with CAD had ED (74.3%, p=0.049) and the majority of patients which had a myocardial infarction (MI) (83%) or heart failure (86%) scored <21 points on the IIEF-5 scale (p=0.031). In contrast, patients in which no cardiac diagnosis was made, ED was seen significantly less often (39%, p=<0.001); for more details see Figure 3.

Of the respondents 81% had been sexually active in the past 12 months. The number of respondents that was sexual active diminished with age, of men >80 years 22% had been sexual active. The men who had not engaged in sexual activity (n=86) were prompted to state one or multiple reasons. Lack of interest was reported by 15% (n=13) and 23% (n=20) mentioned physical problems or insufficient condition. The most stated reason not to be sexually active was ED (43%; n=37).

To the question “Did you reckon the cardiac medication you take influences your sexual life?” 53% of the respondents that used one or more cardiovascular agents (n=202) answered with “no influence”, 4% noticed a positive influence, 36% noticed a negative influence of the medication and 7% did not know.

Respondents were asked to score discomfort experienced due to sexual dysfunction on a scale from 0 to 10. The mean bother score was 5.9 (±2.6). This bother was negatively correlated to the IIEF-5 scores (r=-0.63; p<0.001; figure 4). Mean influence of sexual dysfunction on respondents’ marriages/relationships was 3.3 (±3.3) on a 0 to 10 scale. The IIEF-5 score was weakly negative correlated with experienced influence on the relationship (r= -0.30, p=0.003).

Table 1. Characteristics of study sample

Patients Characteristics	**n=296** [a]
Age, mean (range), years	62.9 (20-94)
Weight, mean (SD), kg	85.9 (±13.7)
Height, mean (SD), cm	180.3 (±6.9)
BMI, mean, (SD), kg/m3	26.4 (±3.6)
Nationality	**n (%)**
Dutch	268 (91.5)
Other western country	10 (3.4)
Non-western country	13 (4.4)
Cardiovascular agents [b]	**n (%)**
α-receptor blocker	13 (4.4)
ACE inhibitor	95 (32.4)
ARB	57 (19.5)
β-receptor blocker	103 (35.2)
Calcium-antagonists	44 (15.0)
Digoxin	11 (3.8)
Loop diuretic	11 (3.8)
Thiazide diuretic	33 (11.3)
Nitrate	20 (6.8)
Statin	112 (38.2)
Other	16 (5.4)
Co-medication[b]	**n (%)**
Coumarin derivatives	37 (12.5)
Platelet Aggregation Inhibitors	90 (30.5)
Diabetes medication	13 (9.4)
Anti-depressants	4 (2.1)
Smoking	**n (%)**
Yes	31 (10.5)
No	140 (47.5)
Quited < 1 year ago	10 (3.4)
Quited >1-5 years ago	13 (4.3)
Quited>5-10 years ago	15 (5.1)
Quited>10-20 years ago	27 (9.2)
Quited>20 years ago	59 (20.0)
Cardiac diagnose[b]	**n (%)**
Coronary Artery Disease	86 (29.2)
Hypertension	90 (30.5)
Arrhythmias	87 (29.5)
Myocardial infarction	34 (11.5)
Heartfailure	10 (3.4)
Valvular Heart Disease	25 (8.5)
Primary Myocardial Disease	5 (1.7)
Congenital Heart Disease	4 (1.4)
No cardiac diagnose	41 (13.9)

Abbreviations: *ARB*, angiotensin receptor blocker; *ACE*, Angiotensine converting enzyme; *BMI*, body mass index. [a] Columns may not add to 296 due to missing value. [b] Multiple answers were possible, total exceeds 296

Figure 2. Prevalence of erectile dysfunction (ED) by age group

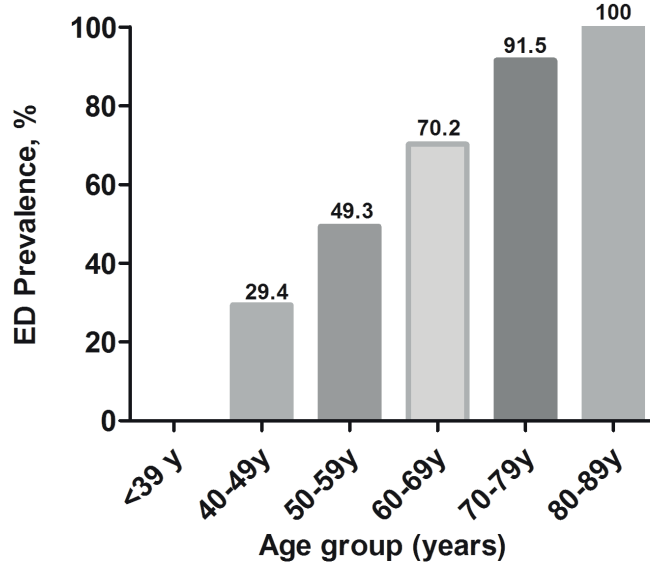
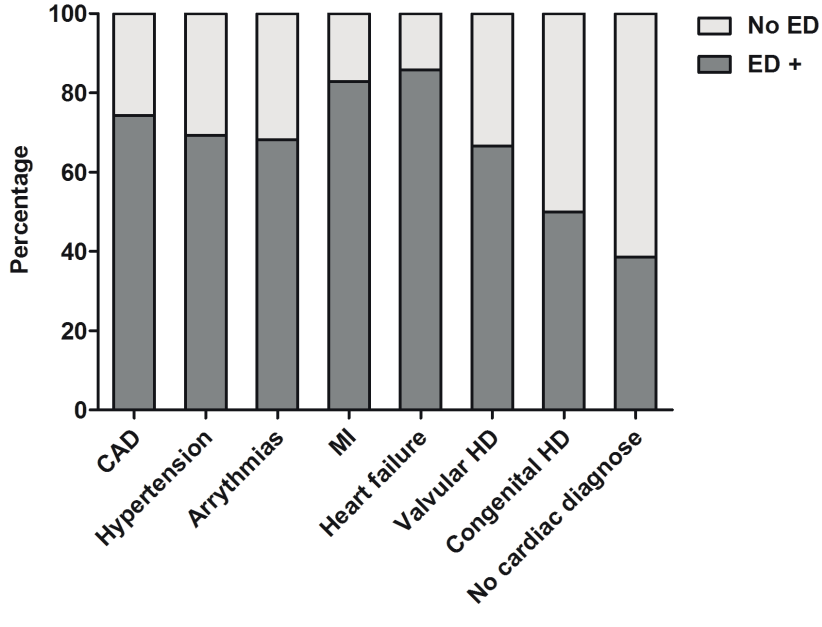
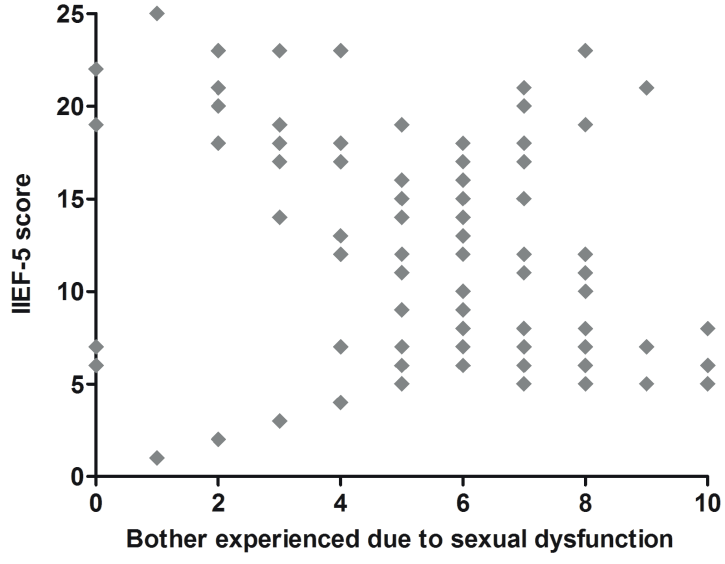


Figure 3. Cardiac diagnose made and distribution of erectile dysfunction



Abbreviations: *CAD* = coronary artery disease; *MI*, Myocardial infaction; *HD* = Heart Disease; *No ED*, No erectile dysfunction; *ED +,* Erectile dysfunction;

Figure 4. Bother experienced due to sexual dysfunction versus IIEF-5 score



Based on data from 212 men. Bother was expressed on a scale from 0 to 10

Patients' perception: care for ED in the cardiology practice

None of the respondents stated it would annoy them if the cardiologist would ask about sexual function; 1 patient said this question would offend him. Most respondents considered a question about sexual health as something positive (Table 2). Respondents' opinions regarding several possibilities for the improvement of sexual healthcare in cardiology were summarized in Table 3. Of men with ED (n=165), 46% (n=75) would like to have a conversation with the cardiologist about possibilities to improve sexual function, 55% (n=90) would be helped if questions could be asked during consultation with a nurse and 58% (n=95) with written information. Of those that stated cardiologists do not have to ask about sexual health (n=55), 27% (n=15) said not to believe the cardiologists could help and 24% said sex was not important for them (n=13). Five men (9%) felt too old to have sex; all of them were older than 80 years. Other reasons for not being willing to discuss sexual function were: "Sex is a private matter" (5%; n=3), "I do not want to claim my doctors' time for something like that" (5%) and "there is no relationship with my complaints" (18%; n=10).

Table 2. Patients' opinion about discussing sexual function with the cardiologist

If the cardiologist would ask you about your sexual function during a consultation, how would you feel about that?	n(%), n=290[a]
Uncomfortable	19 (6.6%)
Annoyed	0 (0)
Offended (sex is a private matter)	1 (0.3%)
I do not think the cardiologist can help me with sexual problems	19 (6.6%)
I would not mind	132 (45.5%)
It seems logical to ask	90 (31%)
I would be happy if the cardiologist started about it	45 (15.5%)
Relieved	17 (5.9%)
I think it is necessary for a complete consultation	95 (32.9%)

[a] Multiple answers were possible.

Of the 296 participants, 50% (n=149) considered themselves to have a sexual dysfunction, 62 would like to try treatment for it (42%), see Table 3. No significant differences were seen regarding questions about sexual health care between the different age categories. But the older the patients, the lower was his wish for treatment (linear-by-linear-association p=0.001).

Phosphodiesterase 5 inhibitors

Of all respondents (n=296), 28% (n=83) tried a PDE5 inhibitor at least once. Of the sexual active men with ED (n=152), 37% tried or used it and of the sexual active men without ED (n=89), 11% did. Of patients that indicated not to have been sexual active the past year, 32% (n=53) tried a PDE5 inhibitor.

Most (65%; n=56) of the respondents that used a PDE-5 inhibitor, got it prescribed by the general practitioner, 8% (n=7) obtained it from a friend or family member and 2% (n=2) ordered it on the internet. Almost a quarter (24%) obtained the prescription from a medical specialist, of which 4% from the cardiologist.

Table 3. Wish for treatment of ED and preferred forms of care as can be offered in the cardiology practice

If there would be a treatment option for your sexual problem (ED), would you be willing to try this?	**n (%) n=296**
Yes	62 (20.9)
No	39 (13.2)
Maybe	48 (16.2)
Not applicable (no sexual dysfunction)	147 (49.7)
Would be helped with written information about sexual dysfunction and its possible solutions?	**n (%) n=296**
Yes	117 (39.5)
No	79 (26.7)
Not applicable (I do not have a sexual problem)	100 (33.8)
Would you be helped if you could ask questions about sexual dysfunction during consultation with a specialized nurse?	**n (%) n=296**
Yes	124 (41.9)
No	54 (18.2)
Not applicable (no sexual dysfunction)	118 (39.9)
Would you like to have a conversation with the cardiologist about possibilities to improve your sexual life?	**n (%) n=296**
Yes	88 (29.7)
No	109 (36.8)
Not applicable (no sexual dysfunction)	99 (33.4)
What would you like the cardiologist to do regarding your sexual problem (ED)?	**n (%) n=110***
Just listen to me	5 (4.5)
Give me some advise how to deal with it	37 (33.6)
Give me explanation about how it works	25 (22.7)
Refer me to an urologist	15 (13.6)
Refer me to a sexologist	15 (13.6)
Refer me to a psychologist	9 (8.2)
Give me information so I can read about it	30 (27.3)
Give me some information and let me think about treatment options at home	34 (30.9)
Change my medication if possible	10 (9.1)

Based on answers of 110 patients which stated to have a wish for treatment (yes or maybe), data from two respondents are missing. Multiple answers were possible.

DISCUSSION

This study characterized male patients visiting general cardiac outpatient clinics in terms of demographics, cardiac diagnosis, erectile function and attitudes towards sexual counseling. It adds to the literature as it is the first study to describe views and preferences of sexual health care in a cross-sectional cohort of males visiting an outpatient cardiology practice. ED was prevalent in more than half of men in this cohort and the most stated reason not to be sexual active. Patients experienced significant bother due to the ED. Half of men with ED would feel helped discussing it with the cardiologist and the majority indicated both written information about treatment options and consultation with a nurse would be helpful options.

In 1980, the Massachusetts Male Aging Study (MMAS) reported prevalence's for complete ED ranging from five percent at age 40 years to fifteen percent at age 70 years. For mild and moderate ED, prevalence estimates were 17% and 25%, respectively [19]. In men with CVD, prevalence rates of ED are much higher ranging from 42 to 75% [4;20]. In accordance with our results, in literature ED was found in up to three quarters of patients with established CAD [4] and in as much as 84% of men with heart failure [21]. In a study evaluating the view of patients with chronic CAD regarding the discussion of sexuality with the cardiologist, 73% of responding men indicated they were comfortable with that. Our results were similar, showing that most respondents would feel comfortable and would appreciate discussion about sexual function [13].

Findings should be considered in the light of potential study limitations. On the one hand, the sensitive nature of the topic explored may have led to non-response bias. Especially widowers, singles and patients in poor mental or physical health may have elected not to participate. On the other hand, non-respondents may have been content with their erectile function and considered their participation irrelevant. Our findings were consistent with prior research and the demographic data were comparable with statistics from general cardiological clinics [22;23]. However, non-respondents have been shown to have worse health status than the population average and to be less satisfied with medical care [24]. To minimize potential biases, we provided detailed assurances of confidentiality, pilot tested and refined the instrument and used balanced keying.

Time after a cardiac event and the New York Heart Association classification for heart failure have been shown to be important factors in sexual function [12;25], our data would have been more complete if we could have included that information. However, because of restrictions imposed by the Committee for Medical Ethics, we could not link questionnaires with patient files and therefore were unable to obtain these data.

In the past years, since ED has been shown to be an important sentinel marker for CVD, several reviews and guidelines for the management of ED in patients with CVD have been proposed [5;9;11;26]. Consequently, cardiologists should be aware that ED is part of their responsibility. As ED is predominantly a vascular disease and associated with an increase in cardiovascular events, CVD and all-cause mortality, cardiologists have to recognize ED within their remit and must routinely ask about it. If followed by appropriate preventive action, this can improve and may save lives [11]. Vice versa, this study showed that ED is highly prevalent in patients with a variety of cardiovascular diagnosis, and it influences quality of life. Indicating that care for ED in the cardiology practice is important as well. Jackson et al. proposed a flowchart for cardiovascular risk assessment in men with ED and known cardiovascular risks factors, starting with "sexual inquiry of all men" [11]. However, exactly this seems to be the crux of the matter: the problem is the translation of knowledge about the importance of ED in cardiology into actions in daily practice. Recently, a survey among Dutch cardiologists showed inquiry about ED is not yet routine. Many cardiologists (61.5%) reported not to feel responsible for this part of patient care. Nevertheless, 41.9% indicated they would benefit from training regarding treatment of sexual dysfunction in patients with cardiovascular disease and stated the necessity of a referral directory [15].

Present study showed sexual counseling and attention for ED is required for ambulant cardiology patients. Although it may be unrealistic to expect all cardiologists to have the time and expertise to provide adequate sexual counseling; the results of this survey indicate that small adjustments can enable cardiac clinics to provide their patients with sufficient information. Patients indicated that consultation with a nurse and written information would be helpful, even more so than consultation with the cardiologist. For nurses in cardiology, guidelines summarizing approaches to discuss sexuality and advises for follow-up are already available [27].

Explanation and advice about the mechanisms behind ED and its treatment options should be available for all men with CVD. Providing leaflets with information about ED may be convenient and will lower the threshold for patients to bring up the subject during consultation. Information for the partner should not be forgotten. Partners often have considerable concerns, often more so than patients [28;29]. Most of the time information is for the person with the cardiac disease and partners may feel their needs are pushed aside [30], guidelines therefore indicate the importance for partner information as well [12].

In patients indicating to be bothered by ED, several steps can be taken to improve erectile function. As stated in the guidelines, advising about lifestyle modification (i.e. reduced caloric intake and smoking cessation) is a rational first step because next to prevention of cardiovascular events, lifestyle changes may improve erectile function [10;11]. It should

be emphasized that a sedentary lifestyle is a potential modifiable risk factor in men with ED and empirical studies provide support for the beneficial role of increasing exercise [12;31;32].

Furthermore, a switch in antihypertensive medication may significantly ameliorate sexual and erectile function. If possible, prior antihypertensive therapy should be switched to either a third-generation β-1 blocker or an angiotensine receptor blocker [33;34]. If no other options are available, use of ACE inhibitors or calcium-channel blockers is not associated with ED; agents from these classes can be prescribed safely [35;36]. Prescription of a PDE5 inhibitor should be the next step. If erectile dysfunction persists after correct PDE5 inhibitor use, referral to an urologist should be considered for further diagnosis and other therapeutic options (e.g. testosterone suppletion or interacavernosal prostaglandin E1). In patients with other sexual dysfunction and in those in need for advice to improve their sexual life otherwise, referral to a sexologist is useful.

In conclusion, next to the necessity of cardiovascular risk assessment in men with ED, ED is highly prevalent in ambulant cardiac patients, and information regarding ED and its treatment is mandatory. This information and sexual counseling can be provided in several ways; both consultations with the cardiologist or a (specialized) nurse, as well as written information would be accommodating.

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6 CARDIOVASCULAR DISEASE AND FEMALE SEXUAL DYSFUNCTION

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INTRODUCTION

Female sexual dysfunction (FSD) is age related and has been shown to be common among women with cardiovascular disease (CVD) (1-3). Sexual activity is an important component of quality of life in both patients with CVD and their partners, including many elderly patients (4). Interestingly, according to the National Health and Social Life Survey more women (43%) than men (31%) reported sexual problems (5). After a cardiovascular event, the psychological impact as well as the physiological effects of the disease and the medications prescribed after an event can have a major effect on patients' sexual life. Furthermore, patients or partners' anxiety of another cardiac event often lead to reduced sexual activity or sexual dysfunction (6) (7) (8).

Male sexual function received close scientific attention, as erectile dysfunction was shown to be an independent risk factor for future cardiovascular events (9;10). However, FSD related to CVD remains under explored.

A recent survey among Dutch cardiologist (n=414) showed that cardiologists inform less often about sexual function in women than in men ($p<0.001$)(11). Subsequently, a consensus document from the American Heart Association was published, encompassing recommendations for healthcare professionals regarding sexual counseling and routine assessment of sexual problems in patients with CVD and especially those after a cardiovascular event (12). Male and female patients are being addressed together in these guidelines, while studies evaluating experiences and needs of women with CVD regarding sexual healthcare have not yet been performed.

We hypothesized that women with CVD have different expectations and demands than men regarding sexual healthcare in cardiology. Therefore, the aim of this study was to evaluate views of female cardiac patients with regards to sexual healthcare, in a multi-centered sample of women consulting the cardiologist. Results provide the necessary information to offer effective patient- centered care for female patients in cardiology practice.

METHODS

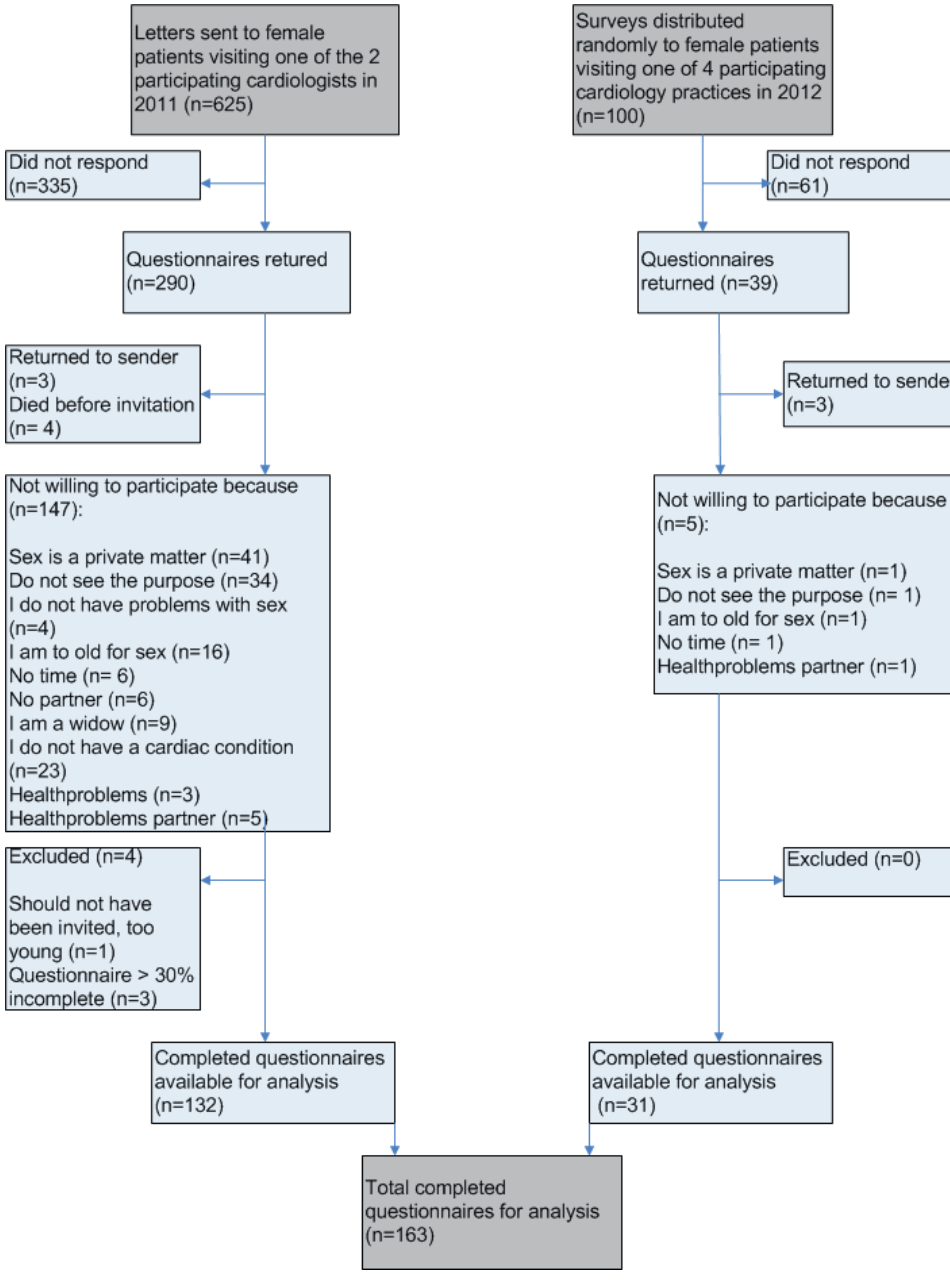
Setting and participants

In February 2013, a total of 625 surveys were mailed to a cross sectional cohort of adult female patients consulting one of the participating 'Cardiology Centers of the Netherlands' (CCN) (G.A.S, I.I.T., CCN location Amsterdam or G. J. d. G., CNN location Voorschoten) between January 2011 and January 2012. Furthermore 100 questionnaires were randomly distributed to adult female patients visiting the outpatient cardiology department of Leiden University Medical Center (academic hospital) or the Diaconessen Hospital Leiden (local general hospital) between May 2012 and January 2013. Questionnaires were distributed in a sealed envelope accompanied by a letter in which the nature, scope, objectives and contents of the questionnaire were explained and an information sheet explaining participation was voluntary and ensuring total anonymity. People unwilling to participate could mark the consent form stating their unwillingness; a question was added to obtain reason(s) not to participate. In the two other outpatient clinics, questionnaires were distributed by the secretary. Patients were invited to fill out the questionnaire at home and return it by mail in the provided freepost envelop. Questionnaires were processed by independent researchers (M.P.N and J.v.B.), and could not be traced back to individual patient records. The study was approved by the Committee for Medical Ethics (MEC) of Southwest Holland and the boards of the participating centers. The strictly anonymous design was the prerequisite; due to this design reminders could not been sent out to non-respondents.

Due to the cross-sectional study design, all women over 18 years consulting a cardiologist in one of the participating centers were considered eligible for participation. Patients visiting for routine checks or medical inspection were included in the study and data from both sexual active and sexual inactive women were obtained. Exclusion criteria were the inability to understand the Dutch or English language.

A study flow chart is displayed in Figure 1 indicating sources and methods of selection of participants.

Figure 1. Study flow diagram



Survey Instrument

Established, validated questionnaires about sexual function and quality of life were used to develop a 28-item gender-specific survey directed towards female patients with all possible indications for consulting a cardiologist. The survey consisted of three sections; in the first part demographic information was obtained, the second part was developed to explore prevalence of FSD, and the third part to gain insight into the needs of women with CVD regarding sexual health care in cardiology. Assessment of female sexual function was performed using the validated 6-item version of the Female Sexual Function Index (FSFI6), a frequently cited psychometric test for screening and diagnosis of FSD in clinical practice and research (13). The abbreviated version was used because it is an efficient instrument to disclose FSD, scoring for desire, arousal, lubrication, orgasm, satisfaction and pain (14). By keeping the questionnaire short, we aimed to reach a higher response rate and to avoid "straight line" (stereotypical) responding (15). Bother due to sexual dysfunction and its influence on the relationship was scored on a 0-10 scale, in which 0 meant no bother at all and 10 meant the most possible bother. Quality of the questionnaire was audited by a multidisciplinary expert panel with experience in the development of questionnaires.

Data Analysis

Results were summarized by reporting responses on all surveyed items. Frequencies of demographic characteristics, health behaviors, chronic conditions and aspects of sexual function were presented. Numerical demographic values were summarized as mean (SD). Prevalence of FSD was based on a FSFI6 cutoff score ≤19 (14). Differences in numerical data between demographic groups were analyzed with independent sample t-tests. χ^2 Tests were used to assess association between categorical respondents' characteristics and categorical responses. Bivariate correlations were used to correlate FSFI6- scores with bother-scores and linear regression analysis was used to identify predictors of an abnormal FSFI6 score. Statistical significance was defined as $p<0.05$, all tests were two-sided. Confidence intervals were defined as 95%. Analyses were conducted using SPSS release 20 (SPSS Inc., Chicago, IL, USA).

RESULTS

Demographic data

From the 725 women who received the questionnaire and consent form, 329 (45.4%) where returned. Of these respondents, 152 (46.2%) declined participation, 3 women had died (0.9%) and 7 (2.1%) questionnaires where returned to sender. A total of 167 women filled in the questionnaire, 3 were excluded because they where incomplete for more than 30%, 1 because the patient was under-aged, leaving 163 questionnaires for analysis (49.5%; see Figure 1).

Mean age of 163 respondents was 60.2 years (±13.7). For 74.8% of these women a cardiac diagnose was made, in the other 25.2% no cardiovascular problems were found.

No significant age differences were seen between women without a cardiac diagnosis (mean age 57.4 ±13.5, see Table 1) and those with CAD (p=0.243), hypertension (p=0.11) or arrhythmias (p=0.49).

However, women with heart failure, valvular disease or congenital heart disease were older than those without a cardiac diagnosis (mean ages 65.9±11.2, p=0.02; 70.6±11.8, p= 0.004 and 80.5±9.1, p=0.05 respectively).

Of those who did not use cardiovascular medication 39.3% (n=64), 51.6% were diagnosed with a cardiovascular problem. Cardiovascular agents were used by 60.7% of the respondents; 22.1% used one, 19.6% used two and 19.0% used three or more agents (Table 1).

Table 1. Characteristics of study sample

Patients Characteristics	n=163 [a]
Age, mean (range), years	60.2 (18-90)
Weight, mean (SD), kg	73.5 (±14.4)
Height, mean (SD), cm	167.0 (±10.5)
BMI mean, (SD), kg/m^3	27.0 (±12.0)
Nationality n (%)	
Dutch	147 (90.2)
Other western country	8 (4.9)
Non-western country	8 (4.9)
Cardiovascular agents[b], n (%)	
α-blocker	3(1.8)
ACE inhibitor	23 (14.0)
ARB	29 (17.7)
β-blocker	61 (39.0)

Table 1. Continued

Calcium-antagonists		24 (14.6)
Digoxin		2 (1.2)
Loop diuretic		18 (11.0)
Thiazide diuretic		5 (3.0)
Nitrates		7 (4.3)
Statins		34 (20.7)
Other		7 (4.3)
Co-medication[b] n (%)		
Coumarin derivatives		6 (3.7)
Platelet Aggregation Inhibitors		35 (1.6)
Diabetes medication		4 (2.4)
Anti-depressants/anti-psychotics		5 (3.0)
Smoking n (%)		
Yes		14 (8.5)
No		93 (56.7)
Quited < 1 year ago		4 (2.4)
Quited >1-5 years ago		11 (6.7)
Quited>5-10 years ago		12 (7.3)
Quited>10-20 years ago		12 (7.3)
Quited>20 years ago		18 (11.0)
Cardiac diagnose[b]	n (%)	Age, mean (range), years
Ischemic Heart Disease	21 (12.8)	63.0 (29-84)
Hypertension	54 (32.9)	64.8 (35-88)
Arrhythmias	59 (36.0)	58.0 (18-88)
Myocardial infarction	6 (3.7)	58.0 (29-82)
Heartfailure	2 (1.2)	66.5 (66-67)
Heart valve disease	23 (14.0)	67.2 (35-90)
Primary Myocardial Disease	2 (1.2)	63.0 (49-77)
Myxoom	2 (1.2)	52.0 (35-69)
Congenital Heart Disease	2 (1.2)	80.5 (74-87)
No cardiac diagnose	25 (15.2)	57.4 (28-77)

Abbreviations: *BMI,* Body mass index (m / l²); *ACE,* angiotensin-converting enzyme, *ARB,* Angiotensin receptor blocker

[a] Columns may not add to 164 due to missing value

[b] Multiple answers were possible, total exeeds 164

Female patients' perception: sexual healthcare in cardiology

To the question: "If the cardiologist would ask you about sexual problems during consultation, how would that make you feel?" on the one hand, 15% of respondents (n=163; multiple answers were possible) answered "uncomfortable", 5% "annoyed", 1% "offended" and 19% thought the cardiologist would not be able to help with sexual problems. On the other hand, 45% would not mind if the cardiologist asked about sexual function, 15% found it logical and almost 24% thought discussing sexual health was necessary for a complete consult.

Respondents' views about several possible options for improvements in sexual healthcare are displayed in Table 2.

Of the six women who had MI, none indicated attention for sexual health was necessary, three indicated not to have a sexual dysfunction, the other three indicated not to believe the cardiologist could help them with sexual problems. Of the heart failure patients (n=2) one felt too old for sex (age 67) and one said her condition was insufficient.

Women with sexual complaints

For women with self-indicated sexual dysfunction, an additional set of questions concerning experienced bother, treatment wish and preferred forms of treatment was posed, 35% of the women answered these questions.

Respondents were asked to score discomfort/bother experienced due to sexual complaints on a 0 to 10 scale. Mean bother score was 3.4 (±3.0), younger age was a predictor for higher bother scores (β=-0.09, SE±0.04; p=0.02). Mean influence of sexual dysfunction on marriage or relationship was 3.1 (±2.6) on a 0 to 10 scale and this was not correlated with age (r=-0.03, p=0.88).

Answers to the question: "Would you like treatment for your sexual problem(s)?" can be found in Table 2. Several reasons not to discuss sexual health with the cardiologist were mentioned; "these complaints are not related to my cardiac problem" was the most common (29%). "Sex is not important for me" (21%) and "I do not believe the cardiologist can help me with this kind of problems" (18%) were mentioned as well. Furthermore, 15% said to feel too old for sex (ages ranged from 60 to 74 years) and 9% answered that sexual function was a matter too intimate to discuss with the physician.

Table 2. Wish for treatment of sexual complaints and preferred forms of care as can be offered in the cardiology practice

Would you appreciate conversation with the cardiologist about possibilities to improve your sexual life?	**n=161 [a] n(%)**
Yes	9 (5.6)
No	70 (43.5)
Not applicable	82 (50.9)
Would you appreciate the option of discussing sexual issues during consultation with a specialized nurse?	**n=161[a]**
Yes	29 (18.0)
No	45 (28.0)
Not applicable	87 (54.0)
Would you like to receive written information about sexual dysfunction and its' possible solutions?	**n=161 [a]**
Yes	26 (16.2)
No	55 (34.2)
Not applicable	77 (47.8)
Would you like to be treated for your sexual problem/complaint(s)?	**n=56[b]**
Yes	3 (5.4)
Maybe	20 (35.7)
No	33 (58.9)
What would you like the cardiologist to do regarding your sexual complaints?	**n=23[c]**
Just listen to me	2 (8.7)
Give me some advise how to deal with it	3 (13.0)
Give me explanation about how it works	5 (21.7)
Refer me to a gynecologist	3 (13.0)
Refer me to a sexologist	2 (8.7)
Refer me to a pelvic floor physiotherapist	2 (8.7)
Give me information so I can read about it	22 (95.6)
Give me some information and let me think about treatment options at home	5 (21.7)

[a] Two respondents missed or skipped these questions

[b] Based on answers from 56 women; questions were only answers by women that indicate not to be satisfied with their sexual life

[c] Women that answered "yes" or "maybe" to the previous question.

[d] No significant differences were seen between women with different cardiovascular diagnoses regarding or between premenopausal (n=32) and postmenopausal women (n=131).

Specific groups and the demand for sexual healthcare

Female sexual dysfunction scored with the Female Sexual Function Index

FSD was defined as a Female Sexual Function Index-score (FSFI6) of 19 points or less. The FSFI6 was only validated for women who had been sexual active in the past four weeks, excluding all women that were not; the female sexual function index was scored for 104 women.

Prevalence of FSD was 61.5% (n=64/104), prevalence of FSD increased significantly with age (linear-by-linear association, p<0.001). As shown in Figures 2 and 3, increasing age had a strong negative correlation with FSFI6 score in the sexual active population (β=-0.18 (SE=0.04); p=<0.001). A higher age-related unstandardized coefficient was seen in women with hypertension (β=-0.35, SE±0.10; p=0.002), compared to normotensive women (β=-0.17, SE±0.05; p=0.001).

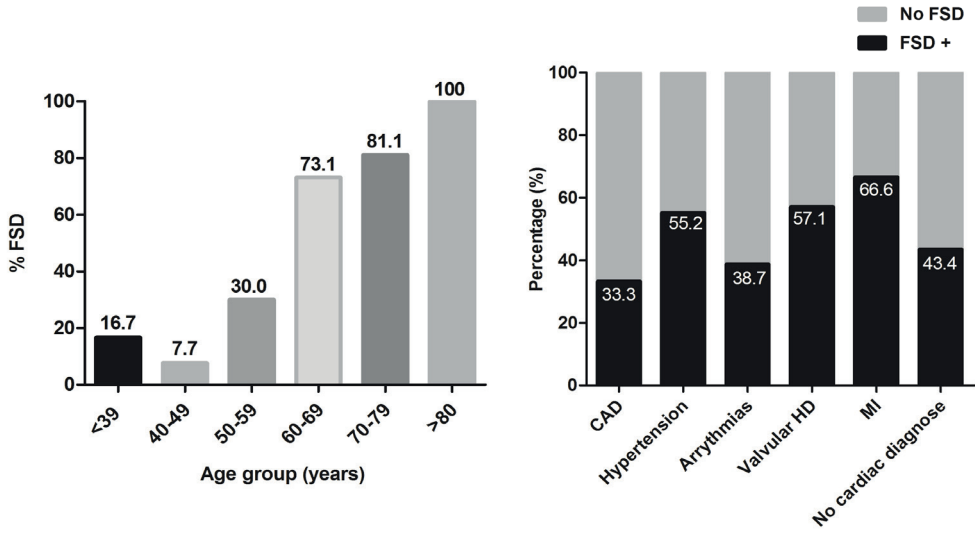
Low FSFI6 scores were not significantly associated with current and former smoking (p=0.436) or with BMI above 25 kg/m^3 (p=0.645). However, the hypertensive women (n=37) had significantly lower FSFI6 scores than normotensive women (mean scores 14.6 ±7.30 versus 17.3 ±5.62; p=0.04), a trend towards association with MI was seen (mean scores 10.0 ±8.73 versus 16.5 ±6.22; p=0.08) (see Figure 3).

Of those with FSD, 18% said to be very or moderately dissatisfied with their sexual life, 21% were equally satisfied as dissatisfied, and 61% said to be moderately or very satisfied. Women without FSD were satisfied more often than those with FSD (93% vs. 61%; p<0.001), unrelated to age. Influence of FSD that patients experienced on their marriage or relationship was correlated to the bother scored due to FSD (r=0.46, p=0.009). And difference was seen between women with- and without FSD (as measured with the FSFI6-score) regarding the wish for treatment of sexual complaints (yes or maybe) (linear-by-linear association, p=0.011).

Sexual inactive women

Fifty-seven women (35%) were sexual inactive in the past 12 month, these were significantly older than the sexually actives (mean age 68.5 ±11.6 compared to 55.8 ±12.6; p<0.001). The sexually inactive women were asked to state one or multiple reasons for this. The most common reason was the lack of a partner (divorced, single, widow) (41%). 24% answered 'Sex is not important for me', 29% accredited the sexual inactivity to physical problems and 24% said to be too tired. Thirty-five percent of the sexual inactive women (35%) indicated to have a sexual dysfunction, 18% of them indicated to be sexual inactive due this dysfunction, in 27% sexual (erectile) dysfunction of the partner was the reason. Differences between wishes regarding sexual healthcare in cardiology between sexual active and sexual inactive women can be found in Table 2.

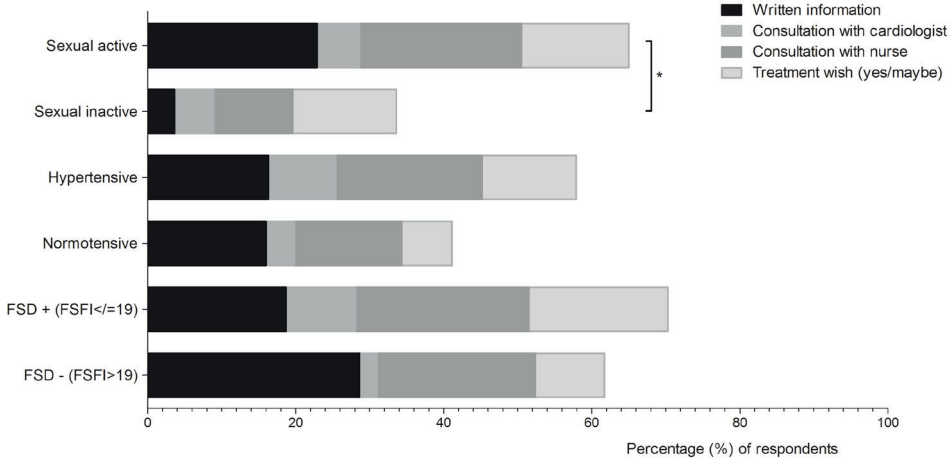
Figure 2. Prevalence of female sexual dysfunction by age group and percentage of FSD by diagnose



Abbreviations: *CAD*, coronary artery disease, *Valvular HD*, valvular Heart Disease; MI= myocardial infarction; *FSD +* = female sexual dysfunction present
Based on data of 104 sexual active women.

6

Figure 3. Preferred forms of sexual healthcare and wish for treatment



Based on answers of 163 women in different categories, not all women answered.
Totals: sexual active: n=104, sexual inactive: n=57, hypertensives: n=54, normotensives: n=106, FSD + (FSD present as measured with the FSFI): n= 64, FSD - (no FSD present when measured with the FSFI): n=40.

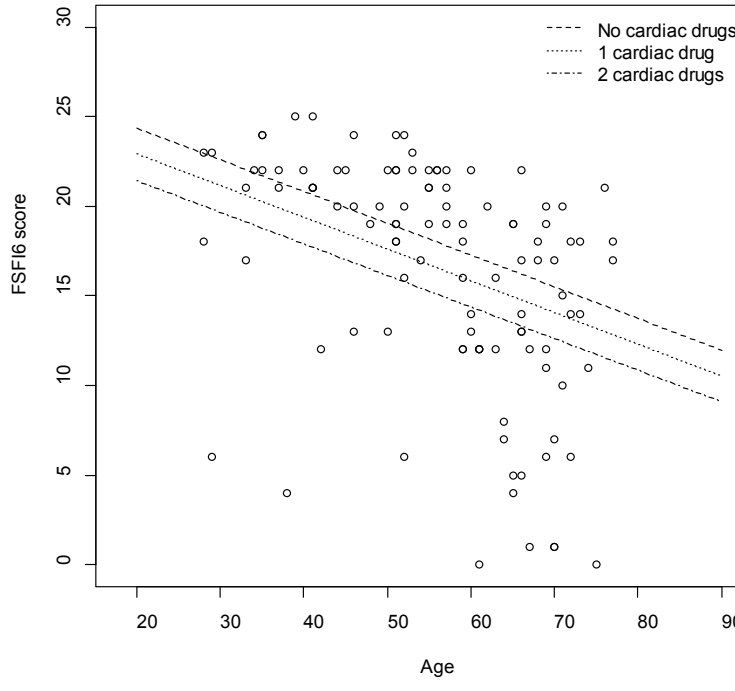
Medication

Using linear regression, number of cardiovascular agents was shown to be a predictor for lower FSFI6 scores (β= -1.47 (SE 4.31); p=0.001) per added agent, independent of age (Figure 4). Furthermore, the more cardiovascular agents used the more often a treatment wish was stated (linear-by-linear association, p=0.009).

A significant lower mean FSFI6 score was found in women using a β-blocker (14.0 ±6.2 versus 17.4 ±6.2; p=0.08) and in those using an ARB (12.2 ±7.9 versus 17.1 ±5.8; p=0.004). However, when corrected for age (β= -0.18 (SE 0.04); p<0.001) and number of agents used, the effects of both β-blockers and ARBs were not found predicting for FSD anymore (β=0.28 (SE 1.9); p=0.98 and β=-1.85 (SE 1.6); p=0.26 respectively), the number of agents the patient used however, remained predicting for low FSFI6 scores (β= -1.22 (SE 0.56); p=0.03). Nevertheless, women using β-blockers or ARBs indicated to be less satisfied with their sexual lives in general (linear-by-linear associations,

p= 0.019 and p=0.001 respectively) and less satisfied with their sexual relationship (linear-by-linear associations, p= 0.019 and p=0.014 respectively). This was not the case with the other antihypertensive agents. Women using a β-blocker wanted treatment for sexual dysfunction more often than those not using a β-blocker (linear-by-linear association; p<0.001), this was not observed in women using ARBs.

Figure 4. Female Sexual Function Index (FSFI6) score versus age and use of cardiovascular drugs.



DISCUSSION

Key findings of this study were: 1) 35% of women in our sample indicated sexual dysfunction was prevalent and 2) 40% of them would welcome treatment for it. Only a small minority would appreciate consultation about sexual health with the cardiologist. Consultation with a nurse and the availability of written information would be valued by 20%, unrelated to age. The necessity for sexual healthcare in cardiology was confirmed more often in women with FSD as scored with the Female Sexual Function Index. Higher percentages of sexual dysfunction were seen among hypertensive women and, the cumulative number of antihypertensive agents used was found to be negatively correlated with sexual function. To our knowledge, this was the first study evaluating the specific needs of a cross-sectional ambulant sample of women with CVD. The self-reported prevalence of sexual dysfunction was comparable to the rate found in the Observational Study Cohort of Women's Health Initiative among postmenopausal women with CVD (1). Measured with the FSFI6, more than 60% percent of sexual active women in our sample scored to have FSD, similarly in a sample of 2763 women with heart disease (mean age 67 years) a prevalence rate of 65% was found (2). The present study showed a higher rate of FSD in hypertensive women, confirming data of Doumas et al, who reported a higher prevalence of FSD in hypertensive- (42%) compared to normotensive women (19%)(3). The association between β-blocker use and sexual dissatisfaction was shown in several studies among women as well (3;16;17).

Antihypertensive combination therapy has been associated with higher rates of erectile dysfunction in men. Combination of a diuretic with a β-blocker, particularly the non-selective ones, increased the rate of sexual dysfunction and resulted in treatment discontinuation in men (18;19). However, until now, this has not been studied among women and has to be explored in future research.

Comparing results of this study with our previous study among men with CVD, the gender differences regarding sexuality are clear. Of 296 men visiting the cardiologist, 65% had erectile dysfunction (ED), sexual satisfaction and wish for treatment were significantly related to it. Compared to the women in present study, a significant higher proportion of men would appreciate consultation with the cardiologist (29.7% versus 5.4%) and 46% of men would appreciate consultation with a nurse to ask questions about sexual function, in contrast to 18% of women (20). In addition, whereas it is difficult to indicate if CVD has a direct effect on female sexual function (1;21); in men the link between ED and CVD is significant and has been shown and confirmed in many trials (10;22).

This study contributes to current, scarce, knowledge about FSD in women with CVD, indicating women have different needs than men with regards to sexual counseling.

Results have to be interpreted in the light of several limitations. We tried to minimize potential biases by providing detailed assurance and confidentiality and by pilot testing and refining our questionnaire. Still the relatively low response rate may have led to response bias. Moreover, the sensitive nature of the topic explored may have led to non-response bias. Especially singles, widows, and patients in poor mental or physical health may have decided not to participate. Epidemiologic literature showed non-respondents to have worse health status than the population average and to be less satisfied with medical care (23). Consequently, our results may be displaying an underestimation of FSD. Yet, distribution of demographic data in the sample and the obtained prevalence rates of FSD were consistent with those from prior population-based research among women with CVD (1;2;24). The majority of women with CVD are postmenopausal, likewise are most women in present study. While age is an important determinant in FSD, this age factor has to be taken into account while interpreting the data.

The fact that women, in comparison to men, attributed less importance to sexual function in general and related to their relationship, was to be expected and was already explained in the sixties by Masters and Johnson (25). Women's experience with sexual arousal is not focused on the physical responses, but is much more subjective and regulated by emotions and cognitions (26). Furthermore, aging women may devaluate their expectations regarding sex or its perceived importance (27). This may explain why only a relative small percentage of women with FSD would appreciate the various proposed options for improvement of sexual healthcare in cardiology. The subjective component of FSD makes it much more difficult to assess whether or not endothelial dysfunction in CVD has the same physical impact in female sexual function as it has in men. ED has been found to be a sentinel marker occurring years prior to cardiovascular events (28), but even if the same connection is found with female sexual function, the fact that FSD cannot objectively be measured implicates it will never be useful as marker for CVD in women.

For the cardiology practice, results of this study indicate sexual counseling does not have to be offered as actively in women as in men. In contrast to the recommendations made in the consensus document of the American Heart Association (12), our data point towards a passive approach with respect to sexual healthcare for women in the cardiology clinic. The availability of written material seems a good starting point, providing patients with information about sexual health in the context of CVD and lowering the threshold to initiate conversation about the subject. If a patient indicates sexual counseling is needed, the availability of a (specialized) nurse would be accommodating. This service would both be appreciated by the patient, and would reduce workload for the cardiologist.

In women with FSD using one cardiovascular agent, a switch in antihypertensive medication may significantly ameliorate sexual function. In several studies among males and in a few studies among female patients, the use of ARBs have been shown to leave sexual function unaffected (3;29;30) or even to improve sexual function (16;31;32). This however was not measured in multi-drug regimens. Our data indicated that the use of several antihypertensive agents together has a negative effect on female sexual function, independent of the combination used. This implicates that female sexual function would improve if the medication regiment would be emaciated. Studies regarding medication switches to improve sexual function in women have not yet been performed either. To provide recommendations for women who presenting with FSD while using antihypertensive agents, results of studies in men have to be extrapolated. Findings from observational and clinical studies pointed towards similar effects of antihypertensive drugs in male and female sexual function (17;32;33). Next to a switch to ARBs, if β-blocker use is necessary, a switch to the third-generation β-1 blocker Nebivolol may improve sexual function (34;35).

In case sexual dysfunction remains after diminishing and/or switching the medication, referral to a gynecologist or pelvic floor physiotherapist should be considered. For those in need for advice to improve their sexual life unrelated to physical problems, referral to a sexologist is preferred.

In conclusion, FSD is prevalent among women visiting the cardiology clinic, but in contrast to male sexual dysfunction (often ED) the burden appointed to it seems to be significantly smaller and only a minority of women indicate to appreciate conversation about sexual health with the cardiologist. The availability of written information about sexual function and/or the possibility of consultation with a specialized nurse may be good alternatives for patients with FSD.

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Part II

GASTROENTEROLOGY & SEXUAL TRAUMA

7 SEXUAL ABUSE HISTORY IN GASTROINTESTINAL ILLNESS, HOW DO GASTROENTEROLOGISTS DEAL WITH IT?

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INTRODUCTION

In the last three decades, the understanding of the relationship between a history of sexual abuse (SA) and gastrointestinal (GI) disorders has increased [1-6]. There is a growing awareness of the adverse health outcomes associated with SA among patients with GI symptoms, especially in IBS, which is a huge health-care problem. A history of abuse has been shown to contribute independently to the health status of any individual presenting with GI symptoms [6]. The prevalence rates of SA among patients with GI illness have been shown to range up to 56% in selected populations with functional GI complaints [7-11]. Treatment guidelines have been published and promoted to assist in conducting SA inquiry, as it is an essential part of the medical history [11]. However, we are unaware of the implementation of this knowledge in gastroenterologists' daily practice patterns. We hypothesized that most Dutch gastroenterologists are aware of the possible impact of a SA history in their patient population, but they do not inquire about it consistently due to a lack of training on this subject and insufficient knowledge on treatment implications.

METHODS

In the autumn of 2010 an online questionnaire was emailed to all the Dutch gastroenterologists (n=262) and fellows in training (n=140), followed by two reminder-emails. Eight months later, a postal mailing was sent to the non-responders. The 42-itemed questionnaire, designed by a urologist (H.W.E) and a gastroenterologist (H.H.F.), addressed pelvic-floor-related complaints and the gastroenterologists' beliefs and overall impressions of pelvic floor complaints in relation to sexual functioning. We performed a small pilot with eight gastroenterologists to evaluate the questionnaire and adjusted it accordingly. The survey was accompanied by a letter explaining the objectives of the study. All data were collected anonymously. Demographic data included type of practice, medical degree (resident or gastroenterologist), gender and age. Data analysis was performed using SPSS release 18 (SPSS Inc., Chicago, IL, USA). Bivariate associations between demographic information and the type of answers were calculated using the Pearson chi-square procedure; comparisons of the percentages were made with the McNemar test and 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. In the Netherlands ethical approval is not required for surveys among physicians.

RESULTS

Demographics

Of the 402 mailed questionnaires, 243 questionnaires were returned (response rate 243/402=60%). Seventeen contained refusal notes and 43 contained a notification of unavailability to complete the questionnaire due to a lack of time or interest. Of the 183 (45.2%) filled in, 14 were incomplete. We only used questionnaires in which at least 90% of all applicable questions were answered. This means that 169 questionnaires were analyzed (42%). Overall 2.4-5.3% of the questions about SA and 5.3% of the sociodemographic questions were not answered. The majority of respondents were gastroenterologists (70%), 30% were residents (Table 1). Their mean age was 42.3 (range 23-64). The respondents were equally divided between university hospitals, teaching hospitals and district general hospitals.

Table 1. Demographic characteristics of respondents (n=169)

Age, years (range)	**n(%)**
Median 41 (range 23-64)	169 (100)
Sex	
Male	102 (60.4)
Females	58 (34.3)
Unknown	9 (5.3)
Function	
Gastroenterologist	112 (66.3)
Resident gastroenterology	48 (28.4)
Unknown	9 (5.3)
Type of practice	
Tertiary referral center (or university hospital)	51 (30.2)
District general teaching hospital	66 (39.1)
District general hospital	43 (25.4)
Unknown	9 (5.3)

Asking about sexual abuse and responsibility

A small number of respondents said to always ask about SA prior to the physical examination; 5.0% of female and 0.6% of male patients (Table 2). In patients presenting with specific complaints such as chronic abdominal pain or constipation, gastroenterologists stated to ask about SA in 71.4% of female and 31.3% of male patients. Significant differences were seen between the inquiries in female vs. male patients. Concerning the complaints that triggered the gastroenterologists to ask about sexual abuse; significant differences between male- and female patients were seen as well (Table 2). Before performing a colonoscopy, just four respondents (2.5%) asked their female patients about SA; while only one respondent (0.6%) asked their male patients (p=0.02).

Table 2. Sexual abuse evaluation

	Female patient	**Male patient**
Do you ask each patient about history of SA before you perform physical examination?	n [a] (%) n=164	n [a] (%) n=160
Yes	8 (4.9)	1 (0.6)
Do you ask each patient, referred for colonoscopy, about SA?	n=160	n=160
Yes	4 (2.5)	1 (0.6)
Do you ask about SA when a patient has specific gastrointestinal complaints?	n=161	n=160
Yes	115 (71.4)	50 (31.3)
Which complaints?[b]	n=160	n=159
Constipation	71 (44.4)	25 (15.7)
Chronic abdominal pain	79 (49.4)	24 (15.7)
Fissura ani	31 (19.4)	13 (19.4)
Dyssynergic defecation	62 (38.8)	2 (1.3)
Fecal incontinence	37 (21.1)	34 (21.4)

[a] Totals differ because the questions were not answered consistently, some were skipped or forgotten

About 7.5% considered asking about SA in female patients to be unimportant. There was a significant difference with male patients: 29.9% of the respondents found it unimportant to ask male patient about SA (p<0.01). Female physicians stated significantly less often that “it is not important to ask male patients about sexual abuse” (19.6%) versus 36% of the male doctors (p=0.03). For more comparisons between male and female physicians, see Table 3.

Table 3. Comparison between answers and physicians' gender and function.

n (%)		♂ doctor 102(64.2)	♀ doctor 57 (35.8)	*p*-value	Resident 48 (30.2)	GE 111 (69.8)	*p*-value
Do you ask each patient about history of SA before you perform physical examination?	♀ patient	2 (2.0)	6 (10.5)	0.018*	4 (8.3)	4 (3.6)	ns
	♂ patient	1 (0.9)	0	ns	1 (2.0)	0	ns
Do you ask about sexual abuse when a patient presents with specific GI complaints?	♀ patient	71 (69.6)	42 (73.3)	ns	38 (79.2)	75 (67.6)	ns
	♂ patient	31 (30.0)	19 (33.3)	ns	21 (43.8)	29 (26.1)	0.04*
Do you think is it important to have extra training on *female* sexuality?		♂ doctor	♀ doctor	*p*-value	Resident	GE	*p*-value
Not		4 (3.9)	0	ns	1 (2.1)	3 (2.7)	ns
Moderately		20 (19.6)	9 (16.1)	ns	4 (8.3)	25 (22.7)	0.05
Rather		63 (61.8)	33 (58.1)	ns	35(72.9)	61 (55.5)	0.06
very		14 (13.7)	13 (23.2)	ns	7 (14.5)	20 (18.9)	ns
Do you think is it important to have extra training on *male* sexuality?		♂ doctor	♀ doctor	*p*-value	Resident	GE	*p*-value
Not		9 (8.8)	2 (3.5)	ns	1 (2.1)	10 (9.0)	ns
Moderately		41 (40.2)	14 (24.6)	ns	15 (31.3)	40 (36.0)	ns
Rather		42 (41.2)	31 (54.4)	ns	27 (56.3)	46 (41.4)	ns
very		10 (9.8)	10 (17.5)	ns	5 (10.4)	27 (13.5)	ns

GE, gastroenterologist; *ns,* not significant

Overall, 26.4% of the gastroenterologists found it difficult to ask about SA in female patients and 22.9% in male patients. Thirteen percent did not know what to do if a female patient confirmed a history of SA, compared to 12.1% in males. Almost 10% percent of the respondents reported that “lack of time” represented a constraint when inquiring about SA.

No significant differences where found between residents and gastroenterologists regarding questions about SA or the barriers keeping them from asking about SA.

To the question: “Do you think it is important to pay more attention to sexuality related to abdominal complaints during your training?” 61.3% said this was “rather important” when it concerned female patients, 46.3% found it “rather important” when it concerned male patients. The mean estimated prevalence rates of patients with a history of sexual in the respondents’ own patient populations were 10.6% (SD± 8.65) for female and 3.8% (SD± 3.78) for male patients. Using linear regression age or gender of the gastroenterologists where not of influence on the mean prevalence rates of sexual abuse estimated to exist in their patient populations.

DISCUSSION

This study was performed to evaluate gastroenterologists daily practice patterns and views regarding the care for patients with a history of SA. To our knowledge, this is the first report on this topic. Seventy percent of the respondents asked females presenting with complaints, such as chronic abdominal pain, constipation and fecal incontinence, about SA. An implicit assumption of our survey is that Dutch gastroenterologists are aware of the value that inquiring about SA has in assessing females with GI-complaints. However, they seem to be significantly less convinced when it concerns men. Thirty percent asked of the gastroenterologists asked their male patients about SA when presenting with specific complaints, such as fecal incontinence and anal fissures. In contrast, 71% did so in female patients with these complaints.

We assumed that asking about SA beforehand of performing colonoscopy would be evident in gastroenterology. Nevertheless, just 2.5% of the respondents asked their female patients about SA and only 0.6% asked males before performing this invasive transanal procedure. This in contrast to Dutch urologist of whom nearly 70% said to ask about SA in female patients before performing physical examination [12]. The results of this survey concerning gastroenterologists' inquiry about SA before performing physical examination or colonoscopy are therefore disappointing.

Invasive procedures in the pelvic region can cause flashbacks, severe emotional distress and dissociation in patients with a history of abuse [13-16]. When this takes place, the patient surrenders to her or his memories and the emotional contact between the examiner and the patient will be disturbed. This will affect the patient-physician relation since communication and interaction during physical examination has been shown to be most important factors for patients' perception of the examination [17;18].

Time constraints were cited by ten percent of the gastroenterologists as an important reason not to inquire about SA. In a survey among Canadian gastroenterologists, this was mentioned a constraint by 25% as well [19].

The argument that asking a male patient about SA is not of value in the gastroenterology practice was mentioned by a third of the responding gastroenterologists. Concerning female patients, this argument was used significantly less often (7.5%). This response might be due to the lack of literature regarding the effects of SA in males. The benefits of the disclosure and knowledge about SA history in male patients have not been fully studied; however, the physical and mental responses to SA in males are very likely to be similar or comparable to those in females. The other constraints the gastroenterologists reported which are keeping them from

asking about SA were personal discomfort with discussing this topic and a lack of resources for treatment or referral. These barriers can and should be resolved with extra training, since physicians cannot be excused of lack of involvement due to personal discomfort or a lack of knowledge on a subject this relevant in their daily practice. Furthermore, gastroenterologists underestimated the prevalence of SA in their populations. Several studies evaluated the prevalence of SA in gastrointestinal disease and these prevalence rates ranged from 6% in men and 19% in women in cross-sectional cohorts up to 25% in men and 56% in women in highly selected populations with (functional) gastrointestinal disease [7-11;20]. Nevertheless, despite the underestimation of the prevalence of SA in their practices, most gastroenterologists did consider SA an important topic and would like to receive more education and training on the subject. This is even more relevant because patients seldom disclose SA spontaneously. A cross-sectional, multi-centre study in Scandinavian gynecological patients showed that 96-98% of women with a SA experience did not disclosed this during their latest visit to the clinic; 1-2% stated that their doctor already knew about it and 0.6 -1.1% had spontaneously discussed the SA with their gynecologist during their last visit [21].

Present study has several imitations. A non-validated questionnaire was used in which cultural components were not taken into account. And, as in all questionnaire studies, there may be a bias in reporting. Respondents may have overestimated their own habits or may have responded in a more socially responsible manner. The survey and data analysis were performed totally anonymous to reduce this bias.

Furthermore, non-respondents may have different beliefs, attitudes and practice patterns than respondents which may have caused selection bias. The demographic data of the respondents, however, suggest a representative group and a response rate of 60% is rather high for a postal questionnaire [22].

Finally, for the clinical practice the following question remains: how *should* gastroenterologists deal with patients with a history of SA? First of all, it should not be perceived as an obligation for gastroenterologists to ask all their patients about SA. Notwithstanding, the gastroenterologist needs to decide when the effects of an abuse history might interfere with adequate care. More training seems needed as well as easy to use-guidelines to providing grip for gastroenterologists when and how to consider a history of SA and in which situations a question about SA should always be posed. Secondly, one may ask each new patient to fill out a questionnaire including a question about SA [23], so SA can be detected in an early stage. In that respect, our self-administered questionnaire for pelvic-floor complaints has proved to be a reliable instrument [24].

In addition, training sessions could provide the skills necessary to inquire about SA in an appropriate and supportive manner. Furthermore, gastroenterologists should be well informed about treatment options for patients with sexual traumata and the different co-morbid conditions that may exist due to the SA. In general, patients with a neglected SA history need to be referred for further psychological treatment.

In future research, SA patients' perceptions of their treatment in the gastroenterology practice and their opinion about phycians'questions concerning delicate matters such as sexuality and sexual abuse should be conducted.

For now it can be concluded that Dutch gastroenterologists underestimate the problem SA in their practices, and do not inquire about it routinely. However, patients with a history of SA are prevalent in every patient population and especially in those with GI complaints. Education is necessary generate more attention for the importance of SA in the gastroenterology practice. Training is needed to reduce the barriers which are withholding gastroenterologists from asking about SA and to acquire the skills and knowledge necessary to treat patients with a history of SA.

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8 THE IMPACT OF SEXUAL ABUSE IN PATIENTS UNDERGOING COLONOSCOPY

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INTRODUCTION

The prevalence of sexual abuse (SA) in modern western societies is estimated to be 12% to 25% for females and 8% to 10% for males [1-3]. SA has been linked to abdominal pain and functional gastrointestinal disorders [4;5], more healthcare utilization and exacerbated (pelvic) pain perception [6-8]. In community samples, patients with an abuse history have a 1.5 to 2 times increased risk of reporting gastrointestinal (GI) complaints compared to non-abused individuals [9;10]. Furthermore, SA has been linked to discomfort and traumatic reactions during pelvic examinations [11;12] and has been reported to make patients feel vulnerable when undergoing invasive endoscopic procedures [13-15]. Disclosure of abuse in the gastroenterological setting may allow for earlier consultation with mental health professionals [6].

In a recent survey among gastroenterologists, the majority stated to be aware of the importance of inquiring about SA. Nevertheless many indicated a lack of training in dealing with abuse-related problems [16]. Patients' beliefs regarding routine direct inquiry about SA in gastroenterology practice have never been assessed and it is unknown whether colonoscopy is experienced differently by patients with a history of SA. Hypothesizing attention for SA in gastroenterology practice is limited; we were interested in patients' beliefs and attitudes regarding care for SA. We aimed to assess if patients with a SA history experience colonoscopic procedures differently and to identify whether care around colonoscopy needs adjustment for patients with SA experience, exploring targets for the improvement of patient-centered care around colonoscopic procedures.

METHODS

Ethics Statement

Written informed consent was obtained from all participants. The study was approved by the Medical Ethical Testing Committee of Southwest Holland.

Patients and procedure

All patients ≥ 18 years old who had undergone colonoscopy in the selected timeframe were included. Patients were excluded if the procedure was performed under general anesthesia. Patients from the LUMC with inflammatory bowel disease (IBD) were excluded because participation in a study addressing sexuality in IBD was offered to those patients in the same period. IBD-patients from the HAGA teaching hospital were not excluded.
Within 11 months after the colonoscopy took place, the selected patients (n=2348) received an introduction letter containing information about the study, a consent form and a freepost return envelope. Those returning the consent form with an affirmative answer received the questionnaire (in Dutch or English) within one month. The consent form contained an opt-out section in which reason for opting out was not asked for, as required by the medical ethical testing committee (MEC). One reminder letter was sent to non-respondents and one reminder letter was sent to respondents that agreed to participate but did not return a (completed) questionnaire.

Colonoscopy

Colonoscopies were performed according to the routine protocols of both centers. Each endoscopy team consisted of an endoscopist (gastroenterologist, resident in gastroenterology or specialized nurse endoscopist) and one or more specialized endoscopy nurses. Conscious sedation with intravenous midazolam and fentanyl was used in all patients undergoing colonoscopy. Rarely, flumazenil or naloxone were given to counteract the sedative action of midazolam or fentanyl, and in some patients butylscopalamine was given, based upon the judgment of the performing endoscopist.

Questionnaire

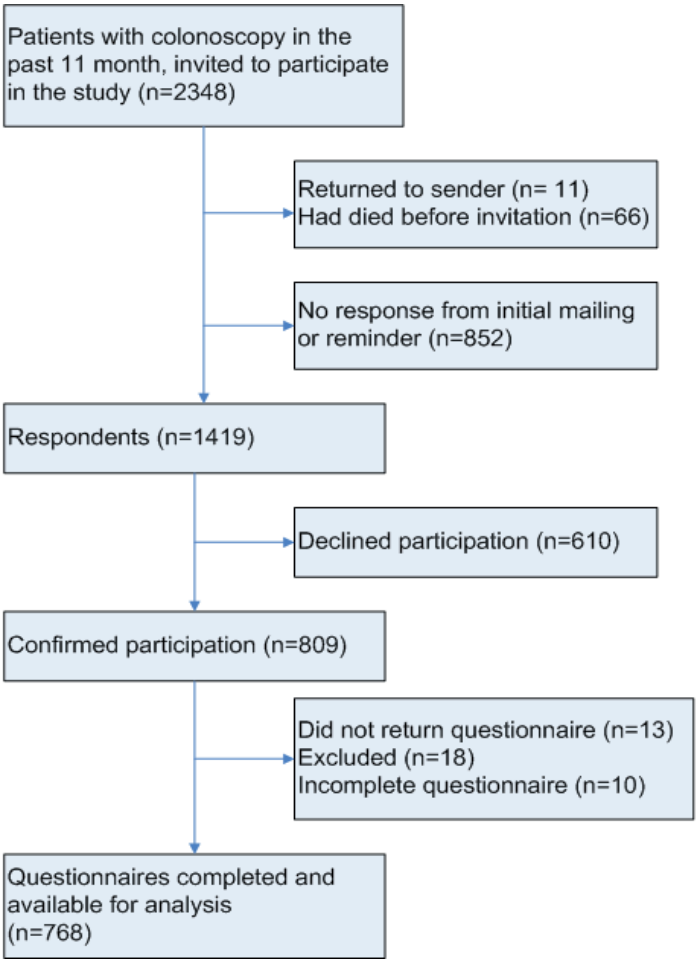
The questionnaire (appendix) was developed by the researchers. It was designed for both men and women. An expert panel with experience with the development of questionnaires checked its comprehensiveness and quality. A pilot study among 5 gastroenterologists, 3 residents in gastroenterology and 10 patients visiting one of the participating gastroenterology clinics was performed to assess the suitability, validity and comprehensiveness of the questionnaire.

The questionnaire included questions about sociodemographic data (age, gender, country of origin, way of referral and indication for colonoscopy), sexual function, micturition, SA history and the patient experience at colonoscopy. Furthermore, questions were included regarding patients' views on conversations about sexual function and SA with the gastroenterologist/physician. Several questions used were from The Pelvic Floor Inventories Leiden (PeLFIs), which is a validated tool to assess complaints of the pelvic floor and about SA [17;18]. For respondents that confirmed a history of SA, additional questions were posed regarding desired forms of healthcare. No distinction was made between adult and childhood SA. Questionnaires were processed by independent researchers (M.P.N. and L. de V.), and could not be traced back to patient records. Data were strictly anonymous as prerequisite by the MEC. In order to process the data correctly the questionnaires were numbered and the corresponding address data were saved and handled separately. Because answering the questionnaire was potentially distressing for subjects, an independent sexologist/psychologist was available in case support was needed.

Statistical Analysis

Results were summarized by reporting responses on all surveyed items. Frequencies of demographic characteristics and answers to the questions were all presented. Numerical demographic values were summarized as mean (SD). Differences in numerical data between demographic groups were analyzed with independent sample t-tests. χ^2 Tests were used to assess association between categorical respondents' characteristics and categorical responses. Linear regression analysis was used to identify predictors of distress caused by colonoscopy and to correct for these factors. Statistical significance was defined as $p<0.05$, all tests were two-sided. Confidence intervals were defined as 95%. Analyses were conducted using SPSS release 20 (SPSS Inc., Chicago, IL, USA), GraphPath Prism 5 was used to design the figures.

Figure 1. Study flow diagram



RESULTS

Subjects

From the 2348 patients who received the information letter and consent form, 1419 forms were returned (60.4%). Of these respondents, 610 (43.1%) declined participation and 809 (57.0%) were willing to participate. Of the 809 patients that received the questionnaire, 13 did not return it and 10 were incomplete for more than 30% and therefore excluded. One respondent was excluded because she indicated not to remember anything about the colonoscopy. Seventeen respondents were excluded because they underwent sigmoidoscopy and should not have been invited in the first place. The above led to a total of 768 questionnaires available for analysis (Figure 1). Mean time span between colonoscopy and return of the competed questionnaires was 274.0 days (±70.3).

Mean age of participants was 61.2 years (±14.5 years), female participants were younger than male participants with a mean age of 59.9 (± 15.3 years) compared to 62.8 (±13.2) years respectively (p=0.02). There was no difference in age between patients that declined participation (mean age 61.4 ±15.9) and participants. Non-respondents were younger than participants with a mean age of 53.8 years (±16.4) (p<0.001). Of the included patients, 43.9% were male. The majority of respondents were born in the Netherlands (88.4%, n=674), 3.4% was from an other western country (n=26) and 8.2% from a non-western country (including Turkey, Morocco, Surinam, and the Dutch Antilles, n=63) (Table 1). From the respondents included for analysis, 81.4% underwent colonoscopy in the general teaching hospital and 18.4% in the tertiary referral center (LUMC).

Indications for colonoscopy were listed in Table 1. The most common indications were abdominal pain (not specified) (30.4%) and rectal blood loss (28.4%).

Almost three quarter of respondents indicated one complaint to be the reason for colonoscopy (73.3%; n=563), 20.2% (n=155) indicated two complaints, 5.2% (n=40) three and 1.0% (n=8) indicated four different reasons for the colonoscopy.

The majority was referred for colonoscopy by the general practitioner (48.8%). Almost a third (27.3%) was indicated for colonoscopy by the gastroenterologist him/herself and 11.1% by a physician in internal medicine (otherwise), 3.7% was referred by a surgeon.

Voiding complaints were present in 33.1% of respondents (n=254): 52.5% of them mentioned frequency, 27.5% urgency and 24.3% urinary incontinence.

A quarter of the patients (25.7%) reported sexual dysfunction (n=197), this was more prevalent in male (34.5%) than in female patients (18.4%).

Table 1. Characteristics of study sample

Gender n(%)	**Female 429 (56.1)** [a]	**Male 336 (43.9)** [a]	**Difference *p*-value**
Age, mean (SD), years	59.9 (15.3)	62.8(13.2)	0.02
Age, ≤39 years, n(%)	41 (9.6)	25 (7.4)	0.08
Age, 40-49 years, n(%)	63 (14.7)	25 (7.4)	0.19
Age, 50-59 years, n(%)	84 (19.6)	60 (17.9)	0.07
Age, 60-69 years,, n(%)	127 (29.6)	124 (36.9)	0.04
Age, 70-79 years, n(%)	74 (17.2)	72 (21.4)	0.34
Age, 80-89 years, n(%)	38 (8.9)	29 (8.6)	0.004
Age ≥90 years, n(%)	2 (0.5)	1 (0.3)	n/a
Country of origin n (%)	**Female n=428** [a]	**Male n=335** [a]	**Difference *p*-value**
The Netherlands	378 (88.3)	296 (88.4)	0.98
Other West-European country	13 (3.0)	9 (2.7)	0.78
Morocco	2 (0.5)	2 (0.6)	0.80
Turkey	3 (0.7)	4 (1.2)	0.48
Surinam	12 (2.8)	10 (3.0)	0.89
Dutch Antilles	3 (0.7)	4 (1.2)	0.48
Elsewhere western	2 (0.5)	2 (0.6)	0.80
Elsewhere non-western	15 (3.5)	8 (2.4)	0.38
Reason for colonoscopy[b] **n (%)**	**Female n=428** [b]	**Male n=336** [b]	**Difference *p*-value**
Abdominal pain	150 (35.0)	81 (24.1)	0.001
Rectal blood loss	110 (25.6)	108 (32.1)	0.05
Surveillance (hereditary) colon carcinoma/polyposis/polyps[c]	111 (25.9)	97 (28.9)	0.37
Changes defecation pattern	104 (24.3)	68 (20.2)	0.18
Chronic diarrhea, constipation or mucus in stool	37 (8.6)	15 (4.5)	0.02
Inflammatory Bowel Disease	18 (4.2)	22 (6.5)	0.15
Pain anal region	18 (4.2)	20 (6.0)	0.27
Anemia	9 (2.1)	14 (4.2)	0.10
Other[d]	38 (8.9)	31 (9.2)	0.51

n/a= not applicable.

a. Based on data from n=768 respondents of which 429 women and 336 men (due to missing values), columns do not necessarily add to 768

b. Multiple answers were possible

c. Significantly more patients with the indication 'surveillance for colonoscopy for hereditary colon carcinoma/ polyposis/polyps' were seen in the tertiary center (41.3%) compared to the general teaching hospital (23.6%; p<0.001).

d. Under which: loss of weight, diarrhea, eating disorders etc.

Sexual abuse

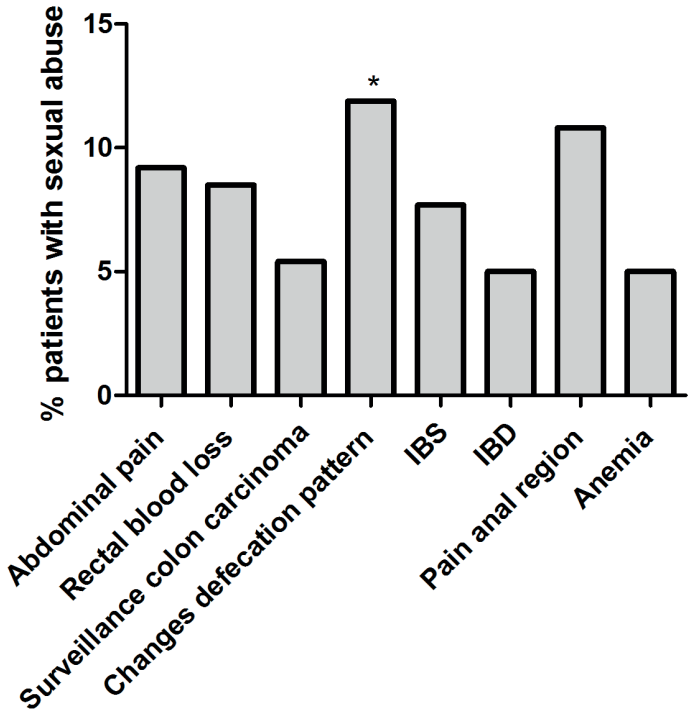
SA was reported by 53 (7.0%) of the 752 respondents that answered the question 'have you ever been a victim of sexual abuse?' Sexual abuse occurred in 40 (9.5%) of females (n=421) and in 13 (3.9%) of males (n=331). Patients born in a non-western country reported more SA compared to patients born in the Netherlands or another western country (14.9% versus 6.3%; p=0.008). More details about the distribution of sexual abuse can be found in Table 2 and Figure 2.

Table 2. Distribution of sexual abuse prevalence

Patients Characteristics	**Female n(%)**	**Male n(%)**
Total sexual abuse: 53 (7.0)	**40 (9.5)**	**13 (3.9)**
Age		
≤39 years	9 (22.5)	1 (1.5)
40-49 years	9 (22.5)	2 (2.3)
50-59 years	7 (17.5)	0
60-69 years	9 (22.5)	4 (1.6)
70-79 years	3 (7.5)	5 (3.5)
80-89 years	3 (7.5)	1 (1.6)
Age ≥90 years	0	0
Country of origin	**Female n(%)[a]**	**Male n(%)[a]**
The Netherlands	32 (80)	10 (77.0)
Other West-European country	1 (2.5)	0
Turkey	0	0
Morocco	0	0
Surinam	2 (5.0)	0
Dutch Antilles	0	2 (15.4)
Elsewhere western	1 (2.5)	0
Elsewhere non-western[c]	4 (10.0)	1 (7.7)
Total Western country	33 (82.5)	10 (76.9)
Total Non-Western country[d]	7 (17.5)	3 (23.1)

Based on data from n=752 respondents of which 421 women and 331 men (due to missing values)
Percentage of the total respondents with sexual abuse, by gender
Total exceeds 100% because multiple answers where possible
Namely: Brazil, Colombia, Egypt (male victim), Indonesia, Iran and Russia.
Included: Morocco, Surinam, Dutch Antilles, elsewhere non-western

Figure 2. Indication for colonoscopy in patients with sexual abuse



* p= 0.006
Based on results for 53 patients, multiple answers were possible

Thirteen of 722 respondents indicated that a physician inquired about SA (1.8%), six were asked by the GP (0.8%) and three by the gastroenterologist (0.4%). Of the patients that reported SA (n=53), 24.5% had professional help to deal with the experience and 64.1% said to have found a way to cope with it. More than half of patients with SA believed the gastroenterologist should ask about it (53.8%). Of them (n=28), 35.7% said they would benefit from advice about dealing with the past, this option was marked significantly more often in male (80.0%) than in female patients (26.0%; p=0.023). To the question 'Do you think gastroenterologists need to have more training on the subject sexual health?' 46.7% said 'yes', 25.1% said 'no' and the remaining 21.6% answered with 'I do not know'. Of patients with SA, 24 (45.3%) indicated gastroenterologists should not ask about SA (n=24). One of the most common reasons for this answer was: 'I am unable to talk about it'. Female patients gave this answer significantly more often than male patients (29.2% vs. 0% respectively, p=0.05), see Table 3.

Table 3. Should gastroenterologists ask about sexual abuse? Answered by patients with a sexual abuse history

'No, the GE should not ask about SA' n(%)	24 (45.3) [a]
If not, what is the reason you do not want to talk about it? [b]	
I am ashamed of it	6 (25.0)
I do not believe the GE can help me with this problem	7 (29.1)
I am not able to talk about it	7 (29.1)
I am afraid to tell	5 (20.8)
It is not important for me anymore	7 (29.1)
It is too intimate to discuss	6 (25.0)
'Yes, the GE should ask about SA' n(%)	28 (52.8) [a]
If yes, 'what should the GE do after you told him about the SA?' [b]	
Just listen to me	7 (25.0)
Give me some advise about dealing with it	10 (35.7)
Refer me to psychologist	6 (21.4)
Refer me to a sexologist	6 (21.4)
Refer me to a pelvic floor physiotherapist	3 (10.7)
Refrain from performing a colonoscopy	2 (7.1)
Give me some information to read about it	10 (35.7)

GE= gastroenterologist, SA= sexual abuse

[a]. Columns do not add to 53 because one patient with SA did not answer these questions

[b]. Multiple answers were possible

Patients without SA experience (n=715) were asked to answer the question: 'Do you think gastroenterologists should ask their patients about sexual abuse?' 36% said 'Yes' and 64% said 'No'. However, of all respondents (n=768), only 23.7% believed a question about SA in an intake questionnaire would be peculiar (n=182). No significant difference was seen between patients with and without a SA history concerning this question (22.4% resp. 24.7%; p=0.723). Of the respondents stating that a question about SA in an intake questionnaire would be peculiar, the reason for this answer was mostly because they did not see the relationship (56.0%) or the relevance (31.1%) of SA in the context. No significant differences were seen between male and female respondents concerning their answers to the above questions.

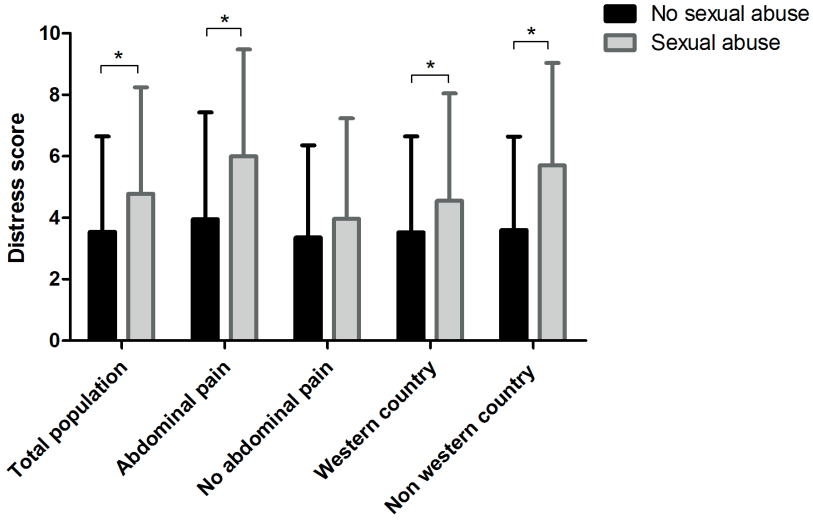
Victims of SA noted significantly more sexual dysfunction (64.0%) compared to those without SA (24.4%; p<0.001), more micturition complaints (58.8% versus 30.9%; p <0.001) and a combination of both complaints (37.3 versus 11.4%; p<0.001).

Significantly more patients with SA history indicated a change in bowel habit as the reason for colonoscopy (p=0.006) (Figure 2). Abdominal pain was significantly correlated to sexual abuse in men (r=0.572, p=0.031) and to a lesser extent in women (r=0.291, p=0.052). More than one GI-complaint was correlated with SA (r=0.1, p=0.006), as well as age under 60 years (r=-0.108, p=0,003).

Discomfort during colonoscopy

Patients were asked to rate discomfort experienced during their last colonoscopy on a 10-point Likert scale in which 0 meant 'no discomfort' and 10 meant 'very much discomfort'. Patients with a sexual abuse history rated more discomfort (mean score 4.78 ±3.47) compared to non-abused subjects (mean score 3.54 ±3.11; p=0.007) (Figure 3).
Using linear regression, we controlled for age, gender, ethnicity, indication(s) for colonoscopy, and time between the colonoscopy and filling in the questionnaire. Several factors were found to influence the distress. Age and abdominal pain were influencing factors (β=-0.019 (SE=0.008); p=0.02 respectively β=0.354 (SE=0.156); p=0.024) as well as the number of complaints presented (β=0.738 (SE=0.276); p=0.008) and country of origin (Table 4). After controlling for these factor, sexual abuse was still a significant predictor for distress during colonoscopy (β=0.991 (SE=0.466); p=0.034). Time between participation in the study and colonoscopy was not of influence (β=<0.001 (SE=0.022); p=0.914), see Table 4.

Figure 3. Distress during colonoscopy in patient with and without sexual abuse



*=significant difference

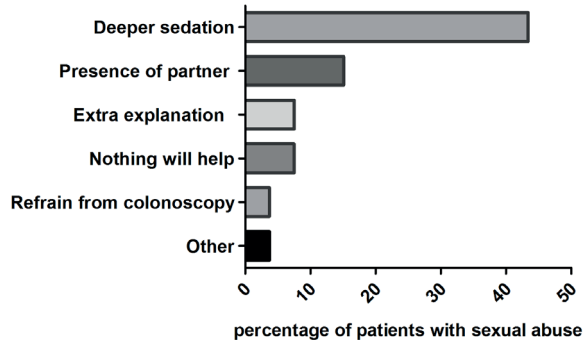
Table 4. Distress experienced during colonoscopy

	Sexual abuse		No sexual abuse		
	Mean (±SD)	Total (n)	Mean (±SD)	Total (n)	p-value
Total	4.8(±3.47)	50[a]	3.5(±3.11)	684	0.007
Male	5.0(±3.82)	11	3.2(±2.93)	311	0.052
Female	4.7(±3.47)	39	3.8(±3.23)	371	0.102
Age≤60 years	4.8(±3.55)	32	3.8(±3.06)	288	0.082
Age> 60years	4.7(±3.41)	18	3.4(±3.13)	396	0.071
With abdominal pain	6.0(±3.48)	20	4.0(±3.48)	204	0.009
No abdominal pain	4.0(±3.26)	30	3.4(±2.99)	480	0.289
Western country	4.6(±3.50)	40	3.5 (±3.12)	631	0.048
Non-western country	5.7(±3.34)	10	3.6(±3.03)	53	0.053
Sexual complaints	5.3(±3.38)	31	3.7(±3.18)	153	0.011

Of the respondents with SA three did not fill in the distress-score
Based on answers of 734 respondents, 34 respondents did not indicate distress during colonoscopy.

Patients with SA were asked to indicate which changes around and during colonoscopy would have made the procedure easier for them. Of 51 patients with a sexual abuse history that answered this question, a quarter (25.4%, n=13) said the procedure went well, however 88.3% (n=45) identified one or multiple options that would make the endoscopic procedure less uncomfortable, these options can be found in Figure 4.

Figure 4. Possible options to diminish distress during and around colonoscopy, answers of patients with a history of sexual abuse



Answers to the multiple choice/open question: "The colonoscopy experience would have been easier/more comfortable for me if…"
Based on answers of 51 patients with sexual abuse experience.
In the free space provided, one patient said: only start about sexual abuse if it has to do with the complaints, and one said 'not declare you as depressed'.

DISCUSSION

This cohort showed a SA prevalence of 3.9% in men and 9.5% in women. Many of the patients which experienced SA were born in a non-western country. Importantly, a SA history was associated with more discomfort during the colonoscopic procedure. Abdominal pain, multiple gastrointestinal complaints at presentation for colonoscopy and sexual dysfunction were associated with SA and more discomfort during the procedure. Most sexually abused patients indicated that gastroenterologists should ask about it before performing colonoscopy. Several minor adjustments where indicated as options to diminish distress during and beforehand of the procedure.

The prevalence rates of SA in our population were comparable with those obtained in a survey among patients visiting a general urology practice in the Netherlands [19]. In studies assessing SA in selected samples of patients with (functional) gastrointestinal illness from referral gastroenterology clinics, up to 44% of women and 11% of men reported sexual abuse [20-23]. However, when the same questions about sexual abuse were posed in community samples, the reported prevalence rates of SA with physical contact (touching and penetration) were comparable to the rates found in present study [24;25]. Because we were restricted by the MEC the specific form of abuse experience could not be asked about, therefore the demarcated question: 'Have you ever been a victim of sexual abuse?' was used. Because this question implicates sexual abuse wíth contact, patients with less explicit forms of abuse such as exposure to exhibitionists or (verbal) sexual intimidation will not have felt addressed. This will have led to an underestimation of sexual abuse in our sample, together with the effects of selection and non response bias.

To minimize potential biases we provided detailed assurances of confidentiality, pilot tested and refined the instrument and used balanced keying. Still, traumatized patients may have elected not to participate in the study to avoid reliving painful memories and non-respondents may have had no affinity with the subject or may have considered their participation irrelevant for the study. Some patients with SA may have refused colonoscopy and therefore did not receive the invitation to participate in the study. The initial response rate was no higher than 32.7% (768/2348), but in the first mailing (2348 patients) only the letter with study information was sent out. Patients were requested to send back the consent form in order to obtain a questionnaire or opt out of the study. This step must therefore be regarded as study recruitment; a part of this initial sample was not eligible due to changes in address, illness, memory loss or death. Therefore the eligible response rate of 54.1% (768/1419 respondents) should be used and considered representative [26].

An obvious limitation regarding the interpretation of discomfort experienced during colonoscopy is the absence of control for confounding variables such as length of the

procedure and the amount of additional sedation used. Due to restrictions imposed by the MEC, we could not link questionnaires with patient files and therefore were unable to obtain these data.

Furthermore, recall bias may have occurred. The validity of retrospective reports by adults of their own adverse experiences in childhood has been extensively studied; so called infantile amnesia, the effect of mood and false or recovered memory may all influence retrospective recall of traumatic experiences [27;28]. In response, methods for addressing the issues of reporting unreliability and recall bias in retrospective reports of child sexual abuse were explored. The influence of recall bias was found to be small, accounting for less than 1% of the reporting variance [29]. Moreover, longitudinal data have to rely on retrospective recall for measures of experiences since the last interview as well, which will often involve reporting over a period of several years. And because longitudinal data are very expensive to collect, the discussion about methodology ended with the conclusion that retrospective reports about childhood abuse have a worthwhile place in research until better methods are found [30].

In spite of these limitations, this was the first study obtaining an inventory of SA in colonoscopy patients, identifying their needs regarding the colonoscopic procedure and comparing experienced discomfort during colonoscopy between patients with and without SA. Our results were consistent with prior research showing that female patients with a history of SA reported more discomfort and anxiety during gynecological examination [12;31-33]. And confirmed the link between sexual abuse, abdominal pain and multiple GI-complaints already found in the early nineties by Drossman et al. which has been verified in many studies afterwards [6;34;35]. The reason a history of SA results in more pain during pelvic examinations may be explained by a variety of neural and humoral pathways that link brain, pelvic floor and gut [36]. Alterations in psychopathological and cortico-limbic pain modulatory systems have been described as mediating mechanisms for the association between SA and gastrointestinal disorders [7]. In addition, anxiety and trauma, especially SA, are significantly associated with dysfunction of the pelvic floor [37], leading to FGID [37;38], dyspareunia [39], dysfunctional voiding [40] and chronic pelvic pain [41]. In patients with IBS and a history of SA significantly more pain was reported to aversive rectal distention (similar to colonoscopy) compared with patients with IBS or abuse alone. Patients with IBS and SA reported higher pain scores and greater anterior mid cingulate activation with rectal distention than patients with either IBS or SA [42]. It is therefore remarkable that, however significant, the differences in mean distress scores found between patients with and without SA where rather mild (3.5 versus 4.8). This could be due to the fact that anxiety, depression and post-traumatic stress disorders play a major part in both perception of pain and symptoms as well [43]. A recent study using in-person interviews among gastroenterologists and endoscopy nurses to obtain information regarding development of psychological and/or physical symptoms after gastrointestinal endoscopy,

fourteen of the 29 gastroenterologists (48%, 95% CI = 30.7–66.2%) reported encountering patients with new onset psychological symptoms lasting for more than a month after upper endoscopy or colonoscopy. A history of psychiatric illness was noted in 11 of 19 patients (58%) and a history of sexual abuse was noted in five of 19 patients (26%). Physicians reported that the endoscopic procedure was longer or more difficult than usual in six of 19 patients and that four of 19 patients had requested to prematurely terminate the procedure [44]. Our study specifically focused on SA in relation to distress experienced during colonoscopy. Patients with psychological problems, but without a SA history may have caused the diluted difference in discomfort between patients with and without SA.

Given the mounting evidence of the long-term detrimental effects of SA, especially as regards to gastrointestinal complaints [37], routine inquiry about SA in the gastroenterology practice might be expected. However, only 1.8% of the responding patients reported their gastroenterologist asked about 'negative sexual experiences' or abuse during consultation. Accordingly, a recent study among gastroenterologists showed that 2.5% of them asked female patients and 0.6% asked male patients about SA before performing colonoscopy. However, the majority of gastroenterologists' rated it as important to pay more attention to SA during their training [16].

From a patients' perspective, in the present study we found that three-quarters of the patients would not find it peculiar if a question about SA would be asked in an intake questionnaire beforehand of the colonoscopy. On the contrary, a third of respondents without SA believed the gastroenterologist should ask about it, and of the patients with SA experience, more than half believed so. More inquiry about SA may result in a better understanding between physician and patient, which is known to be the most important aspect of the pelvic examination experience for women [45]. If the endoscopist is informed about patients' traumas, compassionate and individualized care around and during the endoscopic procedure might diminish its impact. This study indicated that offering options such as use of a chaperone, deeper sedation and/or clear communication about the steps taken during the procedure may decrease discomfort, helping the patients to undergo the examination. Offering extra attention to patients with a history of sexual abuse may limit avoidance of transanal endoscopic procedures and may improve cooperation during procedures and therapy.

In conclusion, the results of this study have several implications for clinical practice. At least a tenth of women and up to four percent of men undergoing colonoscopy indicated experiencing SA. Colonoscopy was shown to be more distressing for patients with a history of SA. Consequently, especially in the gastroenterology practice this subject deserves attention. Discussing SA in medical practice seems difficult for both physician and patient. This study indicates that the use of a standardized intake questionnaire including questions about SA could be a solution to this problem.

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Part III

SUMMARIES, DISCUSSION AND RECOMMENDATIONS

9 SUMMARY

PART I CARDIOLOGY & CARE FOR SEXUAL HEALTH

The cardiologist

Chapter 2

Discussing sexual function in the cardiology practice

Background: In patients with cardiovascular disease, sexual dysfunction is frequently encountered. Erectile dysfunction shares the same modifiable risk factors as coronary artery disease and the fear of triggering cardiovascular events can create stress and anxiety impacting the sexual lives of patients and their partners. To optimize health care, knowledge of cardiologists' attitude and practice patterns regarding the discussion about sexual function is essential.

Methods: A 31-itemed anonymous questionnaire was mailed to 980 members of the Netherlands Society of Cardiology (cardiologists and residents in cardiology training). The questionnaire addressed awareness, knowledge and practice patterns about sexual dysfunction in cardiac patients.

Results: 53.9% of the cardiologists responded. Sixteen percent stated to discuss sexual function regularly. In the past year, an estimated mean of 2% of patients was referred for help with a sexual problem. The majority (70%) of cardiologists advised patients never or seldom about resuming sexual activity after myocardial infarction. PDE5-inhibitor use was assessed by 19.4% of the cardiologists. Important reasons for not discussing sexual function were lack of initiative of the patient (54%), time constraints (43%) and lack of training on dealing with SD (35%). 63% of the cardiologists stated they would be helped with a directory of sexual health care professionals where they can refer patients to.

Conclusion: Sexuality is not routinely discussed in the cardiology practice. Explanations for the lack of attention towards sexual matters are ambiguities about responsibility and a lack of time, training and experience regarding the communication and treatment of sexual dysfunction.

Chapter 3

What do cardiologists know about the effects of cardiovascular drugs on sexual function?

Background: Several cardiovascular agents, such as diuretics and β-blockers, can negatively affect sexual function, leading to noncompliance with therapy. Others such as angiotensin II receptor blockers (ARBs) can improve patients' sexual function (SF).

For this chapter we aimed to gain insight into cardiologists' knowledge about the effects of cardiovascular drugs on SF and whether they take this knowledge into account when prescribing drugs.

Methods: An anonymous questionnaire was mailed to 980 members of the Netherlands Society of Cardiologists (cardiologists and residents in training).
Results: Almost 54% of Dutch cardiologists responded; 414 questionnaires were analysed. 45% of cardiologists was aware diuretics can negatively affect sexual function, 93.1% knew about the negative effects β-blockers can have, but only 9.2% was aware ARBs can have positive effects on sexual health. Almost half of respondents (48.2%) stated to change medication regularly in attempt to improve sexual function. Experienced cardiologists said to do this significantly more often than less experienced ones.
Conclusion: Cardiologists' knowledge about the effects of cardiovascular drugs on sexual health appears to be insufficient. Sexual dysfunction is not routinely taken into account when cardiologists prescribe drugs.

Chapter 4

A review of the positive and negative effects of cardiovascular drugs on sexual function: A proposed table for use in clinical practice

Several antihypertensive drugs, such as diuretics and β-blockers, can negatively affect sexual function, leading to diminished quality of life and often to noncompliance with the therapy. Other drug classes, however, such as angiotensin II receptor blockers (ARBs) are able to improve patients' sexual function. Sufficient knowledge about effects of these widely used antihypertensive drugs will make it possible for cardiologists and general practitioners to preserve and even improve patients' sexual health by switching to different classes of cardiac medication. Nevertheless, previous data (chapter 2) indicate that most cardiologists lack the knowledge about the effects cardiovascular agents can have on sexual function and will thus not be able to provide the necessary holistic patient care with regard to prescribing these drugs.
To be able to improve health care on this point, we aimed to provide a practical overview, for use by cardiologists as well as other health care professionals dealing with sexual dysfunction in their clinical practices. Therefore, a systematic review of the literature was performed. The eight most widely used classes of antihypertensive drugs have been categorized in a clear table, marking whether they have a positive, negative or no effect on sexual function.

The cardiac patient

Chapter 5

Erectile dysfunction in the cardiology practice

Background: Erectile dysfunction (ED) is an independent risk factor for cardiovascular events sharing mutual risk factors with coronary artery disease. Several guidelines for the management of ED in cardiovascular disease have been proposed, recommending cardiologists to routinely inquire about erectile function. However, males' specific needs and wishes regarding sexual healthcare in cardiology are unknown. We sought to identify male patients' view concerning possible improvements in sexual healthcare and preferred forms of sexual counseling in the cardiology practice.

Methods: Cross-sectional multicentered survey study among at random selected males visiting a cardiologist.

Results: Of 388 respondents, 296 questionnaires were eligible for analysis. Mean age of respondents was 62.9 years. Overall 56% (n=165) had ED, with up to 86% in patients with heart failure. Mean bother experienced due to ED was 5.93 (±2.57) on a 0 to 10 scale. Most respondents indicated to feel comfortable discussing sexual health with the cardiologists (88%). Of men with ED (n=165), 46% would like to have a conversation with the cardiologist about possibilities to improve sexual function, 55% would be helped if questions could be asked during consultation with a specialized nurse and 58% would appreciate written information. Of all respondents (n=296) 28% ever tried a phosphodiesterase inhibitor, 4% received the prescription of the cardiologists.

Conclusion: ED is highly prevalent in patients with a variety of cardiovascular diagnosis and care for sexual function is mandatory. Patients indicated that above consultation with the cardiologist both consultation with a specialized nurse and written information would be helpful.

Chapter 6

Cardiovascular disease and female sexual dysfunction

Background: Cardiovascular disease (CVD) greatly impacts physical and psychological wellbeing and influence patients' sexual life. Guidelines for sexual counseling in cardiology were published, but women's needs regarding sexual health care in cardiology have not yet been evaluated. Aim of this chapter was to assess women's needs and wishes concerning sexual health care in cardiology.

Methods: Cross-sectional multicentered survey was assessed among 725 randomly selected women visiting a cardiologist.

Results: Of 329 responding women, 163 questionnaires were eligible for analysis (mean age 60.1). 35% indicated to have sexual complaints, 5% would like treatment for it. Options for sexual health care in the cardiology practice were proposed, of all respondents 6% would appreciate consultation with the cardiologist regarding sexual function, 18% would value consultation with a nurse and 16% valued written information. Using the female sexual function index-score (FSFI), 62% of sexual active women (n=104) had female sexual dysfunction (FSD). Hypertensives more often than normotensives (r=0.20, p=0.04). β-blocker-use was correlated with sexual dissatisfaction (r=-0.23, p=0.02) and number of cardiovascular agents used was a predictor for lower FSFI-scores (β=1.47 (SE 4.31); p=0.001) per added agent and was related to treatment wish for FSD (linear-by-linear association, p=0.009).
Conclusion: Sexual complaints and FSD are prevalent in women with CVD, therefore attention for sexual health in the cardiology practice is most apposite. However, consultation with a cardiologist is not necessarily required; availability of written information and possibility to discuss sexual issues with a nurse would be time and cost-effective options.

PART II GASTROENTEROLOGY & SEXUAL TRAUMA

The gastroenterologist

Chapter 7

Sexual abuse history in gastrointestinal illness, how do gastroenterologists deal with it?

Background: Data show increased prevalence rates of sexual abuse among patients with gastrointestinal complaints. Sexual abuse causes multiple symptoms related to pelvic floor and stress mediated brain-gut dysfunctions. Treating patients with a history of sexual abuse asks for a holistic approach, using centrally targeted interventions. However, data about gastroenterologists practice patterns regarding care for victims of sexual trauma are not available.
In this chapter we aimed to evaluate whether gastroenterologists address sexual abuse in their daily practice and to assess their knowledge regarding the implications of sexual abuse in gastrointestinal disease.
Methods: A 42-itemed anonymous questionnaire was mailed to all 402 members of the Dutch Society of Gastroenterology (gastroenterologists and fellows in training). The questionnaire addressed sexual abuse and pelvic-floor-related complaints.
Results: 183 of the 402 (45.2 %) questionnaires were returned. Overall 4.7% of the respondents asked their female patients regularly about sexual abuse; in males this

percentage was 0.6%. Before performing a colonoscopy, these percentages were even smaller (2.4% and 0.6% respectively). When patients presented with specific complaints, such as chronic abdominal pain or fecal incontinence, 68% of the gastroenterologists asked females about SA and 29% of the males (p<0.001). The majority of respondents stated it rather important to receive more training in how to inquire about sexual abuse and about the implications for treatment.
Conclusion: Gastroenterologists do not routinely inquire about sexual abuse and they rarely ask about it before performing colonoscopy. There is a need for training to acquire the skills and knowledge to be able to deal with patients with a history of sexual abuse.

The gastroenterology patient

Chapter 8
The impact of sexual abuse in patients undergoing colonoscopy

Background: Sexual abuse has been linked to strong effects on gastrointestinal health. Colonoscopy can provoke intense emotional reactions in patients with a sexual abuse history and may lead to avoidance of endoscopic procedures.
Objective of this chapter was to determine whether care around colonoscopy needs adjustment for patients with sexual abuse experience, thereby exploring targets for the improvement of care around colonoscopic procedures.
Methods: Questionnaires were mailed to patients (n=1419) from two centers within 11 months after colonoscopy. Differences in experience of the colonoscopy between patients with and without a sexual abuse history were assessed and patients' views regarding physicians' inquiry about sexual abuse and care around endoscopic procedures were obtained.
Results: A total of 768 questionnaires were analyzed. The prevalence of sexual abuse was 3.9% in male and 9.5% in female patients. Patients born in a non-western country reported more sexual abuse (14.9%) than those born in a western country (6.3%; p=0.008). Discomfort during colonoscopy was indicated on a scale from 0 to 10, mean distress score of patients with sexual abuse was 4.8(±3.47) compared to 3.5(±3.11) in patients without a sexual abuse history (p=0.007). Abdominal pain was a predictor for higher distress during colonoscopy (β=-0.019 (SE=0.008); p=0.02, as well as the number of complaints indicated as reason for colonoscopy (β=0.738 (SE=0.276); p=0.008). Of patients with sexual abuse experience, 53.8% believed gastroenterologists should ask about it, 43.4% said deeper sedation during colonoscopy would diminish the distress.

Conclusion: Sexual abuse is prevalent in patients presenting for colonoscopy. Patients with a sexual abuse history experience more distress during the procedure and indicate that extra attention around and during colonoscopy may diminish this distress.

10 GENERAL DISCUSSION AND FUTURE PERSPECTIVES

The main purpose of this thesis was to evaluate how medical specialists communicate with regards to sexual health and sexual dysfunctions, and to provide evidence for patients' needs regarding care for sexual health in specialized medical practice.

COMMUNICATION

In 1962 Joshua Golden, one of the first sexual investigators, wrote: "The basic problem in managing sexual conflicts has two aspects; those problems which the patient brings, and those which the physician brings. […] the personal feelings of the doctor influence his ability to communicate with his patients about sexual matters, this involves not only matters of information, but the skill required in communicating effectively with patients about anxiety-laden topics"(1).

Since the late sixties, more and more literature pointed to the impact of sexual abuse and sexual dysfunction on quality of life. The first guidelines were presented in the seventies (2-4).
In spite of all the attention sexual health and sexual function has received in research and the media in the past fifty years, this thesis shows that at this time, in 2014, physicians ways of dealing with sexual dysfunction or care for sexual health did not change much.
While open-mindedness, liberty of speech and straightforwardness have become respected Dutch values, yet taboos exist when it comes to the topics sexual abuse (5), sexual dysfunction and sexuality in the ill and the elderly (6;7). **Chapter 2**, **chapter 4** and **chapter 7** of this thesis indicated that medical specialists still have trouble discussing subjects related to sexuality. Even though they acknowledge their importance, various motives keep them from asking patients about sexual function or about traumatic sexual experiences. One of the main reasons is the perceived inability to deal with these matters once expressed, the same problem that was already pointed out by Joshua Golden in 1962...

SEXUAL HEALTH IN SECOND AND THIRDLINE HEALTHCARE

PART I

Part I of this thesis identified that communication about sexual dysfunction and sexual side effects of medication is not yet routine in the cardiology practice, even though guidelines and reviews have been showing its necessity and purpose.

Care for sexual health, from cardiologists' perspective

One does not need a lot imagination to picture a fifty year old, decent, male cardiologist sitting behind his desk, trying to convince a sixty year old male patient to use his beta-blocker. The cardiologist tries to stay patient while explaining the importance of the beta-blocker use once again, but a full waiting room awaits him.
Is it surprising this cardiologist does not start about the effects the beta-blocker may have on erectile function? Probably not, because next to the lack of time, the cardiologist is not trained to discuss sexual function or counsel about sexual health. Moreover, the patient did not start about erectile dysfunction, so why would he?
On the other side of the desk, the patient indeed did not take his beta-blocker because it diminishes and weakens his erections. He and his wife still enjoy their sexual relationship and the ability to have good erections makes him feel young and virile. The patient already knows that he needs to take the beta-blocker to reduce his blood pressure and the risk of cardiovascular events, but he feels great at the moment and the benefits of the medication are more on the long term and therefore intangible to him.

This example may be exaggerated but many physicians reading it may recognize the hesitation and natural resistance to start about this sensitive topic which may lead to uncomfortable conversations or takes a lot of time. Everyone that has ever visited a doctor may recognize the feeling that several questions are still unanswered when leaving the doctors' office. In fact, you may have wished the doctor would have given you more reassurance or you may have felt that half of your questions remained unanswered.

With a helicopter view it is obvious to see that the reason for this patients' non-adherence with therapy is the effect of the beta-blocker on the erectile function. The consultation would have taken less time if the cardiologist would routinely ask about sexual function after prescribing a beta-blocker. Or if the patient would have been informed by the cardiologist, a nurse, the apothecary or an information leaflet that erectile dysfunction may occur with beta-blocker use.
It is well known that adherence with antihypertensive therapy is dependent on sufficient information about side effects (8). It was shown that prescribing sildenafil for ED resulted in significant improvements in adherence rates (from 48% to 66%) with antihypertensive therapy (9;10). A better solution would be of course, if the physician would try to reduce the side effects by switching to other agents **(chapter 3)**.

Training is needed to make the cardiologist more comfortable with raising the subject of

sexual health and to make them familiar with treatment and referral options (**chapter 2 and chapter 4**).

Sexual healthcare in cardiology, from cardiac patients' perspective

The male patient

Chapter 5 made apparent that ED was prevalent among the vast majority of male cardiac patients, compared to those without a cardiac diagnose. Of those with ED, most were bothered by it and half would have liked to discuss possible treatment options with the cardiologist.

ED has been shown to be a very common problem among men with cardiovascular disease. Next to the fact that it might be a result of insecurity about the cardiac condition or induced by the antihypertensive agents used. It is therefore impossible for cardiologists to avoid paying attention to male sexual healthcare.
On the other side, patients need to be educated and helped to lose prejudices which keep them from asking questions about sexual health. It should feel natural for cardiologists and their male patients to discuss ED, since it can significantly impact patients' and their partners' quality of life, reduce their adherence with therapy and cause relational problems, while ED easily can be reduced or resolved.

The female patient

Most of the women studied in **chapter 6** of this thesis, were 60 years or older and therefore postmenopausal. The low response rate for the study was already an indication for the reservations women in this age category have towards sexuality.
The survey results however, showed a prevalence of FSD almost as high as ED in the male cohort. But the women clearly appointed less importance to sexual function compared to men in the same age category. Most women with sexual dysfunction were not interested in treatment for SD.
This may be explained by the fact that aging (postmenopausal) women devaluate their expectations regarding sex, or do not attach great importance to the sexual side effects of their medication (11).

Another explanation may be the lack of knowledge about female sexual function.
For men, treatment for ED was found in the form of PDE-5 inhibitors. The discovery and release of Viagra in 1998 has led to a steady cash flow for pharmaceutical companies. Advertisement for the different erection potentiating agents is abundantly present in all

kinds of media. This may surely have diminished the embarrassment for men to talk about ED. And, because knowledge about ED has been spread for promotional purposes, most men now know there is hope for improvement of erectile function, which may be good reason to wish to speak to the doctor about it.

On the other hand, the search for female-desire drugs has been a fixation of the pharmaceutical industry for more than a decade as well, largely because the popularity of PDE-5 inhibitors have shown that gigantic sums of money can be made with a quick chemical solution to sexual dysfunction.

Viagra and its competitors deal with the 'simple' mechanism of ED, which is the most troubling difficulty for men. But the psychological complexity of hyposexual desire disorder, the most common cause for FSD, has as yet defeated industry giants.

It is also important to note that Viagra isn't entirely without influence on the mental state of desire. The mechanics of the body and the mysteries of the mind are intertwined. When a man has an erection, his sensitized nerves and enhanced feelings of power have a positive feedback on his drive (12). Research has shown, that women are less cognizant of genital arousal, and probably for this reason, Viagra-like substances haven't done enough to raise women's ratings of desire in past experiments. For women, agents need to be added to more directly target the brain (13). The desire pill for women (Lybrido©), which has recently been in the news, combines PDE5-inhibitors with testosterone and showed an increase in desire and in rates of orgasm in preliminary trials (14;15). However, the Food and Drugs Administration (FDA) has to approve of larger randomized trials, before this medication has a change to reach the market. If that happens, providing a quick and easy solution for women to improve their sexual function, they may start wishing for more sexual healthcare in the cardiology practice as well.

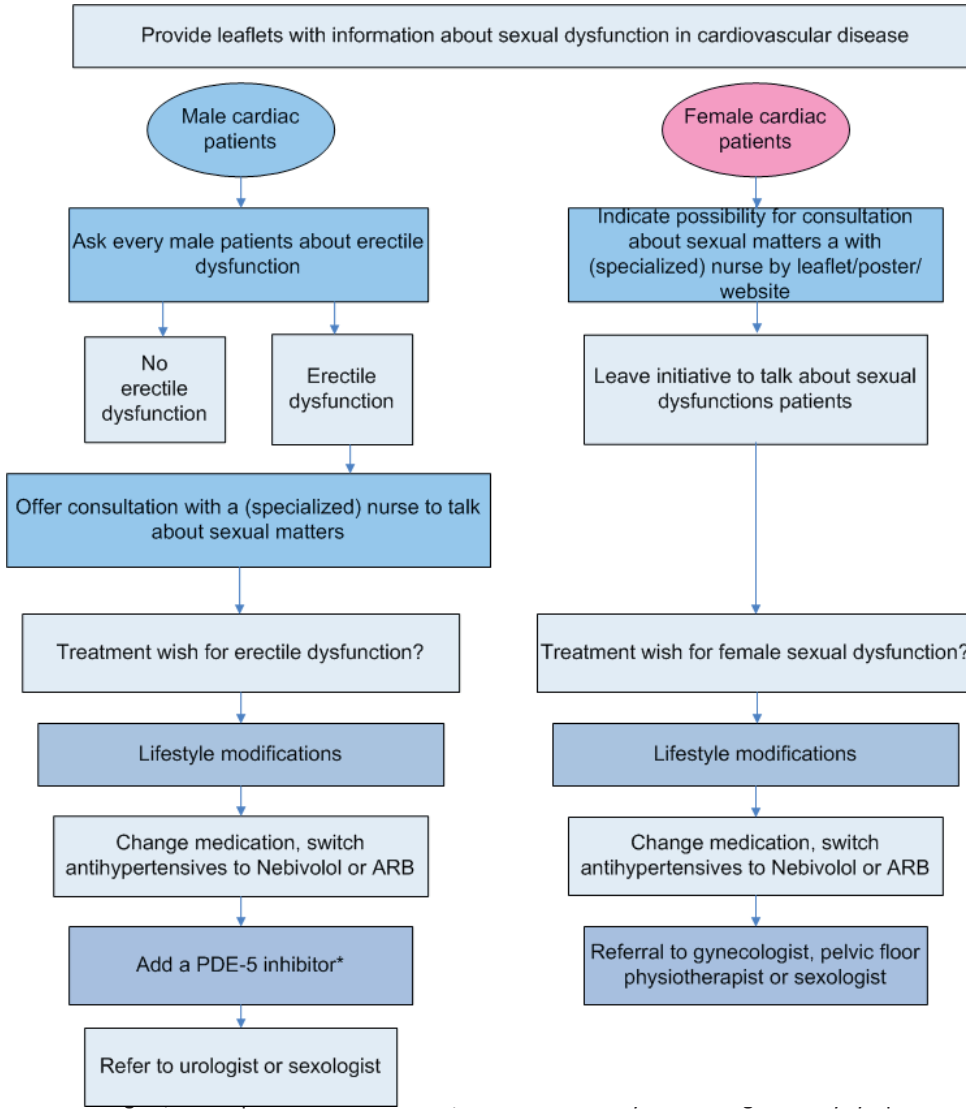
Until then, the recommendation for female sexual healthcare in the cardiology practice as can be inferred from this thesis is as follows: women with cardiovascular disease appreciate the availability of information and options for sexual healthcare. However, the initiative to start about sexual health in cardiology should be left with the female patients themselves (see **chapter 6)**.

The other recommendations for improvements of sexual healthcare in cardiology as can be deduced from the data in **part I** were summarized and presented in Figure 1.

Future studies are mandatory to assess the effects of these adjustments on patients' satisfaction with the provided care and to assess improvements in quality of life.

Figure 1. Proposed adjustments for the cardiology practice to improve sexual healthcare for patients

with cardiovascular disease



and/or severe valvular disease), sexual activity should be deferred until the patient is stabilized and optimally managed(16).

*PDE-5 inhibitors are contraindicated in combination with use of organic nitrates

PART II

Care for sexual abuse in gastroenterology, from gastroenterologists' perspective

In recent years, the scientific community has been paying attention to the relation between lifetime sexual abuse to gastrointestinal complaints. The prevalence of sexual abuse is higher in patients with gastrointestinal symptoms (17-20).
Chapter 7 of this thesis however, indicated that inquiring about sexual abuse is not yet routine in the Dutch Gastroenterology practice.

Training and a standard question(naire) to improve care

Our data pointed to the importance of training for residents and gastroenterologist to obtain the necessary knowledge about sexual abuse and its effects on gastrointestinal symptoms. Furthermore, a standard question about sexual abuse before performing endoscopy (**chapter 8)** would be a simple, but effective improvement of care.
Research indicated that, even if sexual abused women do not confirm the abuse in the first instance, physicians' routinely asked questions about it may evoke the idea that discussion about it is possible (21). Beforehand of asking about abuse it is important for the physician to explain that gastrointestinal symptoms can be related to experiences of sexual abuse in the past. This may help the patient to relate his or her history and once the sexual abuse is entrusted to the physician, it is much easier to place the patients' sickness behavior and health-problems in the right context.

Clinical guidelines for care around colonoscopy in patients with a sexual trauma should become available to enable gastroenterologists to offer patient centered care and diminish distress for these patients as much as possible during trans anal procedures. In that respect questions about earlier traumatic abuse may save time, frustration, money and energy, instead of causing extra diagnostic procedures, unnecessary operations, doctor-shopping and greater health costs (22).

Special treatment needs for patients with a sexual abuse history

Next to the treatment of the physical components of the complaints of these patients, the gastroenterologist should be aware that referral to a mental health consultant is often desirable for patients with sexual abuse experience. Childhood sexual abuse can lead to a wide range of psychiatric illnesses, as posttraumatic stress disorder (PTSS), anxiety disorders, dissociative disorders, substances abuse, conversion and somatization disorders, (borderline) personality disorders and psychosis (23;24). Other psychiatric

consequences are suicidal thoughts, auto mutilation, emotional instability, aggression, delinquent behavior, negative self-image, feelings of guilt and despair, sexual dysfunction (as seen in **chapter 8**), anxiety attacks, sleeping disorders, distrust, relational problems and loneliness (25;26).
Most victims of abuse react neutral or relieved to questions about sexual abuse, only in a minority it was described to increase the complaints (23). The fear that many healthcare providers have, that asking about abuse would lead to more disturbances, is not grounded (27). Inquiry into abuse is important for both men and women (see the subheading 'gender' on page 172) and in every age category, not in the least in the elderly. For even decades after the sexual abuse, it can still hugely impact mental en physical health of its victims. Many elderly patients may have early experiences which may be partly dealt with or were successfully repressed. In later age posttraumatic complaints can exaggerate and even start after decennia in which the patients thought the trauma was processed (27). In Table 1 factors suggesting a history of abuse are displayed (28).

It may be difficult to address the psychological difficulties patients have, coping with chronic pain and illness because that can be intimidating for the non-psychiatric physician. But the physician need to emphasize that improvement in psychological distress can increase tolerance of pain and provide better adjustment to medical illness.
Several forms of psychotherapy are proven to be helpful (29), but because of shame or inability to deal with the generated emotions, the patient may be reluctant to see a mental health consultant. In this situation the physician must accept the patient's wishes' continue in care and suggest that the topic can always be discussed another time. In any case it is important the gastroenterologist maintains continuity in care, referral to a mental health professional should always exist next to treatment of the physical complaints (28). The mental health consultant can identify psychological co-morbid conditions, confirm sexual abuse history and decide on psychopharmacologic treatment. If needed, the mental health consultant can either personally initiate or implement referral for psychological treatment along with medical care.

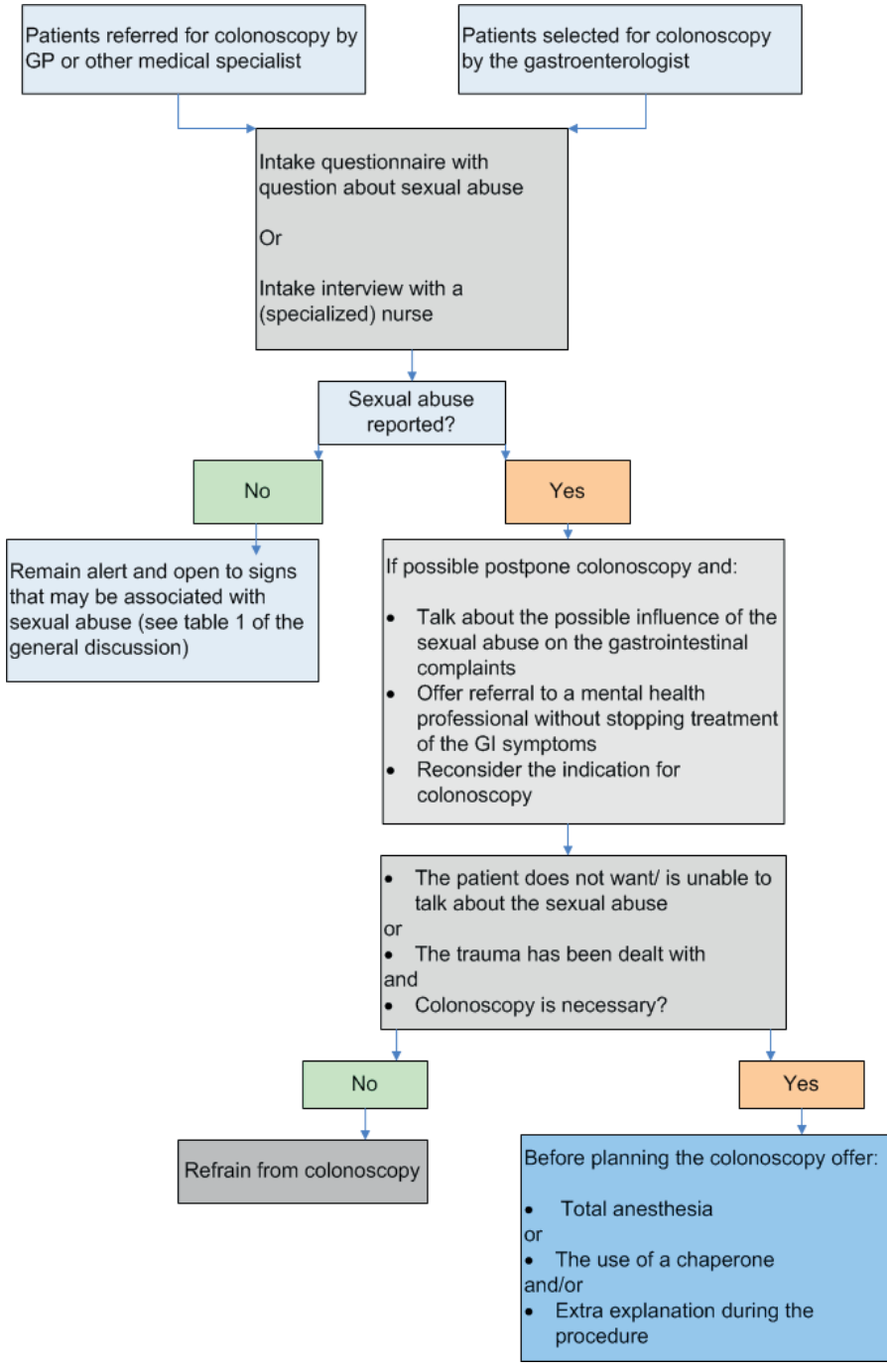
From the results described in **chapter 7 and 8**, several effective and easy applicable recommendations for adjustments in care for patients with sexual trauma in gastroenterology could be deduced. These recommendations are presented in the form of a flow charts (Figure 2, page 170). Future implementation studies should be conducted to evaluate whether these options are effective and if they improve treatment and outcomes of patients with a sexual abuse history in the gastroenterology practice.

Table 1. Factors associated with a history of abuse

Psychological issues
Difficulties in establishing trust
Difficulties perceiving a sense of control over the illness and life events
Feelings of helplessness and dependency
Feelings of vulnerability, shame and guilt
Gastrointestinal and other medical disorders
Chronic pain (including functional abdominal pain syndrome)
Severe constipation (slow transit constipation, and pelvic floor dyssynergia)
Chronic pelvic pain
Narcotic bowel syndrome
Eating disorders (bulimia nervosa, anorexia nervosa, rumination)
Unexplained vomiting
Morbid obesity
Multiple functional GI and functional somatic conditions
Psychiatric disorders
Somatoform disorders (somatization, conversion, hypochandiasis, pain)
Dissociation disorders including multiple-personality disorder
Personality disorders (borderline personality disorder, histrionic personality disorder)
Eating disorders (bulimia nervosa, anorexia nervosa, rumination)
Anxiety disorders (post-traumatic stress disorder, obsessive-compulsive disorder)
Severe depression and panic disorder
Illness-related behaviors
Disability disproportionate to the clinical data
Attempts to validate disease and denial that psychological factors may play a role
Placement of responsibility for healthcare with physician
Avoidance of health-promoting behaviors
Marked anxiety and difficulties with procedures (rectal or vaginal examination, endoscopy)
Borderline behaviors (intense attachments, 'splitting' difficulty in dealing with uncertainties, demanding behaviour)
Unwanted outcomes
Multiple diagnostic procedures, treatments and surgeries
Substance abuse (alcohol, medications, illegal drugs)
Disability and litigation seeking
Frequent and excessive use of medical care services

Source: Drossman et al. *Ann Intern Med*. 1995;123(10):782-794.

Figure 2. Proposal for the improvement of care for patients with sexual abuse in the gastroenterology practice



Health care for sexual abuse in gastroenterology, from patients' perspective

The patient-physician relation can be significantly improved if openness about sensitive topics such as sexual abuse can be created (30;31). Results of **chapter 8** showed that most patients with a history of sexual abuse would appreciate the gastroenterologists asking about it. Gender was not of influence. In both male and female patients the prevalence of sexual abuse was significant. As was already explained these figures were likely an underestimation due to the demarked question used for the identification of sexual abuse, by means of which mild to moderate abuse forms such as fondling or exposure to exhibitionists were implicitly excluded. In addition, we presumably missed many patients from non-Western countries, due to cultural and linguistic barriers.

The association of abuse and gastrointestinal disease

Chapter 8 showed that abdominal pain was related to a history of sexual abuse and with more distress during colonoscopy. This was a finding we expected, while multiple studies have indicated the association between gastrointestinal illnesses, pain and sexual abuse (32-34). Furthermore, epidemiological studies have suggested a link between a history of abuse and a diagnosis of more severe irritable bowel syndrome (IBS) (18;28;32). And, patients with a history of abuse have more severe illness and poorer health outcomes (32).

Several possible mechanisms have been suggested to explain these associations (35):

A history of sexual abuse may have a sensitizing peripheral effect that contributes to heightened visceral sensitivity (peripheral disordered visceral function);

Sexual abuse may have a centrally mediated effect on modulation of the conscious perception of visceral signals and/or altered affective or behavioral responses to afferent visceral signals, thus leading to more severe symptoms and adverse clinical outcome.

One study looked at the effect of a history of abuse on visceral, rectal sensation in patients with IBS. It was examined whether reduced pain thresholds in patients with IBS were related to psychological factors and/or prior history of sexual abuse. They found that higher pain sensitivity in IBS patients correlated with psychological factors (that is, anxiety and somatization). However, sexual abuse was not found to be associated with lower pain thresholds (36). Support for a possible central modulating role of sexual abuse on affective and behavioral responses came from studies using brain imaging techniques. These studies have shown morphological (decreased hippocampal mass)(37;38) and functional (reduced activation of anterior cingulate cortex)(39) abnormalities in subjects with sexual abuse history. Using PET and fMRI it was shown that a history of abuse modulates the anterior cingulate cortex activation, a region involved in the motivational and affective reactions to painful stimulation (40-42). These alterations in cingulate cortex activity were

associated with pain reports and correlated with psychosocial distress (43).
In summary, the fact that sexual abuse leads to more illness behavior and abdominal pain is not only caused by psychological factors and coping strategies but as well by stress-induced changes in the hippocampus and cortex.

Gender

In chapter 8 it was found that sexual abuse was more prevalent among female than male patients. This is in concordance with the literature, sexual abuse has always been more prevalent in women, however childhood sexual abuse of boys have come to the surface more often in the past years, for example in the catholic church (44).
In our sample, no differences were seen between male and female sexual abuse victims regarding the distress scores and physical complaints. This may indicate that men and women respond to sexual abuse in a similar fashion, however, gender differences regarding this response has never been studied. Virtually all research studying the effects of sexual abuse were conducted among female patients, leaving the effects of sexual abuse on men a significant understudied subject. To be able to further adjust patient-centered healthcare for sexual abuse victims in the gastroenterology practice, studies exploring the effects of abuse in men needs to be conducted.
While currently all evidence about the impact of sexual abuse in gastrointestinal disease was collected in female patients, it is comprehensible that gastroenterologists paid more attention to sexual abuse in women than in men (**chapter 7)**.

ROLE FOR THE GENERAL PRACTITIONER IN CARE FOR SEXUAL FUNCTION AND SEXUAL ABUSE

The results found in both parts of this thesis can be extrapolated to other medical workers. Especially the general practitioner is important in this context.
In the Netherlands, the general practitioner (GP) can play a crucial role in sexual healthcare. The GP is the gatekeeper and manager of patient's health and receives all correspondence from patient consultations with the medical specialist. Furthermore, the GP often provides the patients with (repeated) prescriptions for medication prescribed by a medical specialist. Ideally, patients have a good relationship with their GP, he or she could be easier to approach than the medical specialist. Patients and GP should be familiar with one another.
If this, rather old fashioned situation, is the case the GP would be a much better place for patients to talk about and receive treatment for sexual dysfunction, to ask questions regarding sexual health or to talk about abuse experiences.

Older studies among GP's and their patients, however, showed that even in this type of general practice, patients find it difficult to talk about sex and sexual abuse experiences (45-47). And, GP's do not usually tend to ask about sexual dysfunction or a possible story of abuse (48;49).

In the modern form of Dutch general practices, patients do not 'have' their own GP anymore. Patients visit a healthcare center in which several GP's work together and mostly are not available during every day of the week. In this situation, the lack of continuity in care from the 'personal' GP may be another barrier for patients to bring up the topics sex and/or sexual abuse. Research should be conducted to identify if this new form of general practice changed the attention for sexual health and whether this is an extra barrier for patients to reveal abuse experiences.

Lastly, it needs to be noted that in recent years several sexual assault centers where opened in the US and in Europe to provide multidisciplinary care for men and women who experienced sexual abuse, for example rape. These centers enable provision of medical, forensic and physiological support and follow-up care (50). Since 2012 sexual assault centers were opened in Utrecht and in Nijmegen. Both GP's and medical specialists should be aware of the availability of these centres for the referral of patients reporting recent or ongoing sexual abuse. In addition, while sexual abuse regrettably is such a common social problem, availability of only two centres for sexual assault victims is rather scarce. Centers should be initiated in every large city in the Netherlands.

Final remarks

It seems strange that in this modern western society where freedom is everything and taboos seem to have disappeared, discussing sexual matters with a physician still seems to be difficult.

Sex is, next to the origin of human life, an important component for quality of life. Problems in sexual health, such as sexual dysfunction or sexual victimization, highly affect people's lives and their relationships. It therefor deserves much more attention in medical healthcare.

With the use of internet, patients have become better informed and more demanding. A different type of health care -patient centered health care- is becoming the standard. To adequately provide this patient centered healthcare, sexual health has to be given the necessary attention. And attention for sexual abuse has to be incorporated in (specialized) medical healthcare. We may still have a long way to go, but the results of this thesis may be a next step toward this transition.

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11 SEKSUELE GEZONDHEID BINNEN DE CARDIOLOGISCHE PRAKTIJK - VRAAG EN AANBOD-

NEDERLANDSE SAMENVATTING

INLEIDING

Bij patiënten met cardiovasculaire ziekten en na cardiovasculaire events kunnen zowel de fysieke en psychische aspecten van de aandoening, als de ziekte en de bijbehorende medicatie grote invloed hebben op het seksuele functioneren (1). Seksualiteit is een belangrijke determinant voor kwaliteit van leven. Met de huidige levensverwachting is het behoud van de seksuele relatie, ook op hogere leeftijd belangrijk geworden (2).

Erectiele disfunctie en cardiovasculaire ziekten hebben gezamenlijke risicofactoren zoals hypertensie, diabetes, metabool syndroom en arteriosclerose. Aanwezigheid van erectiele disfunctie (ED) is een krachtige voorspeller gebleken voor myocardinfarct (MI), cerebrovasculaire events en mortaliteit (3-5). Omdat peniele arteriën smaller zijn dan coronairen hebben mannen gemiddeld drie jaar voor het ontstaan van angineuze klachten al last van erectiele disfunctie (6;7). Andersom wordt bij 75% van de mannen met chronische stabiele coronaire ziekten erectiele disfunctie geconstateerd (8).

Ook bij vrouwen met cardiovasculaire aandoeningen komt seksuele disfunctie veel voor (9). Vrouwelijke seksuele disfunctie lijkt met name gerelateerd en hypertensie en het gebruik van β-blokkers (10;11), tot op heden blijft dit echter een onderbelicht onderzoeksgebied. Daarnaast hebben veel cardiovasculaire geneesmiddelen een negatieve invloed op de seksuele prestaties. Naast diuretica en β-blokkers (12-14), lijkt ook digoxine de seksuele functie negatief te beïnvloeden (15). Aan de andere kant zijn positieve effecten aangetoond van angiotensine receptorblokkers en statines (16-18).

Recent werden door *the American Heart Association* aanbevelingen gedaan voor de voorlichting aan de cardiale patiënten (én hun partner) over het veilig hervatten van seksuele activiteiten bij cardiovasculaire aandoeningen (19). Ook werden richtlijnen en reviews geschreven over de diagnostiek en behandeling van ED in relatie tot cardiovasculair risicomanagement (20;21).

Hoe de Nederlandse cardioloog in de dagelijkse praktijk omgaat met het onderwerp seksualiteit en of hij bekend is met de effecten van cardiovasculaire middelen op de seksuele functie was tot op heden niet bekend. Om het bovenstaande te evalueren werd een enquête uitgevoerd onder alle Nederlandse cardiologen en cardiologen in opleiding (AIOS). Daarnaast werd niet eerder gekeken naar de wensen van cardiale patiënten ten aanzien van seksuele gezondheid. Om deze wensen in kaart te brengen werd een multicenter, cross-sectioneel onderzoek werd uitgevoerd onder patiënten die een cardioloog consulteerden.

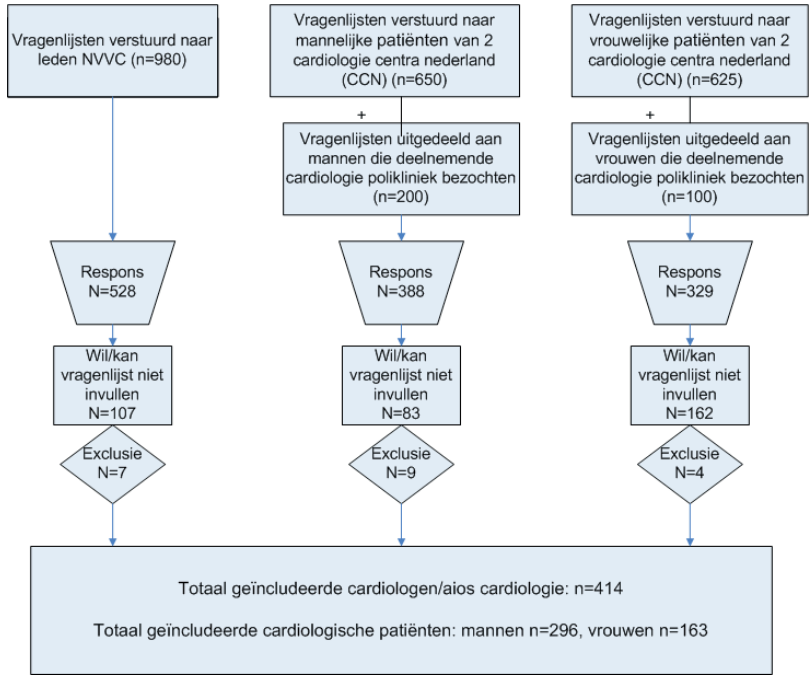
METHODE

Studieopzet en populatie

Vragenlijstonderzoek werd verspreid onder alle leden van de Nederlandse Vereniging voor Cardiologie in het najaar van 2011. Daarnaast werden tussen maart 2012 en januari 2013 driehonderd vragenlijsten uitgedeeld aan patiënten die de polikliniek cardiologie van het Leids Universitair Medisch Centrum of het Diaconessenhuis Leiden bezochten en werden 1275 vragenlijsten verstuurd aan patiënten van Cardiologie Centra Nederland, locaties Voorschoten en Amsterdam Zuid. (Figuur 1).

De vragen werden verzonden/uitgereikt in een envelop samen met een brief met uitleg over de studie en een toestemmingsformulier. Patiënten die de Nederlandse taal machtig waren en ouder waren dan 18 jaar werden geïncludeerd. In verband met de cross-sectionele studieopzet werden ook patiënten die voor medische keuring kwamen geïncludeerd, evenals patiënten bij wie geen cardiale oorzaak voor de klachten werd gevonden. Exclusie vond plaats van patiënten die aangaven niet te weten welke cardiale diagnose was gesteld. Vragenlijsten waarbij niet meer dan 30% was ingevuld werden geëxcludeerd. Goedkeuring voor het uitvoeren van de patiënten enquête werd verkregen bij de Medisch Ethische Toetsingscommissie van het LUMC.

Figuur 1. Studie stroomdiagram



Vragenlijsten

De vragenlijst voor cardiologen werd ontworpen door de auteurs. Een pilotstudie vond plaats onder 40 cardiologen en AIOS in het LUMC. Voor de evaluatie van cardiale patiënten werden genderspecifieke vragenlijsten ontworpen, bestaande uit drie secties. Het eerste deel bevatte vragen met betrekking tot de cardiale problematiek en demografische gegevens. In het tweede deel werd informatie vergaard over seksuele activiteit en seksueel functioneren, hierbij werd voor mannen gebruik gemaakt van de verkorte versie van de *International Erectile Dysfunction Index (IIEF-5)*(22;23). Voor vrouwen werd de gevalideerde, verkorte versie van de *Female sexual function index (FSFI-6*) gebruikt (24;25). Het derde deel behelsde de mening van patiënten betreffende het bespreekbaar maken van seksuele problematiek met de cardioloog en eventuele oplossingen hiervoor.

Statistische analyse

Een score van 21 punten of minder op de IIEF-5 werd beschouwd als ED (22). De grenswaarde voor seksuele disfunctie bij vrouwen was een FSFI score lager dan 19 (25).
Statistische bewerking werd uitgevoerd in SPSS (versie 20, Chicago, IL, USA), waarbij tweezijdige *p*-waarden <0.05 als significant werden beschouwd. Voor de meeste vergelijkingen werd gebruik gemaakt van de gepaarde t-toets of de Pearsons $\chi 2$ toets. Bivariate correlatie werd gebruikt om FSFI-6, IIEF-5 en lastscores te correleren, lineaire regressie werd gebruikt voor het identificeren van voorspellers voor lage FSFI- en IIEF-scores.

RESULTATEN

Visie van de cardioloog

Tabel 1. Demografische gegevens deelnemende cardiologen (n=414)

Leeftijd in jaren, gemiddelde (SD)	**45.5 (±9.6)**
Geslacht, n(%)	
Man	314 (76.0)
Vrouw	99 (24.0)*
Functie, n(%)	
Cardioloog	335 (80.9)
AIOS cardiologie	79 (19.1)
Type praktijk n(%)	**n=412***
Academisch centrum,	90 (21.8)
Topklisch opleidings ziekenhuis	174 (42.2)
Streek ziekenhuis	148 (35.9)
Ervaringsjaren binnen de cardiologie, n(%)	
0-11 maanden	18 (4.3)
1-2 jaar	30 (7.2)
3-5 jaar	80 (19.3)
6-10 jaar	106 (25.6)
11-15 jaar	49 (11.8)
15 jaar of meer	131 (31.6)

*n verschilt omdat niet alle respondenten de antwoorden op deze vragen hebben beantwoord.
SD=Standaard Deviatie

Spreken over seksuele functie (Hoofdstuk 2)

Meer dan de helft (54%) van de Nederlandse cardiologen en AIOS retourneerde de vragenlijst (zie figuur 1). 412 vragenlijsten waren geschikt voor analyse. 2% van de cardiologen zei seksualiteit altijd te bespreken, 17% gaf aan dit regelmatig te doen, 49% zei ‘soms’, 27% zei ‘zelden’ en 3% besprak het onderwerp nooit. Het merendeel voelde zich ook niet verantwoordelijk voor deze taak, 42% dichtte die toe aan een ander, waarvan 70% daarbij dacht aan de huisarts. Toch zei 39% zich verantwoordelijk te voelen voor het bespreken van seksuele problematiek gerelateerd aan cardiovasculaire ziekten, 20% zei niet te weten wie deze verantwoordelijkheid heeft of zou moeten hebben. Ervaren cardiologen spraken significant vaker over seksuele problematiek dan AIOS ($p<0.001$). De meerderheid zei zelden (49%) of nooit (20%) adviezen te geven over het hervatten van de seksuele activiteiten na een myocardinfarct of bij hartfalen. Bij mannen werd significant vaker dan bij vrouwen naar de seksuele functie gevraagd ($p<0.001$).

Belangrijke redenen om niet te beginnen over seksualiteit waren gebrek aan initiatief van de patiënt (54%), tijdgebrek (43%) en gebrek aan training om dit onderwerp bespreekbaar te maken en gebrek aan kennis over het behandelen van seksuele problematiek (35%). Een groot gedeelte van de respondenten (42%) zei training te willen om kennis over dit onderwerp te verbeteren om het gemakkelijker met patiënten bespreekbaar te maken. 63% gaf aan geholpen te zijn met een overzicht van hulpverleners naar wie zij patiënten met seksuele problematiek kunnen doorverwijzen.

Kennis over de effecten van antihypertensiva op de seksuele functie (Hoofdstuk 3)

De cardiologen en AIOS cardiologie werd gevraagd om van de acht belangrijkste klassen antihypertensiva aan te geven of deze een positief, een negatief of geen effect hebben op de seksuele functie van de gebruiker. Het merendeel (93%) wist dat β-blokkers negatieve effecten kunnen hebben op de seksuele functie, 41% wist het van diuretica. Van digoxine was de negatieve invloed bekend bij 12% van de respondenten.

Voor calcium antagonisten, ACE-remmers en α-blokkers is in de literatuur nooit een significant negatief effect op de seksuele functie aangetoond. Bijna de helft van de cardiologen (49%) wist dat calcium antagonisten neutraal zijn wat betreft de effecten op de seksuele functie, van α-blokkers wist 45% dit en 61% wist dat ACE-remmers geen effect hebben op de seksuele functie.

Verscheidene studies hebben aangetoond dat angiotensine receptor blokkers positieve effecten hebben op het endotheel, op de doorbloeding van de geslachtsorganen en daarmee op de seksuele functie (26-32), 9% van de cardiologen was hiermee bekend. Ook aan statines worden deze positieve effecten toegeschreven (33-37), 11% van de responderende cardiologen was hiervan op de hoogte. Bijna de helft van de cardiologen (48%) zei regelmatig de medicatie te switchen om de seksuele functie van patiënten te verbeteren, 48% zei regelmatig te vragen naar bijwerking op het gebied van seksualiteit en 27% zei dit vaak te doen.

Naar het gebruik van phosfodiesteraseremmers (PDE5) wordt door 38% van de cardiologen en AIOS regelmatig gevraagd, 50% vraagt zelden naar het gebruik van deze middelen.

Tabel 2. Overzicht van de effecten van de meest voorgeschreven klassen cardiovasculaire middelen op de seksuele functie

Middel	Effect
β-blokkers*	-
Cardiac Glycosiden	-
Diuretica**	-
α-blokkers	±
ACE-remmers	±
Calcium antagonisten	±
Angiotensine Receptor Blokkers	+
Statines	+

° Informatie uit gerandomiseerde trials, dubbel blinde crossover studies en prospectieve vragenlijststudies onder zowel mannen als vrouwen;
* Behalve voor Nebivolol, dit middel lijkt een positief effect te hebben;
** Behalve voor kaliumsparende diuretica welke geen effecten lijken te hebben op de seksuele functie;
- = negatief effect, ± = geen effect, + = positief effect

Visie van de cardiologische patiënt

De mannelijke patiënt (Hoofdstuk 5)

296 vragenlijsten waren geschikt voor analyse (figuur 1). De gemiddelde leeftijd was 62.9 jaar (±11.1). De meerderheid was het afgelopen jaar seksueel actief geweest (81%), ED werd aangeduid als de belangrijkste reden voor seksuele inactiviteit (43%). De IIEF-5 vragenlijst is alleen gevalideerd voor seksueel actieve mannen en van hen (n=240) scoorde 65% minder dan 21 punten, duidend op matig tot ernstige ED. Van de mannen die antihypertensiva (n=202) gebruikten zei 36% een negatief effect van de medicatie op de erectie te bemerken. Patiënten scoorden gemiddeld een 5.9 (±2.6) op een schaal van 0 tot 10 voor de last die zij ervoeren van ED. Deze last was negatief gecorreleerd met de IIEF-5 score (r-0.63; p<0.001). 91% van de mannen zou het als vanzelfsprekend of zelfs als een opluchting ervaren als de cardioloog over de seksuele functie zou beginnen. 46% van de mannen met ED gaf aan een gesprek met de cardioloog te willen om te spreken over mogelijkheden voor verbetering van de erectie. Een consult met een (gespecialiseerd) verpleegkundige werd door 55% zinvol geacht, ook zou 58% geholpen zijn met schriftelijke informatie. In totaal (seksueel actieven en inactieven) gaf 50% (n=148) van het cohort aan een seksuele disfunctie te hebben, 42% wilde daar behandeling voor. Bijna dertig procent gaf aan al eens een phosphodiesteraseremmer geprobeerd te hebben (n=86). De meerderheid kreeg een phosphodiesteraseremmer op recept van de huisarts (65%), 8% van een vriend of familielid en 2% bestelde het op internet. Een kwart kreeg het recept van een medisch specialist, waarvan 4% van de cardioloog.

Tabel 3. Demografische gegevens cardiologische patiënten

Patient karakteristieken	**Mannen n=296** †	**Vrouwen n=164** [a]
Leeftijd, gemiddeld (spreiding), jaren	62.9 (20-94)	60.1 (18-90)
Gewicht, gemiddeld (SD), kg	85.9 (±13.7)	73.5 (±14.4)
Lengte, gemiddeld (SD), cm	180.3 (±6.9)	167.0 (±10.5)
BMI*, gemiddeld, (SD), kg/m^3	26.4 (±3.6)	27.0 (±12.0)
Nationaliteit	**n (%)**	
Nederlands	268 (91.5)	148 (90.2)
Ander westers land	10 (3.4)	8 (4.9)
Niet-westers land	13 (4.4)	8 (4.9)
Cardiovasculaire middelen ‡	**n (%)**	
α-receptor blokker	13 (4.4)	3(1.8)
ACE remmer	95 (32.4)	23 (14.0)
Angiotensine receptor blokker	57 (19.5)	29 (17.7)
β-receptor blokker	103 (35.2)	61 (39.0)
Calcium-antagonist	44 (15.0)	24 (14.6)
Digoxine	11 (3.8)	2 (1.2)
Loop diureticum	11 (3.8)	18 (11.0)
Thiazide diureticum	33 (11.3)	5 (3.0)
Nitraten	20 (6.8)	7 (4.3)
Statines	112 (38.2)	34 (20.7)
Anders	16 (5.4)	7 (4.3)
Cardiale diagnose‡	**n (%)**	
Angina pectoris	86 (29.2)	21 (12.8)
Hypertensie	90 (30.5)	54 (32.9)
Ritmestoornis	87 (29.5)	59 (36.0)
Myocard infarct	34 (11.5)	6 (3.7)
Hartfalen	10 (3.4)	2 (1.2)
Hartklepaandoening	25 (8.5)	23 (14.0)
Primaire myocard aandoeningen	5 (1.7)	2 (1.2)
Congenitale hartziekten	4 (1.4)	2 (1.2)
Geen cardiale diagnose	41 (13.9)	25 (15.2)

*BMI = m / l², ACE = angiotensine converterend enzym

† Kolommen tellen niet altijd op tot het aangegeven totaal door ontbrekende waarden

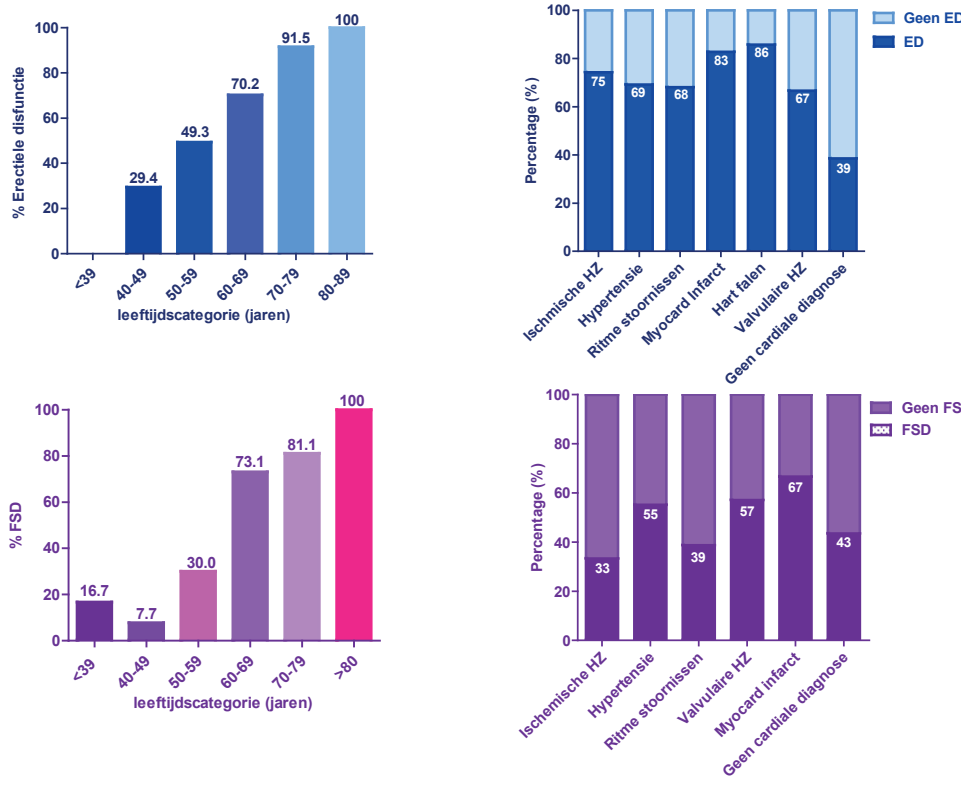
‡ Meerdere antwoorden mogelijk

De vrouwelijke patiënt (Hoofdstuk 6)

163 vragenlijsten waren geschikt voor analyse. De gemiddelde leeftijd van de participerende vrouwen was 60.2 (±13.7) jaar. 35% gaf aan seksuele problemen te ondervinden, van hen zei 6% hiervoor behandeld te willen worden, 34% zou behandeling overwegen indien die mogelijkheid geboden zou worden. 35% was niet seksueel actief in het afgelopen jaar (n=57). Deze vrouwen waren gemiddeld ouder dan de seksueel actieven (64.5 ±11.6 versus 55.8 ±12.6; p<0.001). De meest genoemde reden voor seksuele inactiviteit was het gebrek aan een partner (41%). Vierentwintig procent vond seks niet (meer) belangrijk. Van de 104 seksueel actieve vrouwen werd bij 62% een seksuele disfunctie gescoord met de FSFI (score <19). Vrouwen met hypertensie scoorden lager dan normotensieven (gemiddelde scores 14.6 ±7.3 respectievelijk 17.3 ±5.6; p=0.04). Het gebruik van een β-blokker was gecorreleerd aan lagere scores voor tevredenheid op het gebied van de seksuele gezondheid en met onvrede over de relatie (p=0.019 resp. p=0.002). Het aantal gebruikte antihypertensiva bleek een voorspeller te zijn voor lagere FSFI scores (β= -1.47 (SE 4.31) per toegevoegd medicament (p=0.001). Hoe meer antihypertensiva de respondent slikte, hoe vaker een behandelwens voor FSD werd geuit (p=0.009), hierbij was de specifieke combinatie van medicatie niet van invloed. Van de vrouwen met FSD wilde 9% hier met de cardioloog over spreken, 23.4% zou er over willen praten met een verpleegkundige en 19% zou schriftelijke informatie waarderen.

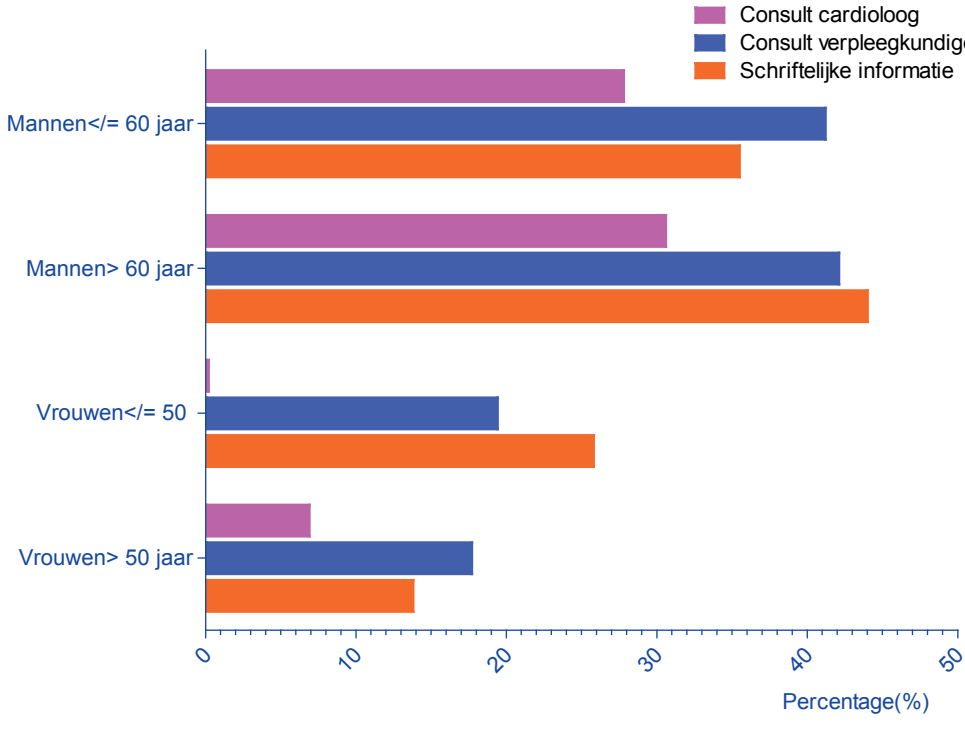
Van alle vrouwen stond 34% neutraal tegenover het vragen naar seksuele functie door de cardioloog, 35% zou het als positief of logisch ervaren. Aan de andere kant zou 16% het ongemakkelijk of vervelend vinden als de cardioloog naar seksuele functie zou vragen, 14% dacht niet dat de cardioloog hen hierover advies zou kunnen geven.

Figuur 2. Percentage seksuele disfunctie bij mannen (ED) en vrouwen (disfunctie niet gespecificeerd) per leeftijdscategorie en per cardiale diagnose



ED= erectiele disfunctie; FSD= vrouwelijke seksuele disfunctie; HZ= hart ziekten

Figuur 3. Gewenste vormen van aanbod zorg voor seksuele disfunctie in de cardiologische praktijk



Gebaseerd op de antwoorden van 296 mannen en 163 vrouwen.
Totalen: mannen jonger dan 60 jaar: n=116, mannen ouder dan 60 jaar: n=185
Vrouwen jonger dan 50 jaar: n=32, vrouwen ouder dan 50 jaar n= 131

DISCUSSIE

Dit onderzoek laat zien dat er een discrepantie bestaat tussen de behoeften van cardiale patiënten betreffende de aandacht voor seksuele disfunctie en de geboden zorg. De meerderheid van de mannen met een cardiovasculaire diagnose heeft een vorm van ED en geeft aan daar last van te hebben. Hiervan heeft de helft een actieve behandelwens. Bij vrouwelijke cardiale patiënten ligt dit gecompliceerder. Ondanks het feit dat meer dan een derde aangeeft seksuele disfunctie te hebben, wordt er weinig behoefte aan zorg aangegeven. Behandeling met antihypertensiva lijkt bij vrouwen van grote invloed te zijn op de seksuele functie.
Verder kan aan de hand van onze resultaten gesteld kan worden dat Nederlandse cardiologen onvoldoende kennis hebben van de effecten die de verschillende soorten antihypertensiva kunnen hebben op de seksuele functie.

Vergelijking met de literatuur

Niet eerder werd onderzocht wat de wensen van cardiale patiënten zijn op het gebied van seksuele gezondheidszorg. De prevalentie van ED en FSD was vergelijkbaar met grote internationale studies onder cardiale patiënten (8;10;38;39). De resultaten van de enquête onder cardiologen toont aan dat er meer training nodig is om goede seksuele zorg te kunnen bieden. 46% wenst meer helderheid om doelgericht te kunnen verwijzen (40). Ervaring in het vak bleek voor cardiologen en AIOS een belangrijke voorwaarde om het onderwerp seksualiteit te bespreken. Het trainen van de communicatie over seksuele problematiek blijkt de belangrijkste voorspeller voor het daadwerkelijk bespreken hiervan in de praktijk (41).

Beperkingen van het onderzoek

De belangrijkste beperking van dit onderzoek is waarschijnlijk de non-respons bias vanwege het gevoelige onderwerp. Daarnaast kunnen de antwoorden van de cardiologen onderhevig zijn geweest aan overschatting door zelfrapportage. Om deze potentiële bias zo klein mogelijk te houden werd volledige anonimiteit bij de verwerking en opslag van de data verzekerd.

Beschouwing

De resultaten van de survey onder cardiologen kunnen teleurstellend genoemd worden, in 1981 werd cardiologen immers al aanbevolen om seksuele problematiek bespreekbaar te maken (42). Onze resultaten laten zien dat ervaring in het vak een belangrijke voorwaarde

is om dit -toch vaak als lastig ervaren onderwerp- aan te snijden. Ook een gebrek aan tijd werd door een belangrijk deel van de cardiologen genoemd als reden om niet over seksuele problematiek te beginnen. Dit probleem zou opgelost kunnen worden door verpleegkundigen op te leiden die angst en onzekerheid rondom seksuele activiteit met patiënten kunnen bespreken, en patiënten met een seksuele disfunctie naar de juiste hulpverlener kunnen verwijzen.

Daarnaast is klaarblijkelijk nog veel winst te behalen daar waar het de kennis betreft van cardiologen over de effecten op de seksuele functie van de door hen voorgeschreven cardiovasculaire medicatie. De helft van de cardiologen zegt regelmatig de medicatie aan te passen om het seksueel functioneren van patiënten te verbeteren. Aan de hand van deze data kan echter gesteld worden dat kennis van de effecten op seksuele functie van de bekendste klassen antihypertensiva nog onvoldoende is. Richtlijnen bevelen cardiologen aan patienten standaard naar seksuele functie te vragen alvorens medicatie uit te schrijven (1;43). Onze data wijzen er echter op dat dit slechts in de minderheid van de gevallen gebeurt. Dit kan naast een vermindering van het seksueel functioneren –en dus kwaliteit van leven- ook gevaar opleveren. Zo is het gelijktijdig gebruik van nitraten met phosfodiesteraseremmers gecontraïndiceerd in verband met het risco op hypotensie (1). Onze data toonden dat dertig procent van de mannelijke cardiale patiënten een phosfodiesteraseremmer gebruikt of heeft gebruikt, maar dat dit middel in de overgrote meerderheid van de gevallen niet werd verkregen via de cardioloog. Minder dan de helft van de cardiologen zei naar het gebruik van phosfodiesteraseremmers te vragen. Hieruit kan geconcludeerd worden dat de cardioloog dus meestal niet op de hoogte is van phosfodiesteraseremmer gebruik van zijn patiënten en dat waarschuwingen over gecombineerd gebruik met nitraten dus vaak niet gegeven zullen worden.

Tenslotte blijkt uit de evaluatie van cardiologische patienten dat vrouwen significant minder waarde hechten aan aandacht en zorg voor seksuele disfunctie dan mannen. Dit verschil kan verklaard worden doordat seksuele problematiek bij mannen met CVZ (vaak) veroorzaakt wordt door ED. Voor ED is medicamenteuze behandeling ruimschoots beschikbaar, iets wat de afgelopen jaren breed onder de aandacht is gebracht in de media. Dit in tegenstelling tot seksuele problematiek bij vrouwen, waarvoor nauwelijks aandacht bestaat en therapeutische mogelijkheden minder bekend zijn (10). Daarnaast is vrouwelijke seksualiteit meer afhankelijk van emoties en verlangens en minder van de fysieke functie waardoor het moeilijker te objectiveren is (44).

Conclusies en aanbevelingen

Dit onderzoek geeft handvatten om seksuologische zorg binnen de cardiologie aan te kunnen bieden. De resultaten tonen aan dat een groot gedeelte van de mannelijke patiënten met CVZ last heeft van ED en graag met de cardioloog zou spreken over behandelmogelijkheden. Dit in tegenstelling tot vrouwelijke cardiologie patiënten van wie slechts een minderheid met de cardioloog over seks zou willen praten, ondanks dat een groot deel van hen FSD heeft. Voor vrouwen heeft een actieve benadering niet de voorkeur. Echter, opties die de drempel verlagen om het onderwerp aan te snijden, zoals een folder in de wachtkamer en de mogelijkheid met een verpleegkundige te spreken, zouden door zowel mannen als vrouwen gewaardeerd worden.

Een belangrijke redenen voor de cardioloog om het onderwerp seksualiteit niet ter sprake te brengen is een gebrek aan tijd en training. Cardiologen geven daarbij aan dat het waardevol zou zijn te beschikken over een regionale lijst met hulpverleners voor efficiënte doorverwijzing.

Op nascholingsbijeenkomsten en in de opleiding voor cardiologen zou meer aandacht besteed moeten worden aan de kennis over medicatie wat betreft de invloed op de seksuele functie en aan het onderwerp seksualiteit bij CVZ.

Daarnaast zouden cardiologen ontzien kunnen worden door hulp van een verpleegkundige die seksualiteit met patiënten kan bespreken. Ook voor de huisarts is een belangrijke rol weggelegd. Voor cardiovasculair belaste patiënten die zich bij huisarts of cardioloog melden met seksuele disfunctie zijn dezelfde leefstijl adviezen van toepassing als die ter voorkoming van cardiovasculaire gebeurtenissen (20;45). Een verandering van de medicatie kan verbetering van seksuele functie geven. Indien mogelijk dient de medicatie bij patiënten met klachten van seksuele disfunctie omgezet te worden naar een derde generatie β-1 blokker of een angiotensine receptor blokker (12;46;47). Indien dit niet mogelijk is kunnen ACE-remmers of calciumantagonisten veilig voorgeschreven worden (16;18). Voor mannen is het voorschrijven van een phosphodiesteraseremmer de volgende stap. Verwijzing naar een uroloog kan overwogen worden indien ED persisteert of als er sprake is van andere seksuele disfunctie (20). Vrouwen kunnen doorverwezen worden naar een gynaecoloog of bekkenbodem fysiotherapeut. Voor patiënten, bij wie de fysieke aspecten van seks een minder grote rol lijken te spelen, kan verwijzing naar een seksuoloog uitkomst bieden.

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12 IS ER VOLDOENDE AANDACHT VOOR SEKSUEEL MISBRUIK IN DE NEDERLANDSE MDL-PRAKTIJK?

NEDERLANDSE SAMENVATTING

INLEIDING

Sinds dertig jaar is bekend dat seksueel misbruik niet alleen psychische, maar ook somatische gevolgen heeft (7,9,12). Op gastrointestinaal terrein hebben patiënten met een geschiedenis van SA 1.5 tot 2 maal groter risico op klachten, vergeleken met de algemene populatie (1;2). De prevalentie van seksueel misbruik (sexual abuse, SA) in de Westerse maatschappij ligt bij vrouwen tussen de 12 en 33% en bij mannen tussen de 4.5% en 10% (3-7). SA is ook geassocieerd met hevige emotionele reacties en gevoelens van schaamte bij gynaecologisch en endoscopisch onderzoek, wat kan leiden tot vermijding en uitstel van behandeling (8-11). Patiënten melden misbruik zelden spontaan, maar tijdig signaleren kan overbodig medisch handelen voorkomen en maakt het mogelijk de patiënt de juiste zorg aan te bieden (7;12). Voor patiënten met SA in het verleden kan aandacht hiervoor belangrijk zijn voor de arts-patiënt relatie. Deze relatie is de belangrijkste factor die de ervaring van de patiënt tijdens het inwendig lichamelijk onderzoek beïnvloedt (13;14). Eerdere studies toonden belemmeringen aan bij gynaecologen en urologen om naar SA te vragen (15;16). Voor MDL-artsen was dit nog niet onderzocht. Ook is weinig bekend over het effect van colonoscopie op slachtoffers van SA, vergeleken met patiënten zonder een dergelijke voorgeschiedenis.

Doel van dit onderzoek was om 1) inzicht te krijgen in de kennis en praktijkvoering van MDL-artsen betreffende de zorg aan patiënten met een verleden van SA en 2) te evalueren wat de impact is van het colonoscopie op patiënten met SA in het verleden en welke aanpassingen rondom de procedure deze impact mogelijk kunnen verminderen.

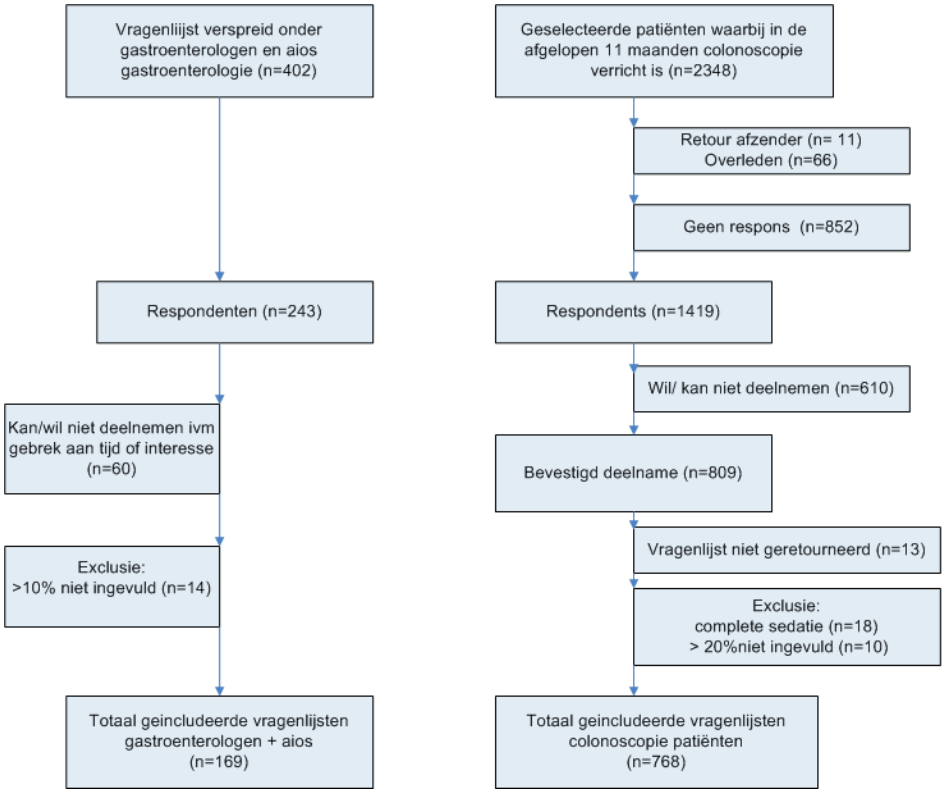
METHODE

Studieopzet en populatie

In 2010 werden alle praktiserende Nederlandse MDL-artsen (n=262) en MDL-artsen in opleiding (AIOS)(n=140) uitgenodigd een digitale vragenlijst in te vullen.

In 2011 ontvingen patiënten (>18 jaar) die in de afgelopen 11 maanden colonoscopie hadden ondergaan in het Haga ziekenhuis of in het Leids Universitair Medisch Centrum (n= 2348) een informatiebrief over de studie en een toestemmingsformulier. Vragenlijsten (zie hieronder) werden alleen verstuurd aan patiënten die het toestemmingsformulier terugstuurden en bevestigden deel te willen nemen. Patiënten die colonoscopie onder algehele anesthesie ondergingen werden geëxcludeerd (Figuur 1). Een herinnering werd verstuurd naar non-respondenten en naar respondenten die aanhadden gegeven deel te willen nemen maar de vragenlijst niet terugstuurden. Dit observationele cross-sectionele onderzoek werd uitgevoerd volgens de STROBE-richtlijnen (17) en werd goedgekeurd door de Medisch Ethische Commissie van Zuidwest Holland.

Figuur 1. Studie stroomschema



Vragenlijsten

De vragenlijsten werden op basis van literatuuronderzoek ontworpen door de auteurs. De vragenlijst voor artsen werd als pilot getest onder 8 MDL-artsen en aios en de vragenlijst voor colonoscopie patiënten werd getest door 10 patiënten. Een gedeelte van de patiënten vragenlijst werd gebaseerd op de Pelvic Floor Inventories Leiden (PelFIs), een gevalideerde vragenlijst voor het achterhalen van bekkenbodemproblematiek en seksueel misbruik in het verleden (18).
De belasting van de colonoscopie werd gescoord op een schaal van 1 tot 10, waarbij 0 stond voor 'geen belasting' en 10 voor 'de meest zware belasting denkbaar'. Onderscheid tussen SA in de jeugd of op volwassen leeftijd werd niet gemaakt.
De vragenlijsten werden verwerkt door twee onafhankelijke onderzoekers (M.P.N en L. de V) en konden niet herleid worden tot gegevens van arts of patiënt. Omdat deelname aan de studie mogelijk als confronterend ervaren kon worden en vragen kon oproepen, waren een onafhankelijke psycholoog en seksuoloog beschikbaar voor consultatie.

Colonoscopie

Colonoscopie werd verricht onder sedatie met midazolam en fentanyl volgens de protocollen van de participerende centra. Ieder endoscopie team bestond uit een endoscopist (MDL-arts of AIOS MDL) en een of meerdere endoscopieverpleegkundigen.

Statistische analyse

Data werden geanalyseerd met behulp van SPSS (versie 20, Chicago, IL, USA), waarbij tweezijdige *p*-waarden <0.05 als significant werden beschouwd. Numerieke demografische waarden werden samengevat als gemiddelden (±SD).Verschillen in numerieke data tussen de demografische groepen werden geanalyseerd met de ongepaarde T-toets. De Pearson $\chi 2$ test werd gebruikt om de associatie tussen categoriale gegevens van respondenten en categoriale antwoorden te vergelijken.
Armitrage's trend test werd gebruikt voor de associatie tussen categoriale gegevens en antwoordmogelijkheden met een glijdende schaal. Lineaire regressie werd gebruikt om voorspellers voor stress tijdens colonoscopie te vinden en hiervoor te corrigeren. Betrouwbaarheidsintervallen werden gedefinieerd als 95%.

RESULTATEN

Antwoorden van de MDL-arts

Tabel 1. Demografische gegevens (n=169)

Leeftijd, gemiddelde (spreiding), in jaren	**43.8 (23-64)**
Geslacht, n(%)	
Man	102 (60.4)
Vrouw	58 (34.3)
Onbekend*	9 (5.3)
Opleiding, n(%)	
MDL-arts	112 (66.3)
MDL-arts in opleiding	48 (28.4)
Onbekend	9 (5.3)
Type praktijk, n(%)	
Academisch Centrum	51 (30.2)
STZ ziekenhuis	66 (39.1)
Streek ziekenhuis	43 (25.4)
Onbekend	9 (5.3)

*Het gedeelte met demografische gegevens werd niet door alle respondenten ingevuld

Van de 243 geretourneerde vragenlijsten waren er 169 geschikt voor analyse; 60 respondenten gaven aan niet deel te willen nemen, 14 vragenlijsten waren onvolledig ingevuld (zie figuur 1). Voorafgaand aan lichamelijk onderzoek gaf 5% van de MDL-artsen aan naar SA te vragen bij vrouwelijke patiënten, slechts 1 respondent (0.6%) meldde dit te doen bij mannen. Voorafgaand aan colonoscopie gaf 2.5% van de MDL-artsen aan naar SA te informeren bij vrouwen en slechts 1 respondent deed dit ook bij mannen. Bij patiënten met specifieke klachten zoals chronische buikpijn, fecale incontinentie of obstipatie zegt 71.4% bij vrouwen naar SA te vragen en 31.3% bij mannelijke patiënten ($p<0.001$).

De meeste MDL-artsen onderkennen het belang van vragen naar SA: 29.9% vond het niet van belang bij mannelijke patiënten en 7.5% vond dit niet van belang bij vrouwelijke patiënten ($p<0.001$),

24.6% van de MDL-artsen gaf aan het moeilijk te vinden om naar SA te vragen en 12.5% gaf aan niet te weten hoe te handelen als SA aan het licht zou komen. 10% gaf aan dat tijdgebrek een reden was niet naar dit onderwerp te vragen. Tenslotte werd aan de MDL-artsen gevraagd een schatting te geven van de prevalentie van SA in de eigen patiëntenpopulatie. Voor vrouwen werd deze gemiddeld geschat op 10% en voor mannen op 4%.

Antwoorden van de patiënt

Tabel 2. Patiëntkenmerken

	Vrouw 429 (56.1) [a]	Man 336 (43.9) [a]	Verschil p-waarde
Leeftijd, gemiddelde (SD), jaren	59.9 (15.3)	62.8 (13.2)	0.02
≤39 jaar, n(%)	41 (9.6)	25 (7.4)	0.08
40-49 jaar, n(%)	63 (14.7)	25 (7.4)	0.19
50-59 jaar, n(%)	84 (19.6)	60 (17.9)	0.07
60-69 jaar, n(%)	127 (29.6)	124 (36.9)	0.04
70-79 jaar, n(%)	74 (17.2)	72 (21.4)	0.34
80-89 jaar n(%)	38 (8.9)	29 (8.6)	0.004
≥90 jaar n(%)	2 (0.5)	1 (0.3)	n/a
Geboorteland n (%)	**Vrouw n=428 [a]**	**Man n=335 [a]**	**Verschil p-waarde**
Nederland	378 (88.3)	296 (88.4)	0.98
Ander West-Europees land	13 (3.0)	9 (2.7)	0.78
Marokko	2 (0.5)	2 (0.6)	0.80
Turkije	3 (0.7)	4 (1.2)	0.48
Suriname	12 (2.8)	10 (3.0)	0.89
Nederlandse Antillen	3 (0.7)	4 (1.2)	0.48
Ander westers land	2 (0.5)	2 (0.6)	0.80
Ander niet-westers land	15 (3.5)	8 (2.4)	0.38
Indicatie voor colonoscopie [b] n (%)	**Vrouw n=428 [b]**	**Man n=336 [b]**	**Verschil p-waarde**
Buikpijn	150 (35.0)	81 (24.1)	0.001
Rectaal bloedverlies	110 (25.6)	108 (32.1)	0.05
Controle (erfelijke) colon carcinoom/ poliposis/poliep [c]	111 (25.9)	97 (28.9)	0.37
Veranderd defecatiepatroon	104 (24.3)	68 (20.2)	0.18
Chronische diarree en/of obstipatie en/of slijm bij de ontlasting	37 (8.6)	15 (4.5)	0.02
IBD	18 (4.2)	22 (6.5)	0.15
Pijn anale regio	18 (4.2)	20 (6.0)	0.27
Anemie	9 (2.1)	14 (4.2)	0.10
Anders	38 (8.9)	31 (9.2)	0.51

a. Gebaseerd op de gegevens van 768 respondenten waarvan 429 vrouwen en 336 mannen (in verband met ontbrekende waarden,
komen de totalen niet altijd uit op 768);
b. Meerdere antwoorden mogelijk;
c. Significant meer patiënten met de indicatie 'controle (erfelijk) coloncarcinoom/polyposis' werden gezien in het academische centrum vergeleken met het topklinische ziekenhuis (23.6%; p<0.001);
n/a = niet van toepassing; ns = niet significant, IBD = Inflammatory Bowel Disease.

Prevalentie seksueel misbruik

In totaal gaf 7% van de patiënten aan slachtoffer van SA te zijn geweest. Van de vrouwen was dit 10% (40/421) en van de mannen 3.9% (13/331; p=0.003). Niet-westerse immigranten rapporteerden meer SA dan patiënten uit een westers land (14.9% versus 6.3%; p=0.008). Dit komt voor vrouwen overeen met cijfers uit populatieonderzoek, bij mannen is het lager dan op grond van populatieonderzoek is te verwachten.

Praten over seksueel misbruik

Aan 1.8% van de respondenten was ooit door een arts naar SA gevraagd. Van patiënten met SA gaf 53.8% aan dat de MDL-arts hier wel naar zou moeten vragen (n=28). Een deel van de patiënten (29.2% van de vrouwen) gaf aan dat dit niet nodig was, omdat ze er "niet over kunnen praten" (zie Tabel 3). Van de 768 respondenten gaf 23.7% aan het vreemd te vinden als een vraag over SA gesteld zou worden in een intakevragenlijst voorafgaand aan de colonoscopie. Onbegrip over de relevantie was voor 89.1% in deze subgroep de reden deze vraag vreemd te vinden.

Tabel 3. Moet de MDL-arts vragen naar seksueel misbruik (SA)?
Antwoorden van patiënten die SA ervaring aangaven

Nee, de MDL-arts hoeft niet naar SA te vragen, n(%)	**24 (45.3)** [a]
Zo niet, wat is de reden dat u hier niet over wilt praten? [b]	
Ik schaam me ervoor	6 (25.0)
Ik geloof niet dat de dokter me daarmee kan helpen	7 (29.1)
Ik heb er hulp voor gehad en kan er nu mee omgaan	0 (0.0)
Ik kan er niet over praten	7 (29.1)
Ik ben bang om het te vertellen	5 (20.8)
Het is niet (meer) belangrijk voor me	7 (29.1)
Het is te intiem om te bespreken	6 (25.0)
Ja, de MDL-arts moet naar SA vragen, n(%)	**28 (52.8)** [a]
Zo ja, wat zou u willen dat uw dokter zou doen nadat u het had verteld? [b]	
Alleen naar me luisteren	7 (25.0)
Adviseren over hoe ik hiermee om moet gaan	10 (35.7)
Verwijzen naar een gynaecoloog/uroloog	0 (0.0)
Verwijzen naar een psycholoog	6 (21.4)
Verwijzen naar een seksuoloog	6 (21.4)
Verwijzen naar een bekkenbodemfysiotherapeut	3 (10.7)
Afzien van colonoscopie	2 (7.1)
Informatie verstrekken zodat ik kan lezen over de behandelmogelijkheden	10 (35.7)

a. Kolommen komen niet uit op n=53 patiënten omdat 1 patiënt met seksueel misbruik in de voorgeschiedenis geen antwoorden heeft gegeven op de bovenstaande vragen
b. Meerdere antwoorden waren mogelijk

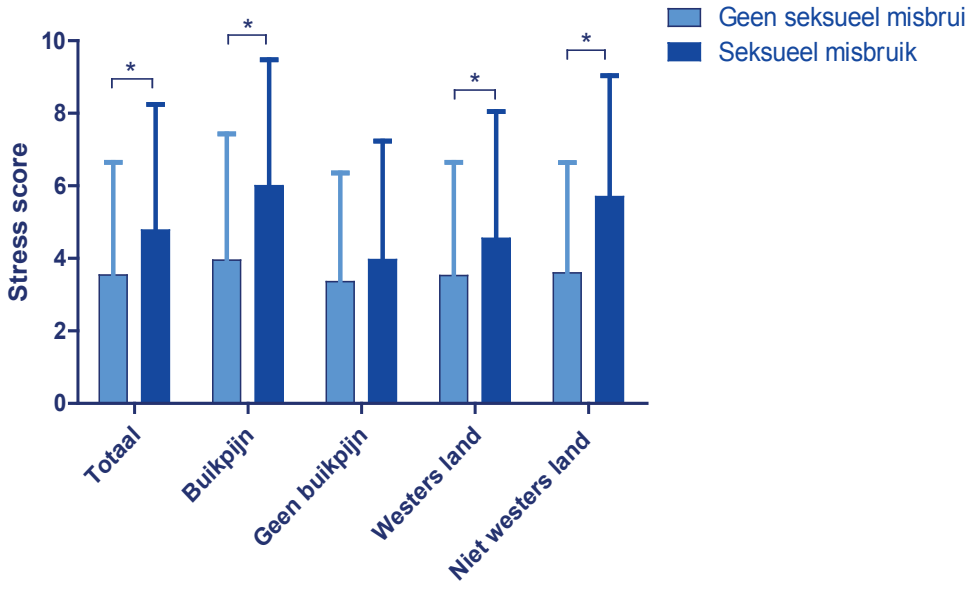
Seksueel misbruik en lichamelijke klachten

Slachtoffers van SA gaven meer seksueel disfunctioneren aan dan andere respondenten (64.0% versus 24.4%; p<0.001). Ook mictieklachten werden vaker gemeld door patiënten met misbruik in de voorgeschiedenis (58.8% versus 11.4%; p<0.001). Daarnaast noemden slachtoffers vaker meer dan één gastro-intestinaal probleem als reden voor colonoscopie (r=0.1, p=0.006) en gaven zij vaker veranderingen in het defecatiepatroon aan vergeleken met de andere respondenten (37.7% versus 21.3%; p=0.006). Buikpijn was gecorreleerd aan SA bij mannen (r=0.572, p=0.031) en in mindere mate bij vrouwen (r=0.291, p=0.052).

Ervaren belasting van colonoscopie

Respondenten werd gevraagd op een schaal van 0 tot 10 aan te geven hoe belastend zij de colonoscopie ervaren hadden. De groep patiënten die seksueel misbruik had meegemaakt ervoer de colonoscopie als belastender (gemiddelde score 4.78 ±3.47) dan de groep patiënten zonder een voorgeschiedenis van seksueel misbruik (gemiddelde score 3.54 ±3.11; p=0.007). Zie figuur 2.

Figuur 2. Ervaren belasting van de colonoscopie



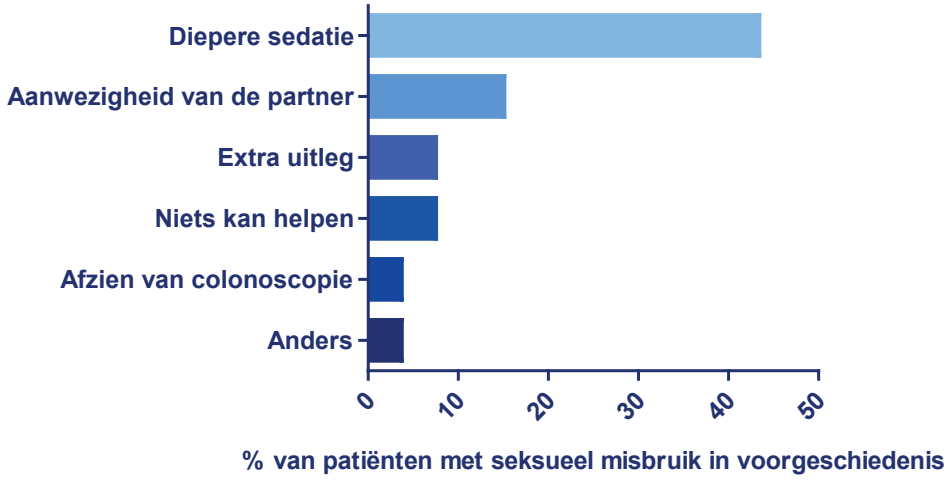
Buikpijn: Patiënten die aangaven buikpijn als klacht te hebben of die buikpijn aangaven als de indicatie voor de colonoscopie en patiënten die naast een andere indicatie voor colonoscopie ook buikpijn aan gaven. Patiënten die geen buikpijn klachten aangaven of dit niet opgaven als reden voor de colonoscopie werden ingedeeld in de groep 'geen buikpijn'.

*= significant verschil

Ook wanneer werd gecontroleerd voor de factoren leeftijd, geslacht, etniciteit, indicatie en tijd tussen de colonoscopie en het invullen van de vragenlijst bleek SA een significante voorspeller voor belasting van de colonoscopie (β=0.991 (SE=0.466); p=0.034). Er werd geen verschil gezien tussen mannen en vrouwen met SA wat betreft colonoscopie gerelateerde belasting (gemiddelde scores van 5.00±3.82 respectievelijk 4.72 ±3.41; p=0.814).

Patiënten met een verleden van SA werd gevraagd welke aanpassingen rondom en tijdens de colonoscopie de procedure minder belastend zouden kunnen maken. 25.4% vond dat de huidige procedure prima was, maar de meesten noemden één of meer opties die de procedure comfortabeler zou kunnen maken, zie figuur 4.

Figuur 4. Mogelijkheden voor het verminderen van de belasting van de colonoscopie [a]
a. Antwoorden van 51 patiënten op de multiple choice + open vraag: 'de colonoscopie zou makkelijker/comfortabeler voor me zijn geweest als…?'
b. Bij anders werd genoemd: 'Alleen over SA beginnen als het met de klachten te maken kan hebben' en 'niet je depressief verklaren'.



DISCUSSIE

De resultaten van deze studie tonen aan dat MDL-artsen in Nederland zich bewust zijn van de impact van SA in hun patiëntenpopulatie, maar dat ze niet routinematig naar SA vragen. Resultaten van de vragenlijst onder patiënten die colonoscopie ondergingen laten zien dat patiënten met een voorgeschiedenis van SA meer stress ervaren tijdens het onderzoek. Het merendeel van deze patiënten vindt dat de MDL-arts naar SA dient te vragen. Verschillende mogelijkheden werden genoemd, die de belasting voor patiënten met een seksueel trauma tijdens de colonoscopie zouden kunnen verminderen, met name diepere sedatie. Gezien het grote aantal publicaties sinds de jaren '80 over het effect van SA op gastro-intestinale klachten en buikpijn ligt het voor de hand dat de MDL-arts routinematig naar SA vraagt. Deze studie laat zien dat dit niet het geval is, en dat een deel van de MDL-artsen belemmeringen ervaart om hierover met een patiënt te spreken. Specifieke training op dit vlak kan hierin mogelijk van waarde zijn. Aandacht voor SA is belangrijk, omdat stressreductie tijdens de colonoscopie mogelijk kan worden bereikt door de aanwezigheid van een familielid, diepere sedatie of heldere communicatie tijdens het onderzoek. Een standaard vraag over SA in een vragenlijst voorafgaand aan colonoscopie zou de drempel voor zowel de arts als de patiënt verlagen om het onderwerp ter sprake te brengen. Van patiënten met SA in de anamnese geeft meer dan de helft aan dit met de MDL-arts te willen bespreken.

Het merendeel van de MDL-artsen zegt aandacht voor SA te hebben bij vrouwelijke patiënten die zich presenteren met klachten zoals chronische buikpijn. Uit de antwoorden van de patiënten in de vragenlijst kan opgemaakt worden dat minder dan 1% ooit door de MDL-arts naar seksueel misbruik is gevraagd. Dit is in overeenstemming met de literatuur over dit onderwerp; van de Nederlandse urologen en gynaecologen bleek ook slechts een minderheid naar SA te vragen (7;10;19;20). De resultaten van onze studie komen daarnaast overeen met soortgelijk onderzoek waarbij een duidelijk verband werd aangetoond tussen een verleden met SA en stress, angst, en herbeleving tijdens gynaecologisch (vaginaal) onderzoek (13;21). De weerslag van invasief lichamelijk onderzoek bij mannen met een seksueel trauma werd tot op heden niet onderzocht.

Dit onderzoek heeft beperkingen. Resultaten van vragenlijstonderzoek kunnen onderhevig zijn aan non-response en recall bias. Patiënten met een verleden met SA kunnen ervoor gekozen hebben niet deel te nemen aan de studie om pijnlijke herinneringen te vermijden. Ook kan selectie bias optreden omdat patiënten met SA in de voorgeschiedenis colonoscopie wellicht weigeren of vermijden: deze patiënten kwamen dan niet in de studie. Allochtonen kunnen ondervertegenwoordigd zijn vanwege onbegrip bij taalbarrière of door culturele barrières. Daarnaast werd de vorm en intensiteit van SA

niet uitgevraagd, ook om deelname voor patiënten niet te belastend te maken. Alleen de gerichte vraag: 'Bent u ooit slachtoffer geweest van SA?' werd gesteld. Ten slotte kon vanwege het retrospectieve en anonieme studieontwerp niet gecorrigeerd worden voor confounders zoals de lengte van de procedure.

Ondanks deze beperkingen geeft deze studie duidelijk aan dat SA in de voorgeschiedenis een impact heeft op de dagelijkse praktijk van de MDL-arts en de belasting van colonoscopie voor de patiënt vergroot. Meer stress tijdens colonoscopie kan mogelijk verklaard worden door een verstoorde visceroperceptie via verschillende neuronaal en humoraal gestuurde interacties tussen het CZS, de bekkenbodem en de darmen (22). Veranderingen in cortico-limbische pijnmodulatiesystemen spelen een rol in de associatie tussen SA en gastro-intestinale klachten (23). Daarnaast zijn angst en trauma, in het bijzonder seksueel trauma, significant geassocieerd met bekkenbodemdisfunctie leidend tot functionele gastro-intestinale ziekten, dyspareunie, disfunctionele mictie en chronische buikpijn (14;24-26).

Concluderend blijkt dat meer aandacht voor SA binnen de gastroenterologische patiëntenzorg wenselijk is. Opleiding en richtlijnen zijn nodig om meer aandacht te krijgen voor de invloed van SA in de MDL-praktijk. Huisartsen zouden hierin vanzelfsprekend ook een rol kunnen spelen bij de patiënten die zij direct doorsturen voor colonoscopie.

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IV APPENDICES

VRAGENLIJST CARDIOLOGEN (DUTCH)

__ __ __ __

Indien u niet wilt deelnemen aan deze survey:
Waarom wilt u dit niet?

- ☐ Geen interesse
- ☐ Geen tijd
- ☐ Niet genoeg ervaring
- ☐ Verbetering op dit gebied is niet mogelijk
- ☐ Anders:……

Demografische gegevens

Leest u iedere vraag aandachtig door. Kies dan bij elke vraag het antwoord dat het meest op u van toepassing is. Zet vervolgens een kruisje voor het door u gekozen antwoord. Sla geen vragen over. Mocht u een fout maken, zet dan een streep door het foute antwoord en een nieuw kruisje voor het goede antwoord. Alvast bedankt voor uw medewerking.

1. Wat is u leeftijd? ……jaar

2. Wat is uw geslacht?
   - ☐ Man
   - ☐ Vrouw

3. Wat is uw functie?
   - ☐ cardioloog
   - ☐ cardioloog in opleiding

4. Waar werkt u?
   - ☐ Academisch ziekenhuis
   - ☐ Algemeen topklinisch opleidingsziekenhuis
   - ☐ Regionaal- of streekziekenhuis

5. Hoe lang bent u werkzaam in uw huidige beroep?
   - ☐ 0-11 maanden
   - ☐ 1-2 jaar
   - ☐ 3-5 jaar
   - ☐ 6-10 jaar
   - ☐ 11-15 jaar
   - ☐ 15 jaar of meer

Vragenlijst Seksualiteit

6. Hoevaak bespreekt u de seksuele gezondheid van de patiënt?
   - ☐ Nooit
   - ☐ Zelden
   - ☐ Soms
   - ☐ Regelmatig
   - ☐ Vaak

7. Op uw huidige werkplek, bij hoeveel procent van de patiënten denkt u dat seksualiteit veranderd is ten gevolge van hun aandoening?
   ……%

8. In het afgelopen jaar, met hoeveel procent van uw patiënten heeft u hun seksuele gezondheid besproken?
   ……..%

9. In het afgelopen jaar, hoeveel procent van uw patiënten heeft u doorverwezen naar een arts of andere hulpverlener voor begeleiding van seksuele problemen of voor het beantwoorden van vragen over seksualiteit?
   ……..%

10. De cardioloog heeft de verantwoordelijkheid om seksualiteit met patiënten te bespreken.
   □ Helemaal mee eens
   □ Mee eens
   □ Weet niet
   □ Mee oneens
   □ Helemaal mee oneens

11. Zo niet, wie heeft dan wel de verantwoordelijkheid?(meerdere antwoorden mogelijk)
   □ De Huisarts
   □ Revalidatie arts
   □ Maatschappelijk werk(st)er
   □ Verpleegkundige
   □ Fysiotherapeut
   □ Psycholoog
   □ De patiënt moet het zelf ter sprake brengen
   □ Anders, namelijk ……

12. In welke mate heeft u het gevoel over voldoende kennis te beschikken om het onderwerp seksualiteit te bespreken?
   □ Helemaal geen kennis
   □ Niet veel kennis
   □ Enige kennis
   □ Veel kennis
   □ Extreem veel kennis

13. Op uw huidige werkplek, hoe vaak heeft u patiënten na een myocardinfarct of hartfalen voorlichting gegeven met betrekking tot seksualiteit over:

	Nooit	**Zelden**	**Regelmatig**	**Vaak**
A. Wanneer seksuele activiteiten te hervatten	□	□	□	□
B. Het rapporteren van waarschuwingssignalen	□	□	□	□
C. Het gebruik van nitraten bij pijn	□	□	□	□
D. Effecten van medicatie	□	□	□	□
E. Gebruik van erectiebevorderende middelen	□	□	□	□

14. Op uw huidige werkplek, hoe vaak heeft u informatie over seksualiteit verstrekt aan:

	Nooit	**Zelden**	**Regelmatig**	**Vaak**
- Mannelijke patiënten na een hartinfarct of hartfalen	□	□	□	□
- Vrouwelijke patiënten na een hartinfarct of hartfalen	□	□	□	□

15. Kunt u aangeven bij welke klachten u specifiek naar seksuele problematiek vraagt? (meerdere antwoorden mogelijk)
   □ Angina pectoris klachten
   □ Claudicatio klachten
   □ Hartfalen
   □ Recent myocard infarct
   □ Recent starten met een bètablocker
   □ Recent starten met andere cardiovasculaire medicatie
   □ Anders……

16. Vraagt u naar het gebruik van erectiepillen (Viagra, Levitra, Cialis) bij mannelijke patiënten op uw polikliniek?
    - ☐ Nooit
    - ☐ Zelden
    - ☐ Regelmatig
    - ☐ Vaak

17. Op uw huidige werkplek, hoe vaak heeft u informatie over seksualiteit verstrekt aan patiënten na een hartinfarct of hartfalen uit de volgende leeftijdscategorieën?

	Nooit	**Zelden**	**Regelmatig**	**Vaak**
- 20-35 jaar	☐	☐	☐	☐
- 36-50 jaar	☐	☐	☐	☐
- 51-65 jaar	☐	☐	☐	☐
- 66-75 jaar	☐	☐	☐	☐
- 76 jaar of ouder	☐	☐	☐	☐

18. In onderstaande lijst staan redenen aangegeven die u mogelijk weerhouden om seksualiteit met uw patiënten te bespreken. In welke mate bent u het met de stellingen eens? Vink op elke lijn één vakje aan.

	Geheel mee oneens	Oneens	Enigszins mee oneens / Enigszins mee eens	Mee eens	Geheel mee eens
Onvoldoende tijd	☐	☐	☐	☐	☐
Onvoldoende kennis	☐	☐	☐	☐	☐
Onvoldoende training	☐	☐	☐	☐	☐
Het is de taak van een ander	☐	☐	☐	☐	☐
Patiënt is er nog onvoldoende klaar voor	☐	☐	☐	☐	☐
Seksualiteit wordt niet als een probleem ervaren door de patiënt	☐	☐	☐	☐	☐
Patiënt is te ziek om seksualiteit bespreekbaar te maken	☐	☐	☐	☐	☐
Redenen gerelateerd aan cultuur en religie	☐	☐	☐	☐	☐
Redenen gerelateerd aan taal en etniciteit	☐	☐	☐	☐	☐
Leeftijdsverschil tussen u en de patiënt	☐	☐	☐	☐	☐
Patiënt is van hetzelfde geslacht	☐	☐	☐	☐	☐

	Geheel mee oneens	Oneens	Enigszins mee oneens / Enigszins mee eens	Mee eens	Geheel mee eens
Aanwezigheid van een derde partij	☐	☐	☐	☐	☐
Seks is privé	☐	☐	☐	☐	☐
Gevoel van schaamte	☐	☐	☐	☐	☐
Bang zijn om de patiënt te beledigen	☐	☐	☐	☐	☐
Hoge leeftijd van de patiënt	☐	☐	☐	☐	☐
Geen band voelen met de patiënt	☐	☐	☐	☐	☐
Geen insteek of aanleiding hebben	☐	☐	☐	☐	☐
Ik vind het zelf ongemakkelijk	☐	☐	☐	☐	☐
De patiënt begint er zelf niet over	☐	☐	☐	☐	☐

19. Heeft u in uw centrum de mogelijkheid om patiënten met seksuele problemen door te verwijzen?
    - ☐ Ja
    - ☐ Nee
    - ☐ Onbekend

Indien ja, naar:……
……
……

20. Heeft u behoefte aan het vergroten van uw kennis omtrent het bespreken van seksualiteit met uw patiënten?
    - ☐ Ja
    - ☐ Nee

21. Heeft u behoefte aan een lijst met vaste hulpverleners waar u patiënten naar zou kunnen verwijzen?
    - ☐ Ja
    - ☐ Nee

Seksueel functioneren en cardiovasculaire medicatie

Met uw huidige kennis, welke medicatie denkt u dat er invloed heeft op het seksueel functioneren? En wat is het effect?
Gelieve niet op zoeken aub!

22. Bètablokkers:
    - ☐ positief
    - ☐ geen invloed
    - ☐ negatief

23. Alfa-blockers:
    - ☐ positief
    - ☐ geen invloed
    - ☐ negatief
24. Hartglycosiden:
    - ☐ positief
    - ☐ geen invloed
    - ☐ negatief
25. ACE-remmers:
    - ☐ positief
    - ☐ geen invloed
    - ☐ negatief
26. Angiotensine II antagonisten:
    - ☐ positief
    - ☐ geen invloed
    - ☐ negatief
27. Calciumantagonisten:
    - ☐ positief
    - ☐ geen invloed
    - ☐ negatief
28. Diuretica:
    - ☐ positief
    - ☐ geen invloed
    - ☐ negatief
29. Nitraten:
    - ☐ positief
    - ☐ geen invloed
    - ☐ negatief
30. Statines:
    - ☐ positief
    - ☐ geen invloed
    - ☐ negatief

31. Verandert u wel eens de medicatie van een patiënt om te trachten de seksuele functie te verbeteren?
    - ☐ Nooit
    - ☐ Zelden
    - ☐ Regelmatig
    - ☐ Vaak

Hartelijk dank voor uw hulp!

VRAGENLIJST CARDIOLOGISCHE PATIËNTEN (DUTCH)

MANNEN

♂ Man

De seksuele gezondheid is een belangrijk deel van het psychische en emotionele welzijn van een individu. Erectiele disfunctie, beter bekent als impotentie of erectie stoornissen, is een veel voorkomende medische aandoening die de seksuele gezondheid kan beïnvloeden. Vooral bij mannen met hart- en vaatziekten komen erectiestoornissen veel voor.

A. Geeft u uw toestemming voor het gebruik van uw antwoorden (anoniem) voor de medische wetenschap?

- ☐ Ja
- ☐ Nee

B. Zo niet: waarom niet?

- ☐ Seks is een privé aangelegenheid
- ☐ Ik heb er geen belang bij
- ☐ Ik heb er geen tijd voor
- ☐ Anders:……

Algemene gegevens:

1. Leeftijd:……jaar

2. Land van herkomst:
   - □ Nederland
   - □ Turkije
   - □ Een ander Europees land:……
   - □ Marokko
   - □ Suriname
   - □ De Nederlandse Antillen
   - □ Anders:……..…

3. Wat is uw gewicht …….kg

4. Wat is uw lengte…….cm

5. Rookt u?
   - □ Ja
   - □ Nee
   - □ Gestopt, sinds: ___ - ___- _____ (graag een datum invullen)

6. Waarom bent u verwezen naar de cardioloog?
   (meerdere antwoorden mogelijk)
   - o Pijn op de borst klachten
   - o Hoge bloeddruk
   - o Hartkloppingen
   - o Onverklaarbare benauwdheid/vermoeidheid
   - o Hartinfarct
   - o Hartfalen
   - o Anders……..

7. Welke (hart)medicijnen gebruikt u?
   ……
   ……
   ……
   ……

   □ Ik gebruik geen medicijnen

8. Indien er bij u een cardiologische diagnose is gesteld, welke is dat?

- ☐ Vernauwde kransslagaderen (angina pectoris)
- ☐ Hoge bloeddruk
- ☐ Hartritmestoornissen
- ☐ Hartinfarct
- ☐ Hartfalen
- ☐ Hartklep aandoening
- ☐ Ontsteking van het hart
- ☐ Hartspierziekte
- ☐ Aangeboren hartaandoening
- ☐ Weet ik niet
- ☐ Anders ……

Seksuele functie:

C. Bent u in de afgelopen 12 maanden seksueel actief geweest?

- ☐ Ja
- ☐ Nee

Als u 'Nee' heeft ingevuld bij vraag C, dan kunt u de volgende vragen overslaan en doorgaan naar vraag 12 op pagina 5.

PER VRAAG SLECHTS ÉÉN GETAL OMCIRCELEN S.V.P
Omcirkel het antwoord dat het best uw situatie omschrijft.

De afgelopen 6 maanden:

7. Hoe omschrijft u het vertrouwen dat u heeft over het krijgen en vasthouden van een erectie?					
Weet ik niet/niet geprobeerd	Erg laag	Matig	Redelijk	Tamelijk goed	Erg goed
0	1	2	3	4	5

8. Als u een erectie heeft door seksuele stimulatie, hoe vaak was deze dan hard genoeg voor het penetreren van uw partner (gemeenschap)?					
Niet geprobeerd	Bijna nooit of nooit	Een paar keer (minder dan de helft van de tijd)	Soms (ongeveer de helft van de tijd)	Meestal (Meer dan de helft van de tijd)	Altijd of bijna altijd
0	1	2	3	4	5

9. Hoe vaak lukte het tijdens de geslachtsgemeenschap om uw erectie te behouden terwijl u uw partner penetreerde?					
Niet geprobeerd	Bijna nooit of nooit	Een paar keer (minder dan de helft van de tijd)	Soms (ongeveer de helft van de tijd)	Meestal (Meer dan de helft van de tijd)	Altijd of bijna altijd
0	1	2	3	4	5

10. Hoe moeilijk was het om de erectie tot het einde te behouden tijdens de geslachtsgemeenschap?					
Niet geprobeerd	Extreem moeilijk	Erg moeilijk	Moeilijk	Niet erg moeilijk	Totaal niet moeilijk
0	1	2	3	4	5

11. Hoe vaak was de geslachtsgemeenschap bevredigend voor u?					
Niet geprobeerd	Bijna nooit of nooit	Een paar keer (minder dan de helft van de tijd)	Soms (ongeveer de helft van de tijd)	Meestal (Meer dan de helft van de tijd)	Altijd of bijna altijd
0	1	2	3	4	5

zoz

12. Als de cardioloog u tijdens een consult zou vragen naar seksuele problemen, wat zou u hier dan van vinden? (meerdere antwoorden mogelijk)

- o Ongemakkelijk
- o Het zou me irriteren
- o Beledigend (seks is een privé aangelegenheid)
- o Ik denk niet dat de cardioloog me kan helpen met deze problemen
- o Dat zou me niet uitmaken
- o Het lijkt me logisch dat de arts daar naar vraagt
- o Ik zou blij zijn dat de arts dit ter sprake brengt
- o Ik zou opgelucht zijn dat het ter sprake wordt gebracht
- o Ik denk dat het noodzakelijk is voor een compleet consult

13. Waarom bent u niet (meer) seksueel actief? (meerdere antwoorden mogelijk)

- o Niet van toepassing *(ik ben wel seksueel actief)*

- o Het is niet belangrijk voor me
- o Ik ben te moe
- o Ik ben te somber
- o Vanwege gezondheidsproblemen, namelijk:……
- o Ik ben bang om een hartinfarct te krijgen
- o Mijn partner is bang dat het slecht is voor mijn hart
- o Mijn conditie is te slecht
- o Vanwege een seksueel probleem (genoemd in vraag 1 t/m 5)
- o Ik voel me te oud voor seksuele activiteiten
- o Mijn partner heeft seksuele problemen
- o Mijn partner heeft gezondheidsproblemen, namelijk:……
- o Mijn partner is in slechte conditie
- o Ik ben bang om bij mijn partner een hartinfarct uit te lokken
- o Anders:…….....

14. Heeft u het idee dat de medicatie die u van uw cardioloog krijgt uw seksuele leven beïnvloed?

- □ Ja, het beïnvloed positief
- □ Ja, het beïnvloed negatief
- □ Nee, het heeft geen invloed
- □ Niet van toepassing

15. Zou u het prettig vinden als u over seksuele problemen kon spreken en vragen hierover zou kunnen stellen tijdens een verpleegkundig spreekuur?
    - ☐ Ja
    - ☐ Nee
    - ☐ Niet van toepassing

16. Heeft u behoefte aan een gesprek met de cardioloog over de mogelijkheden om uw seksuele leven te verbeteren?
    - ☐ Ja
    - ☐ Nee
    - ☐ Niet van toepassing

17. Zou u schriftelijke informatie willen krijgen over seksuele problemen en de mogelijke oplossingen hiervoor?
    - ☐ Ja
    - ☐ Nee
    - ☐ Niet van toepassing

De volgende vragen zijn niet van toepassing als u GEEN seksuele klacht(en) heeft, ga dan alstublieft door naar vraag 23 op pagina 7.

18. Kunt u aangeven op een schaal van 0 tot 10 in hoeverre u last heeft van uw seksuele klacht(en)?
    0 betekent geen last, 10 betekent veel last
    - ☐ ……..
    - ☐ Niet van toepassing

19. Kunt u aangeven op een schaal van 0 tot 10 in hoeverre uw seksuele probleem uw relatie/huwelijk beïnvloed?
    0 betekent geen invloed, 10 betekent veel invloed
    - ☐ ……..
    - ☐ Niet van toepassing

20. Zou u behandeld willen worden voor uw seksuele probleem/klacht?
    - ☐ Ja
    - ☐ Misschien
    - ☐ Nee

21. *Als u 'ja' heeft geantwoord op vraag* 20:
Wat zou u willen dat uw cardioloog zou doen met betrekking tot uw seksuele klacht(en)? *(Meerdere antwoorden mogelijk)*

- o Alleen naar me luisteren
- o Advies geven over hoe ik ermee om moet gaan
- o Uitleg geven
- o Verwijzen naar een uroloog/gynaecoloog
- o Verwijzen naar een seksuoloog
- o Verwijzen naar een psycholoog
- o Verwijzen naar een bekkenbodem fysiotherapeut
- o Informatie meegeven zodat ik er zelf over kan lezen
- o Informatie meegeven en me thuis over de behandelopties laten denken
- o Anders……

22. *Als u 'nee' heeft geantwoord op vraag 20:*
Waarom wilt u niet dat uw cardioloog naar seksuele klachten vraagt?

- □ Het is niet belangrijk voor me
- □ Het is te intiem om het over te hebben
- □ Ik voel me te oud om seks te hebben
- □ Ik geloof niet dat de dokter me kan helpen met dit probleem
- □ Ik wil geen tijd van mijn dokter vragen voor zoiets
- □ Het is een privé aangelegenheid
- □ Er is geen relatie met de klachten
- □ Anders:……

23. Heeft u wel eens erectiebevorderende medicatie, zoals Viagra of Cialis, geprobeerd?
    - □ Ja
    - □ Nee

24. Als u de vorige vraag met 'Ja' heeft beantwoord; hoe kwam u toen aan deze medicatie?
    - □ Huisarts
    - □ Cardioloog
    - □ Andere specialist
    - □ Ik heb het op internet besteld
    - □ Van een vriend of familielid gekregen
    - □ Anders: ……

25. Heeft u ideeën of opmerkingen voor het verbeteren van de seksuele gezondheidszorg binnen de cardiologie?

……
……
……
……
……

Hartelijk bedankt voor het invullen!

Einde.

VROUWEN

♀Vrouw

De seksuele gezondheid is een belangrijk deel van het psychische en emotionele welzijn van een individu. Seksuele problemen komen vaker voor bij patiënten met hart- en vaatziekten.

A. Geeft u uw toestemming voor het gebruik van uw antwoorden (anoniem) voor de medische wetenschap?
   - □ Ja
   - □ Nee

B. Zo niet: waarom niet?
   - □ Seks is een privé aangelegenheid
   - □ Ik heb er geen belang bij
   - □ Ik heb er geen tijd voor
   - □ Anders: ……

Algemene gegevens:

1) Leeftijd:……jaar

2) Land van herkomst:
   - □ Nederland
   - □ Turkije
   - □ Een ander Europees land:……
   - □ Marokko
   - □ Suriname
   - □ De Nederlandse Antillen
   - □ Anders:……..…

3) Wat is uw gewicht ……kg

4) Wat is uw lengte……cm

5) Rookt u?
   - □ Ja
   - □ Nee
   - □ Gestopt, sinds: ___ - ___- _____ (graag een datum invullen)

6) Waarom bent u verwezen naar de cardioloog?
   (meerdere antwoorden mogelijk)
   - o Pijn op de borst klachten
   - o Hoge bloeddruk
   - o Hartkloppingen
   - o Onverklaarbare benauwdheid/vermoeidheid
   - o Hartinfarct
   - o Hartfalen
   - o Anders……..

7) Welke (hart)medicijnen gebruikt u?
   ……
   ……
   ……
   ……

   □ Ik gebruik geen medicijnen

8) Indien er bij u een cardiologische diagnose is gesteld, welke is dat?

- ☐ Vernauwde kransslagaderen (angina pectoris)
- ☐ Hoge bloeddruk
- ☐ Hartritmestoornissen
- ☐ Hartinfarct
- ☐ Hartfalen
- ☐ Hartklep aandoening
- ☐ Ontsteking van het hart
- ☐ Hartspierziekte
- ☐ Aangeboren hartaandoening
- ☐ Weet ik niet
- ☐ Anders ……

Seksuele functie:

INSTRUCTIE: De volgende vragen gaan over uw seksuele gevoelens en seksuele reacties gedurende de afgelopen 4 weken. Beantwoord deze vragen alstublieft zo eerlijk en duidelijk mogelijk. Uw antwoorden zullen strikt vertrouwelijk behandeld worden.

Bij het beantwoorden van de vragen zijn de volgende definities van toepassing:

Seksuele activiteit: dit kan zijn strelen, voorspel, masturbatie en geslachtsgemeenschap.

Gemeenschap: het binnengaan van de penis in de vagina.

Seksuele stimulatie: hieronder worden onder meer situaties verstaan als voorspel met een partner, zelfbevrediging (masturbatie), of fantaseren over seks.

Seksuele verlangens: hieronder wordt verstaan zin hebben in seks, in willen gaan op het seksuele initiatief van een partner, of denken aan seks.

C. Bent u in de afgelopen 12 maanden seksueel actief geweest?
- □ Ja
- □ Nee

Als u 'Nee' heeft ingevuld bij vraag C, dan kunt u de volgende vragen overslaan en doorgaan naar vraag 17 op pagina 5.

ER VRAAG SLECHTS ÉÉN GETAL OMCIRCELEN S.V.P
Omcirkel het antwoord dat het best uw situatie omschrijft.

Afgelopen 4 weken	**Weet ik niet/ niet geprobeerd**	**Bijna nooit of nooit**	**Een paar keer (minder dan de helft van de tijd)**	**Af en toe (ongeveer de helft van de tijd)**	**Meestal, meer dan de helft van de tijd**	**Bijna altijd of altijd**
10. Hoe vaak had u de afgelopen 4 weken seksuele verlangens?	0	1	2	3	4	5
11. Hoe vaak voelde u zich de afgelopen 4 weken seksueel opgewonden tijdens seksuele activiteit of gemeenschap?	0	1	2	3	4	5
12. Hoe vaak werd u de afgelopen 4 weken vochtig tijdens seksuele activiteit of gemeenschap?	0	1	2	3	4	5
13. Hoe vaak heeft u de afgelopen 4 weken een orgasme (klaarkomen) gehad bij seksuele stimulatie of gemeenschap?	0	1	2	3	4	5
14. Hoe vaak had u de afgelopen 4 weken een ongemakkelijk gevoel of pijn tijdens vaginale penetratie?	0	1	2	3	4	5

zoz

De afgelopen 4 weken	Niet van toepassing	Zeer ontevreden	Tamelijk ontevreden	Ongeveer even tevreden als ontevreden	Redelijk tevreden	Zeer tevreden
15. Hoe tevreden was u de afgelopen 4 weken over uw seksuele relatie met uw partner?	0	1	2	3	4	5
16. Hoe tevreden was u met uw seksleven in het algemeen?	0	1	2	3	4	5

17. Als de cardioloog u tijdens een consult zou vragen naar seksuele problemen, wat zou u hier dan van vinden? (meerdere antwoorden mogelijk)

- o Ongemakkelijk
- o Het zou me irriteren
- o Beledigend (seks is een privé aangelegenheid)
- o Ik denk niet dat de cardioloog me kan helpen met deze problemen
- o Dat zou me niet uitmaken
- o Het lijkt me logisch dat de arts daar naar vraagt
- o Ik zou blij zijn dat de arts dit ter sprake brengt
- o Ik zou opgelucht zijn dat het ter sprake wordt gebracht
- o Ik denk dat het noodzakelijk is voor een compleet consult

18. Waarom bent u niet (meer) seksueel actief? (meerdere antwoorden mogelijk)

o Niet van toepassing (ik ben wel seksueel actief)

o Het is niet belangrijk voor me
o Ik ben te moe
o Ik ben te somber
o Vanwege gezondheidsproblemen, namelijk:……
o Ik ben bang om een hartinfarct te krijgen
o Mijn partner is bang dat het slecht is voor mijn hart
o Mijn conditie is te slecht
o Vanwege een seksueel probleem (genoemd in vraag 1 t/m 5)
o Ik voel me te oud voor seksuele activiteiten
o Mijn partner heeft seksuele problemen
o Mijn partner heeft gezondheidsproblemen, namelijk:……
o Mijn partner is in slechte conditie
o Ik ben bang om bij mijn partner een hartinfarct uit te lokken
o Anders:…….....

19. Heeft u het idee dat de medicatie die u van uw cardioloog krijgt uw seksuele leven beïnvloed?
☐ Ja, het beïnvloed positief
☐ Ja, het beïnvloed negatief
☐ Nee, het heeft geen invloed
☐ Niet van toepassing

20. Zou u het prettig vinden als u over seksuele problemen kon spreken en vragen hierover zou kunnen stellen tijdens een verpleegkundig spreekuur?
☐ Ja
☐ Nee
☐ Niet van toepassing

21. Heeft u behoefte aan een gesprek met de cardioloog over de mogelijkheden om uw seksuele leven te verbeteren?
☐ Ja
☐ Nee
☐ Niet van toepassing

zoz

22. Zou u schriftelijke informatie willen krijgen over seksuele problemen en de mogelijke oplossingen hiervoor?
    - □ Ja
    - □ Nee
    - □ Niet van toepassing

De volgende vragen zijn niet van toepassing als u GEEN seksuele klacht(en) heeft, ga in dat geval alstublieft door naar vraag 28 op pagina 8.

23. Kunt u aangeven op een schaal van 0 tot 10 in hoeverre u last heeft van uw seksuele probleem.
    0 betekent geen last, 10 betekent veel last.

    □ ……..
    □ Niet van toepassing

24. Kunt u aangeven op een schaal van 0 tot 10, in hoeverre uw seksuele probleem uw relatie/huwelijk beïnvloed?
    0 betekent geen invloed, 10 betekent veel invloed

    □ ……..
    □ Niet van toepassing

25. Zou u behandeld willen worden voor uw seksuele probleem/klacht?
    - □ Ja
    - □ Misschien
    - □ Nee

26. *Als u 'ja' heeft geantwoord op vraag* 25:
    Wat zou u willen dat uw cardioloog zou doen met betrekking tot uw seksuele klacht(en)? *(Meerdere antwoorden mogelijk)*

    - o Alleen naar me luisteren
    - o Advies geven over hoe ik ermee om moet gaan
    - o Uitleg geven
    - o Verwijzen naar een uroloog/gynaecoloog
    - o Verwijzen naar een seksuoloog
    - o Verwijzen naar een psycholoog
    - o Verwijzen naar een bekkenbodem fysiotherapeut
    - o Informatie meegeven zodat ik er zelf over kan lezen
    - o Informatie meegeven en me thuis over de behandelopties laten denken
    - o Anders……

zoz

27. *Als u 'nee' heeft geantwoord op vraag 25:*
Waarom wilt u hier niet met uw cardioloog over spreken?

- □ Het is niet belangrijk voor me
- □ Het is te intiem om het over te hebben
- □ Ik voel me te oud om seks te hebben
- □ Ik geloof niet dat de dokter me kan helpen met dit probleem
- □ Ik wil geen tijd van mijn dokter vragen voor zoiets
- □ Het is een privé aangelegenheid
- □ Er is geen relatie met de klachten
- □ Anders:……

28. Heeft u ideeën of opmerkingen voor het verbeteren van de seksuele gezondheidszorg binnen de cardiologie?
……
……
……
……
……

Hartelijk bedankt voor het invullen!

Einde.

VRAGENLIJST MDL-ARTSEN (ENGLISH)

APPENDIX

Questionnaire gastroenterologists (translated from Dutch)

This questionnaire concerns patients with abdominal pain, constipation, diarrhea, alternating constipation/diarrhea, perianal pain and patients with blood within the stool.

Female sexual function

1. Do you ask each female patient for sexual function?
- ❑ Yes
- ❑ No

2. If so, what do you ask for?
- ❑ Dyspareunia
- ❑ Vaginismus
- ❑ Lack of lubrication
- ❑ Diminished sexual desire
- ❑ Incontinence during sexual intercourse
  - ❒ Fecal
  - ❒ Urinary
  - ❑ Other: ……

3. Do you ask for sexual dysfunction in female patients with <u>specific</u> gastrointestinal complaints?
- ❑ Yes
- ❑ No

4. If so, which gastrointestinal complaints? ……

5. A reason not to ask:
- ❑ I don't find it meaningful in the gastroenterology practice
- ❑ Not enough time
- ❑ If a patient has these complaints, I am unsure about therapeutic options
- ❑ I find it difficult to address
- ❑ I have insufficient knowledge how to ask for female sexual dysfunction
- ❑ Other:……

6. What percentage of female patients that you see do you believe experience sexual dysfunction? ……..%

Male sexual function

7. Do you ask each male patient for sexual function?
- ❑ Yes
- ❑ No

8. If so, what do you ask for?

- ❑ Diminished sexual desire
- ❑ Erectile dysfunctions
- ❑ Other:.....

9. Do you ask for sexual dysfunction in male patients with specific gastrointestinal symptoms?
- ❑ Yes
- ❑ No

10. If so, which gastrointestinal symptoms? .....

11. A reason not to ask:
- ❑ I don't find it meaningful in the gastroenterology practice
- ❑ Not enough time
- ❑ If a patient has these complaints, I am unsure about therapeutic options
- ❑ I find it difficult to address
- ❑ I have insufficient knowledge how to ask for female sexual dysfunction
- ❑ Other:.....

12. What percentage of male patients that you see do you believe experience sexual dysfunction .....%

Female sexual abuse

13. Do you always ask women before performing a physical examination about sexual abuse?
- ❑ Yes
- ❑ No

14. Do you always ask female patient for a history of sexual abuse before you perform a colonoscopy?
- ❑ Yes
- ❑ No

15. Do you ask women with specific gastrointestinal complaints for a history of sexual abuse?
- ❑ Yes
- ❑ No

16. If so, which gastrointestinal complaints?
- ❑ Constipation
- ❑ Chronic abdominal pain
- ❑ Fissura ani
- ❑ Anismus
- ❑ Fecal incontinence
- ❑ Other:.....

17. A reason not to ask is?
- ❑ I don't find it meaningful in the gastroenterology practice
- ❑ Not enough time

- ❑ I find it difficult to address
- ❑ I don't know what/how to ask
- ❑ Other:.....

18. What percentage of female patients that you see do you believe experienced sexual abuse?
……..%

19. Do you think it is important to pay more attention to female sexuality relating to abdominal complaints during your training?
- ❑ Not important
- ❑ Slightly important
- ❑ Rather important
- ❑ Very important

Male sexual abuse

20. Do you always ask men before performing a physical examination for a history of sexual abuse?
- ❑ Yes
- ❑ No

21. Do you always ask male patients for a history of sexual abuse before you perform a colonoscopy?
- ❑ Yes
- ❑ No

22. Do you ask male patients with specific gastrointestinal complaints for a history of sexual abuse?
- ❑ Yes
- ❑ No

23. If so, which gastrointestinal complaints?
- ❑ Constipation
- ❑ Fissura ani
- ❑ Anismus
- ❑ Chronic abdominal pain
- ❑ Fecal incontinence
- ❑ Other:……

24. A reason not to ask is?
- ❑ I don't find it meaningful in the gastroenterology practice
- ❑ Not enough time
- ❑ I find it difficult to address
- ❑ I don't know what/how to ask
- ❑ Other:.....

25. What percentage of male patients that you see do you believe have experienced sexual abuse? ……..%

26. Do you think it is important to pay more attention to male sexuality related to abdominal complaints during your training?

- ❑ Not important
- ❑ Slightly important
- ❑ Rather important
- ❑ Very important

Demographics

27. What is your age? ……years
28. What is your gender? M/V
29. Are you in training for gastroenterologist?
    - ❑ Yes
    - ❑ No

30. Where do you work?

- ❑ Academic (teaching) hospital)
- ❑ District general teaching hospital
- ❑ District general hospital

VRAGENLIJST COLONOSCOPIE PATIËNTEN (DUTCH)

Vragenlijst voor patiënten die in het afgelopen jaar een colonoscopie hebben ondergaan

Geeft u uw toestemming voor het gebruik van uw antwoorden (anoniem) voor de medische wetenschap?

- ☐ ***Ja***
- ☐ ***Nee***

1. Leeftijd:

2. Geslacht (omcirkel het juist antwoord): man/vrouw

3. Invuldatum: --/--/----

4. Land van herkomst:
   - ☐ Nederland
   - ☐ Turkije
   - ☐ Een ander Europees land:……
   - ☐ Marokko
   - ☐ Suriname
   - ☐ De Nederlandse Antillen
   - ☐ Anders:……..…

5. Wie heeft u verwezen naar de MDL-arts om het darmonderzoek te laten verrichten?
   - ☐ Huisarts
   - ☐ De MDL-arts zelf
   - ☐ Internist
   - ☐ Chirurg
   - ☐ Gynaecoloog
   - ☐ Uroloog
   - ☐ Anders:……..

6. Waarom werd het darmonderzoek verricht?
   (meerdere antwoorden mogelijk)
   - ☐ Ik had bloed bij/in mijn ontlasting
   - ☐ Mijn ontlastingspatroon was veranderd
   - ☐ Een controle onderzoek vanwege (erfelijke) darmkanker
   - ☐ Pijn in de anale regio
   - ☐ Pijn in de buik
   - ☐ Anders……..

Het is bekend dat een deel van de patiënten met maag- darm klachten ook lijdt aan seksuele problemen en/of plasproblemen. Wij willen graag weten of de MDL-arts patiënten hiernaar vraagt. Vandaar dat de volgende vragen gaan over seksuele problematiek en plasklachten.

7. Heeft of had u last van klachten op het gebied van seksualiteit in de afgelopen jaren? *(zo niet, ga naar vraag 11)*
   - ☐ Ja
   - ☐ Nee

8. *Als u 'ja' heeft geantwoord op vraag 7*:
   Wat voor seksuologische klachten heeft/had u?
   (Meerdere antwoorden mogelijk)
   - ☐ Afgenomen verlangen naar seks
   - ☐ Afkeer van seks
   - ☐ Moeite om een erectie te verkrijgen of vast te houden (man)
   - ☐ Vroegtijdig orgasme (man)
   - ☐ Moeite/onmogelijkheid om een orgasme te krijgen
   - ☐ Moeite met 'nat' worden (vrouw)
   - ☐ Fysieke onmogelijkheid gemeenschap te hebben (vrouw)
   - ☐ Pijn bij het vrijen (vrouw)
   - ☐ Anders……

9. Zo ja, heeft u hier professionele hulp voor gehad?
   - ☐ Ja
   - ☐ Nee

10. Heeft u dit verwerkt of opgelost?
    - ☐ Ja
    - ☐ Nee

11. Heeft uw MDL-arts naar seksuele klachten gevraagd?
    - ☐ Ja
    - ☐ Nee

12. Vindt u dat uw MDL-arts u had moeten vragen naar seksuele klachten?
    - ☐ Ja
    - ☐ Nee

13. *Als u 'ja' heeft geantwoord op vraag 12:*
Wat zou u willen dat u MDL-arts zou doen met betrekking tot uw seksuele klacht(en)?
(Meerdere antwoorden mogelijk)

- ☐ Alleen naar me luisteren
- ☐ Advies geven over hoe ik ermee om moet gaan
- ☐ Uitleg geven
- ☐ Verwijzen naar een uroloog/gynaecoloog
- ☐ Verwijzen naar een seksuoloog
- ☐ Verwijzen naar een psycholoog
- ☐ Verwijzen naar een bekkenbodem fysiotherapeut
- ☐ Informatie meegeven zodat ik er zelf over kan lezen
- ☐ Informatie meegeven en me thuis over de behandelopties laten denken
- ☐ Anders……

14. *Als u 'nee' heeft geantwoord op vraag 12:*
Waarom wilt u niet dat uw MDL-arts naar seksuele klachten vraagt?

- ☐ Het is niet belangrijk voor me
- ☐ Het is te intiem om het over te hebben
- ☐ Ik voel me te oud om seks te hebben
- ☐ Ik geloof niet dat de dokter me kan helpen met dit probleem
- ☐ Ik wil geen tijd van mijn dokter vragen voor zoiets
- ☐ Het is een privé aangelegenheid
- ☐ Er is geen relatie met de klachten
- ☐ Anders:……

15. Heeft u plasklachten? ***(zo niet, ga naar vraag 19)***

- ☐ Ja
- ☐ Nee

16. *Als u 'ja' heeft geantwoord op vraag 15:*
    Wat voor plasklachten heeft u?
    (Meerdere antwoorden mogelijk)

    - ☐ Vaak moeten plassen (vaker dan 8 keer per dag of meer dan 2 keer per nacht)
    - ☐ Hevige aandrang voor het plassen
    - ☐ Urine incontinentie
    - ☐ Problemen met het ledigen van de blaas (druppelen, persen, erg slappe straal)
    - ☐ Pijn bij het plassen
    - ☐ Bloed in de urine
    - ☐ Anders……

17. Heeft u hulp gehad voor uw plasklacht(en)?
    - ☐ Ja
    - ☐ Nee

18. Wilt u hulp voor uw plasklacht(en)?
    - ☐ Ja
    - ☐ Nee

19. Heeft uw MDL-arts naar plasproblemen gevraagd?
    - ☐ Ja
    - ☐ Nee

20. Vindt u dat uw MDL-arts had moeten vragen naar plasproblemen?
    - ☐ Ja
    - ☐ Nee

We weten dat een deel van de patiënten die bij de MDL-arts komt met buikpijn of problemen met de ontlasting, een negatieve seksuele ervaring (seksueel misbruik) heeft meegemaakt. Dit beïnvloedt het lichaam en de geest en soms zijn andere manieren van behandelen nodig om die klachten te verminderen. Daarnaast kan een darmonderzoek erg angstig/naar zijn voor patiënten die seksueel misbruik meegemaakt hebben.
Het is onbekend hoeveel artsen hun patiënten vragen naar seksueel misbruik (negatieve seksuele ervaringen), maar het is erg belangrijk om te weten hoe artsen met dit onderwerp omgaan, zo kunnen we de zorg verbeteren.

De volgende vragen gaan over negatieve seksuele ervaringen/seksueel misbruik.

21. Bent u het slachtoffer geweest van een vorm van seksueel misbruik?

□ Ja
□ Nee

22. Heeft uw arts hiernaar gevraagd?

□ Ja
□ Nee

22a. Zo ja, welke arts heeft u hiernaar gevraagd?

□ Huisarts
□ MDL-arts
□ Anders:……..

Als u vraag 21 met **'Nee'** heeft beantwoord, **vul dan alstublieft alleen vraag 23 tot en met 27 in.**

*Als u vraag 21 heeft beantwoord met **'Ja'** kunt u vraag 23 t/m 27 overslaan en de **vragen op pagina 7 en 8 beantwoorden.***

Als u ***geen*** slachtoffer bent (geweest) van seksueel misbruik:

23. Kunt u op een schaal van 0 tot 10 aangeven hoe u het darmonderzoek heeft ervaren?
    0 betekent weinig ongemak en 10 betekent erg veel ongemak

    …….

24. Vindt u dat de dokter moet vragen naar seksueel misbruik?

    □ Ja
    □ nee

25. Zou u het vreemd vinden als een vraag over seksueel misbruik zou worden gesteld in een vragenlijst, ter voorbereiding op het onderzoek bij de MDL-arts?

    □ Ja
    □ Nee

26. *Als u 'Ja' heeft geantwoord op vraag 25*:
    Waarom vindt u dat dan?

    □ Het lijkt me niet belangrijk in dit geval
    □ Het irriteert me
    □ Het is te intiem om te bespreken
    □ Het is vervelend om over na te denken
    □ Er is geen relatie met het onderzoek en mijn klachten
    □ Anders…….

27. Vindt u dat artsen meer training moeten krijgen over het omgaan met seksualiteit en misbruik problematiek?

    □ Ja
    □ Nee

Als u slachtoffer bent geweest van seksueel misbruik:

28. Heeft u professionele hulp gehad bij de verwerking hiervan?
    - ☐ Ja
    - ☐ Nee

29. Heeft u een manier gevonden om met deze ervaring(en) om te gaan?
    - ☐ Ja
    - ☐ Nee

30. Vindt u dat de dokter moet vragen naar seksueel misbruik?
    - ☐ Ja
    - ☐ Nee

31. *Als u 'Nee' heeft geantwoord op vraag 30:*
    Waarom wilt u niet dat de MDL-arts hiernaar vraagt?
    (Meerdere antwoorden mogelijk)
    - ☐ Het is te intiem om te bespreken
    - ☐ Het is niet (meer) belangrijk voor me
    - ☐ Ik kan er niet over praten
    - ☐ Ik geloof niet dat mijn dokter me met dit probleem kan helpen
    - ☐ Ik heb er hulp voor gehad en nu weet ik hoe ik ermee om moet gaan
    - ☐ Ik schaam me ervoor
    - ☐ Ik ben bang om het te vertellen
    - ☐ Anders:……

32. *Als u 'Ja' heeft geantwoord op vraag 30:*
    Wat zou u willen dat uw dokter deed nadat u het had verteld?
    (Meerdere antwoorden mogelijk)
    - ☐ Alleen naar me luisteren
    - ☐ Adviseren over hoe ik hiermee om moet gaan
    - ☐ Als het mogelijk is, afzien van het darmonderzoek
    - ☐ Verwijzen naar een uroloog/gynaecoloog
    - ☐ Verwijzen naar een seksuoloog
    - ☐ Verwijzen naar een psycholoog
    - ☐ Verwijzen naar een bekkenbodemfysiotherapeut
    - ☐ Informatie verstrekken zodat ik kan lezen over de behandelmogelijkheden
    - ☐ Informatie geven en me thuis over de behandelopties laten nadenken
    - ☐ Anders……

Als u slachtoffer bent geweest van seksueel misbruik:

33. Kunt u op een schaal van 0 tot 10 aangeven hoe u het darmonderzoek heeft ervaren?
0 betekent weinig ongemak en 10 betekent erg veel ongemak

……

34. Zou het darmonderzoek minder onaangenaam voor u zijn geweest als de arts van uw negatieve seksuele ervaring(en) in het verleden had geweten?
    - □ Ja
    - □ Nee

35. Het darmonderzoek zou gemakkelijker/comfortabeler voor me zijn geweest als:
    - □ Mijn partner erbij was geweest om me te steunen
    - □ Mijn dokter me extra uitleg had gegeven over wat er allemaal gebeurde
    - □ Ze me dieper hadden gesedeerd (in slaap gebracht)
    - □ Anders:……

36. Zou u het vreemd vinden als een vraag over seksueel misbruik zou worden gesteld in een intakevragenlijst bij de MDL-arts?
    - □ Ja
    - □ Nee

37. *Als u 'Ja' heeft geantwoord op vraag 37:*
Waarom vindt u dat dan?

    - □ Het lijkt me niet belangrijk in dit geval
    - □ Het irriteert me
    - □ Het is te intiem om te bespreken
    - □ Het is vervelend om er over na te denken
    - □ Het maakt me van streek
    - □ Dan durf ik niet meer naar de arts toe
    - □ Er is geen relatie met het onderzoek en mijn klachten
    - □ Anders…….

Einde.

Hartelijk bedankt voor uw hulp!!

CURRICULUM VITAE

CURRICULUM VITAE (DUTCH)

Melianthe Pherenikè Jeannette Nicolai werd geboren op zondag 30 december 1984 te ‘s Gravenhagen. In 2003 behaalde zij haar eindexamen aan het Gymnasium Haganum. Ze startte datzelfde jaar met de studie Geneeskunde aan de Universiteit van Leiden. Tijdens haar studietijd werkte ze als *“Joshua”* student assistent op de Thorax Intensive Care van het Leids Universitair Medisch Centrum (LUMC). Van 2005 tot 2006 zette zij haar studie Geneeskunde een jaar stop om plaats te nemen in het collegium van de Leidse Studenten Vereniging Minerva, alwaar zij de functie van Assessor Collegii bekleedde. In 2008 begon zij haar wetenschappelijke stage aan de Universiteit van Edinburgh, bij het Queens Medical Reseach Institute deed ze basaal wetenschappelijke ervaring op in het onderzoek naar de rol van Cyclophiline A bij steriele ontsteking en sepsis. Tijdens haar co-schappen in 2009 raakte zij betrokken bij het seksuologische onderzoek op de afdeling urologie van het LUMC wat uiteindelijk zou leiden tot dit proefschrift. Na het behalen van haar arts-examen in 2011 startte zij als arts-assistent niet in opleiding op de afdeling urologie van het Academisch Medisch Centrum (AMC). In 2012 keerde zij terug naar het LUMC en begon met een promotie traject op de afdeling urologie onder begeleiding van Dr. H.W. Elzevier en Prof. Dr. R.C.M. Pelger. Daarnaast was zij onder begeleiding van Prof. Dr. S. Osanto van de afdeling medische oncologie (LUMC) als arts-onderzoeker verantwoordelijk voor de inclusie van patiënten met prostaatcarcinoom bij onderzoek naar osteoporose bij oncologische patiënten (LUMC).

In 2014 begon zij met de vooropleiding chirurgie in het Westfriesgasthuis te Hoorn onder begeleiding van opleider Dr. D.J.A. Sonneveld. In 2016 zal zij verder gaan met de specialisatie tot uroloog onder begeleiding van opleider Prof. Dr. A.A.B. Lycklama à Nijeholt.

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LIST OF ABBREVIATIONS

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ACE-inhibitor	Angiotensin-Converting-Enzyme inhibitor
ARBs	Angiotensin II Receptor Blockers
CVD	cardiovascular disease
CZS	centraal zenuwstelsel
ED	erectile dysfunction
FGID	functional gastrointestinal disorders
FSFI	Female Sexual Function Index score
FSD	female sexual dysfunction
GI	gastrointestinal/ gastrointestinaal
GP	general practitioner
IBD	Inflammatory Bowel Disease
LUMC	Leiden University Medical Center
MEC	Medical Ethics Committee
MDL	Maag Darm Lever
fMRI	Functional magnetic resonance imaging
PelFIs	Pelvic Floor Inventories Leiden
PET	Positron emission tomography
PDE5 inhibitor	phosphodiesterase type 5 inhibitor
PTSS	posttraumatische stress stoornis
SA	sexual abuse
SD	sexual dysfunction
±SD	standard deviation
SE	standard error
SF	sexual function

DANKWOORD

DANKWOORD

Dit proefschrift had niet tot stand kunnen komen zonder de hulp van de ca. 500 cardiologen, 200 MDL-artsen en 1400 patiënten die mee hebben gewerkt aan mijn onderzoeken door de -vrij expliciete- vragenlijsten in te vullen en retourneren.

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