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Elisabete Rodrigues Nascimento

Disfunções Sexuais e Ideação Suicida em cardiopatia e o papel da depressão no controle glicêmico

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Dissertação de Mestrado submetida ao Programa de Pós-graduação em Psiquiatria e Saúde Mental - PROSPSAM do Instituto de Psiquiatria da Universidade Federal do Rio de Janeiro, como parte dos requisitos necessários para a obtenção do título de Mestre em Saúde Mental.

Orientadora: Adriana Cardoso de Oliveira e Silva

Professora da Faculdade de Medicina e do Programa de Pós-graduação em Psiquiatria e Saúde mental

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DEDICATÓRIA

Aos meus pais Maria de Lourdes e Pedro de Alcântara in memória.

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“O choro pode durar uma noite, mas a alegria vem pela manhã.”

Salmos 30: 5

Disfunções Sexuais e Ideação Suicida em cardiopatia e o papel da depressão no controle glicêmico

Elisabete Rodrigues Nascimento

Orientadora: Dr. Adriana Cardoso de Oliveira e Silva

Resumo da Dissertação de Mestrado submetida ao Programa de Pós-graduação em Psiquiatria e Saúde Mental – PROPSAM do Instituto de Psiquiatria da Universidade Federal do Rio de Janeiro, como parte dos requisitos necessários para a obtenção do título de Mestre em Saúde Mental.

Introdução: Dependendo da gravidade, a doença crônica é uma condição incapacitante que requer longo tempo de cuidado, ação contínua e concomitante de prevenção primária e secundária. **Objetivos:** Esta dissertação analisou a presença de diferentes tipos de disfunções sexuais em portadores de doenças cardiovasculares e hipertensão arterial, bem como avaliou o papel da depressão em população de cardiopatas e diabéticos. **Metodologia:** Pesquisas de revisão da literatura e empíricas foram realizadas ao longo de 24 meses e quatros artigos foram publicados em periódicos internacionais e nacionais. **Resultados:** O estudo em pacientes com doenças cardiovasculares mostra que as queixas sexuais mais referidas foram: entre os homens disfunção erétil orgasmo e excitação; entre as mulheres dificuldade de excitação, dificuldade de atingir o orgasmo e dor durante a relação sexual. Os pacientes após Infarto Agudo do Miocárdio demonstraram significante diminuição na frequência da atividade sexual. As mulheres portadoras de hipertensão arterial houve maior prevalência de disfunção sexual do desejo, excitação e satisfação sexual. A elevada taxa de sintomas de ansiedade e depressão encontrada não foi relacionada com disfunção sexual. Os resultados com pacientes cardiopatas revelaram que, as comorbidades em ansiedade e depressão foram associadas a risco de ideação suicida. Os estudos da literatura mostram que transtorno de depressão relaciona-se a um pior controle glicêmico, maior dificuldade de dietas, baixa aderência ao tratamento e aumento do risco de complicação clinica da Diabetes Mellitus. **Conclusões: O** elevado índice de disfunções sexuais ocorre em pacientes com doenças cardiovasculares e um expressivo percentual de pacientes apresenta diminuição da frequência da atividade sexual. Os transtornos psiquiátricos apresentam fatores de risco de ideação suicida para pacientes cardiopatas. Em pacientes diabéticos, o transtorno de humor influência negativamente o tratamento de controle da doença metabólica.

Palavras-chave: prevalência, doenças cardiovasculares, hipertensão arterial, ideação suicida e depressão e ansiedade.

Rio de Janeiro
Novembro de 2015

Abstract

Disfunções Sexuais e Ideação Suicida em cardiopatia e o papel da depressão no controle glicêmico

Elisabete Rodrigues Nascimento

Orientadora: Dr. Adriana Cardoso de Oliveira e Silva

Abstract da Dissertação de Mestrado submetida ao Programa de Pós-graduação em Psiquiatria e Saúde Mental – PROPSAM do Instituto de Psiquiatria da Universidade Federal do Rio de Janeiro, como parte dos requisitos necessários para a obtenção do título de Mestre em Saúde Mental.

Introduction: Depending on the severity, the chronic disease is a condition that requires long time care, continuous action and concurrent primary and secondary prevention. **Objectives**: This dissertation examined the presence of different types of sexual dysfunctions in patients with cardiovascular diseases and hypertension, as well as evaluated the role of depression in the population of cardiac patients and diabetics. **Methodology**: Research and empirical literature review were carried out over 24 months and four articles have been published in international and national journals. **Results**: The study in patients with cardiovascular diseases shows that most sexual complaints referred to were: among men orgasm and erectile dysfunction excitement; among women of arousal difficulty, difficulty reaching orgasm and pain during sexual intercourse. Patients after acute myocardial infarction have demonstrated significant reduction in the frequency of sexual activity. The women with hypertension there was higher prevalence of sexual dysfunction of desire, arousal and sexual satisfaction. The high rate of symptoms of anxiety and depression found was not related to sexual dysfunction. The results with cardiac patients revealed that the Comorbidities in anxiety and depression were associated with risk of suicide ideation. The literature studies show that depression disorder relates to a worse glycemic control, greater difficulty of diets, low adherence to treatment and increased risk of clinical complication of Diabetes Mellitus. **Conclusions**: The high rate of sexual dysfunction occurs in patients with cardiovascular diseases and a significant percentage of patients decreased frequency of sexual activity. The psychiatric disorders present risk factors of suicidal ideation for patients with heart disease. In diabetic patients, the mood disorders negatively influence the treatment of metabolic disease control.

Keywords: prevalence, cardiovascular diseases, hypertension, suicidal ideation and depression, anxiety and diabetes

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SUMÁRIO

1 - Introdução

No Brasil, em 2012 ocorreram 1.137.024 internações por doenças cardiovasculares (DCV) no Sistema Único de Saúde (SUS)[1]. 0s Indivíduos com DCV são propensos à hospitalização, risco de comprometimento funcional, eventos adversos relacionados à ação dos fármacos e a ocorrência de comorbidades[2].

Diversas doenças têm fatores de risco para as DCV, como hipertensão arterial, diabetes e entre outras. As complicações decorrentes da hipertensão arterial envolvem: doença cerebrovascular, doença arterial coronariana, insuficiência cardíaca, insuficiência renal crônica e doença vascular de extremidades. Estima-se que a Hipertensão Arterial afeta de 11 a 20% da população de adultos no Brasil e calcula-se que a metade dos hipertensos desconhece seu problema[3]. Além das DCV serem responsáveis por 80% dos óbitos de pacientes com Diabetes Melitus (DM)[4].

De acordo com relatório da Organização Mundial de Saúde (OMS 2001) existe projeção que até 2020, a depressão ocupe o segundo lugar entre as principais causas dentre todas as doenças, perdendo somente para as doenças isquêmicas cardíacas[5]. A depressão é um transtorno psiquiátrico que acomete 3% a 5% da população em geral. A incidência em populações clínicas é encontrada em 5% a 10% pacientes dos ambulatoriais e 9% a 16% dos indivíduos internados[6]. O transtorno de humor está associado a um declínio do bem estar, do funcionamento diário, do aumento da morbidade e da mortalidade , utilização de serviço de saúde, prejuízo psicossocial, físico e risco de suicídio[7].

1.1 - **Depressão e Cardiopatia**

A depressão afeta 15% dos pacientes cardiopatas em comparação a população geral, 4% a 5%[8]. A presença de sintomas de ansiedade e depressão após um Infarto Agudo do Miocárdio (IAM) está associada a maior reincidência de IAM, morte por doença cardíaca, internação prolongada e prejuízo funcional pós-infarto[9-11]. Os pacientes com depressão têm dificuldade de mudanças de hábitos e estilo de vida, como realização de atividades físicas e suspensão de tabagismo[12-14].

A depressão em pacientes cardíacos é muitas vezes tanto crônica e recorrente. Um estudo de Sertraline Antidepressant Heart Attack Randomized Trial mostrou que 94% dos pacientes cardiopatas hospitalizados apresentavam diagnóstico de depressão há mais de um mês, outros pacientes com duração de seis meses do distúrbio mental e metades dos pacientes apresentavam depressão antes do evento cardíaco[15].

A depressão em pacientes internados pode ser avaliada examinando fatores como a interação com colegas de quarto e visitas familiares e no planejamento de atividades futuras, indecisão, insônia, desesperança, pensamento de morte e de suicídio e planejamento suicida[8]. A expressão suicida pode ser investigada na verbalização do cansaço da vida, desejo de morte, comportamento suicida, ideação suicida e tentativa de suicídio[16 17]. A maioria dos casos de suicídio inicia-se com plano de morrer seguido de tentativa de suicídio e suicídio[18].

A literatura aponta evidência da depressão como um fator de risco para pensamentos suicidas em população de doença médica[19]. Um estudo$_{20}$ com amostra de 886 pacientes com doença arterial coronariana diagnosticado com depressão foi mostrado que 12% dos pacientes foram identificados com ideação de suicida e 0,45% dos pacientes com intenção de suicídio foram hospitalizados[20]. Em outro estudo[21] foi investigado pacientes com Insuficiência Cardíaca Congênita e depressão foi encontrada associação de presença de ideação suicida e ideia de automutilação.

1. 2 - Depressão e Diabetes Mellitus

De acordo com as orientações do American Diabetes Association (ADA) guidelines, os pacientes com diabetes devem manter baixos níveis de hemoglobina glicada. O aumento de risco de complicação clínica do Diabetes Mellitus pode ocorrer devido à elevação da hemoglobina glicosilada[22], quando o controle da doença é inadequado, contribui para o aumento da morbidade e mortalidade[23].

Diversos fatores podem contribuir para um controle metabólico insatisfatório, entre eles, a ocorrência de uma comorbidade psiquiátrica. Estudo[24] aponta que, os pacientes com diabetes com diagnóstico de depressão apresentam taxas elevadas de complicações clínicas, hospitalização e despesas de saúde. Em outro estudo[25] foi relatado que, o sintoma de depressão foi negativamente influenciado pela piora do controle glicêmico.

1.3 - Disfunções Sexuais e Doenças Cardiovasculares

As disfunções sexuais (DS) são consideradas problema de saúde pública devido à alta prevalência na população mundial. Estudo em amostra representativa norte americana estima que 43% para as mulheres e 31% para os homens são afetados pela DS[26]. No Brasil, o Estudo da Vida Sexual do Brasileiro constatou que 50,9% da população feminina e 48% da masculina, possuem queixas sexuais frequentes. Entre os homens foram encontradas: falta de controle da ejaculação, dificuldade de ereção; entre as mulheres, dificuldade de excitação, dificuldade para atingir o orgasmo e dor sexual[27].

A incidência de DS é decorrente do processo envelhecimento, alterações fisiológicas de doenças médicas e efeito de uso de medicamentos prescritos para o tratamento, distúrbios psiquiátricos[26]. Estudo epidemiológico[28] de fatores de risco de DS revelou que mulheres com hipertensão arterial possuem uma diminuição da função de lubrificação e orgasmo. Um estudo Brasileiro[29] revelou que mulheres cardiopatas e com depressão apresentaram maior ocorrência de dor

no intercurso sexual, enquanto que as mulheres com hipertensão arterial prevalência de transtorno do desejo e do orgasmo.

A taxa elevada de distúrbios sexuais após o evento coronariano varia de 24% a 89% dos casos[30]. Estima-se que após reabilitação cardíaca, 50% dos pacientes consegue retornar a vida sexual normal, enquanto metade desses apresenta diminuição na frequência da atividade sexual e 25% não reassumem sua vida sexual[31].

2 - Objetivo Geral

Este estudo teve como objetivo geral avaliar a prevalência de disfunções sexuais em população de pacientes cardíacos e hipertensos.

2.1 - Objetivos Específicos

Avaliar a depressão e ansiedade em pacientes com hipertensão arterial e sua associação com a disfunção sexual; Avaliar a associação de depressão e ansiedade com ideação suicida, Avaliar a influência da depressão no controle glicêmico.

3 - Resultados

Está dissertação apresenta os resultados encontrados nas pesquisas realizadas dos artigos científicos publicados ao longo do período de mestrado. A seguir, encontram-se listadas as referências dos artigos publicados.

1 - Nascimento ER, Maia ACO, Pereira V, Soares-Filho G**,** Nardi AE, Silva AC. Sexual dysfunction and cardiovascular diseases: a systematic review of prevalence. Clinics. 2013, 68 (11): 1462-1468.

2 - Nascimento ER, Maia ACO, Nardi AE, Silva AC. Sexual dysfunction in arterial hypertension women: The role of depression and anxiety. Journal od Affective Disorders. 2015, 181; 96-100.

3 - Nascimento ER, Maia ACO, Soares-Filho G, Nardi AE, Silva AC. Predictors of suicidal ideation in coronary artery disease. Comprehensive Psychiatry. 2015; 57:16-20.

4 - Nascimento ER, Nardi AE, Silva AC. The role of depression on glycemic control. Journal Endocrinol Metab. 2014; 4(5-6):11-120.

Sexual dysfunction and cardiovascular diseases: a systematic review of prevalence

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The aim of this study was to conduct a systematic review of the literature regarding the prevalence of sexual dysfunction in patients with cardiovascular diseases. An article search of the ISI Web of Science and Pub Med databases using the search terms "sexual dysfunction'', ''cardiovascular diseases'', ''coronary artery disease", ''myocardial infarct" and ''prevalence'' was performed.

In total, 893 references were found. Non-English-language and repeated references were excluded. After an abstract analysis, 91 references were included for full-text reading, and 24 articles that evaluated sexual function using validated instruments were selected for this review. This research was conducted in October 2012, and no time restrictions were placed on any of the database searches. Reviews and theoretical articles were excluded; only clinical trials and epidemiological studies were selected for this review. The studies were mostly cross-sectional, observational and case-control in nature; other studies used prospective cohort or randomized clinical designs. In women, all domains of sexual function (desire, arousal, vaginal lubrication, orgasm, sexual dissatisfaction and pain) were affected. The domains prevalent in men included erectile dysfunction and premature ejaculation and orgasm. Sexual dysfunction was related to the severity of cardiovascular disease. When they resumed sexual activity, patients with heart disease reported significant difficulty, including a lack of interest in sex, sexual dissatisfaction and a decrease in the frequency of sexual activity.

KEYWORDS: Sexual Dysfunction; Cardiovascular Diseases; Prevalence.

Nascimento ER, Maia AC, Pereira V, Soares-Filho G, Nardi AE, Silva AC. Sexual dysfunction and cardiovascular diseases: a systematic review of prevalence. Clinics. 2013;68(11):1462-1468.

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INTRODUCTION

According to the DSM-IV, sexual dysfunction (SD) is characterized by a disturbance in the sexual response cycle or pain associated with sexual intercourse. SD is listed as sexual desire disorder, female sexual arousal dysfunction, male erectile dysfunction (ED), female and male orgasm dysfunction, premature ejaculation and sexual pain (vaginismus and dyspareunia). Sexual disorders are often comorbid, and multiple dysfunctions harm other phases of the sexual cycle (1).

These sexual disorders might have an organic etiology, psychogenic etiology or both underlying the medical conditions (1-2). Cardiovascular diseases (CVDs) represent multiple risk and predictive factors for SDs. A systemic vascular condition, which affects arteries throughout the body, also affects the vaginal and penile arteries (the blood supply of the genital organs); consequently, patients with heart diseases show symptoms of SD (3-7).

Psychological factors due to cardiovascular events greatly affect patients' sexual lives, which contributes to the incidence of SD. Patients who return to sexual activity can present mood instability, and many report a certain degree of difficulty with sexual intercourse and a fear of sudden death during sex due to increased cardio respiratory frequency, blood pressure and physical exertion (8-10).

The present study systematically reviewed the literature on the prevalence of SD in patients with CVDs.

METHODOLOGY

The ISI Web of Knowledge and Pub Med databases were searched using the terms "sexual dysfunction'', ''cardiovascular diseases'', ''coronary artery disease", ''myocardial infarct" and ''prevalence''.

This study was conducted in October 2012, without any temporal restrictions placed on the searches. To meet the inclusion criteria, only complete, original articles written in English that assessed sexual function using validated instruments were selected. Articles were excluded if they were written in languages other than English, were duplicates or review articles or were irrelevant to the topic.

RESULTS

Searches of PubMed and the ISI Web of Knowledge identified 468 and 425 references, respectively, for a total of 893 references. Of these articles, 151 were excluded because they were duplicates, and 93 were removed because they were written in languages other than English. Thus, 649 references remained for an abstract analysis. After this analysis, 115 articles were retrieved for full-text reading. The eligibility criteria for the selected articles were based on the themes of the search terms. Thus, 91 articles were deleted, and 24 articles remained for the literature review. Figure 1 shows a flowchart of this process.

All of the 24 articles selected using the inclusion criteria evaluated the prevalence of SD in patients with CVDs.

The results are presented according to the studies' methodologies: 18 cross-sectional, observational studies; 3 case-control studies; 2 prospective studies; and 1 randomized clinical trial (Table 1).

Prospective Cohort Studies

In 1980, Wabrek et al. (11) conducted the first study related to the sexual functioning of men (131 in total)

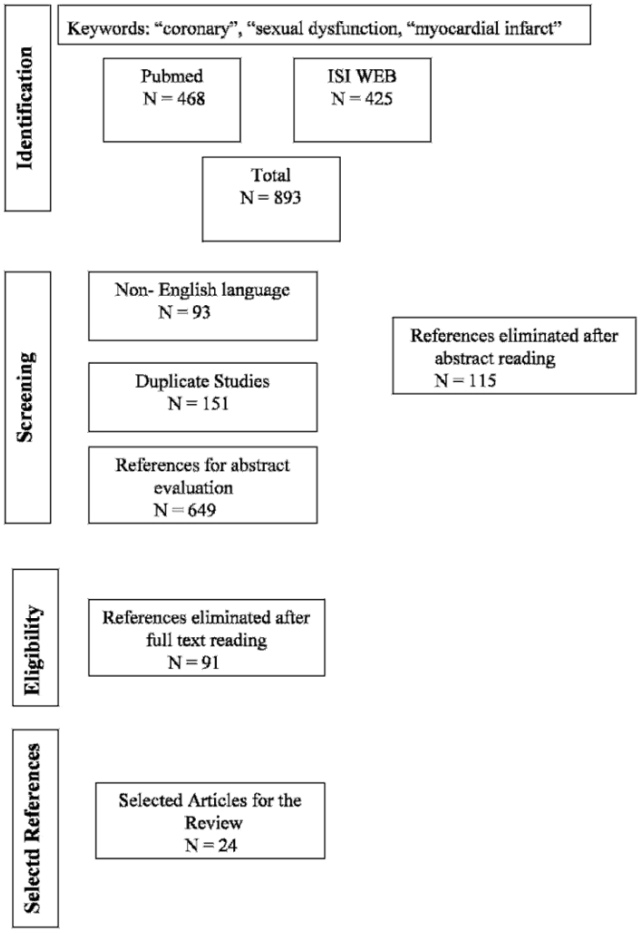

Figure 1 - Study selection.

between the ages of 31 and 86 years six weeks after their first myocardial infarction (MI). The researchers' data indicated that ED was present in 64% of men, that 28% showed decreased sexual frequency and that 8% presented with premature ejaculation. In 2012, Lindau et al. (34) investigated the loss of sexual activity one year after MI. Their study recruited 1,274 men and 605 women with mean ages of 61.1 and 58.6 years, respectively, for a total of 1,879 patients. A decreased frequency of sexual activity was reported by 48% of men and 59% of women, and 11% of men and 13% of women did not return to sexual activity. This study concluded that the absence of sexual desire contributed to the reduction in patient sexual activity.

Cross-Sectional, Observational Studies

In 1996, Jaarsma et al. (12) investigated the sexual functioning of 62 men and 18 women with heart failure and average ages of 52.8 and 53.4 years, respectively, for a total of 80 patients. Forty-five patients (75%) reported a lack of sexual interest, 47 (76%)

showed a marked decrease in sexual activity, 30 (32%) reported not engaging in sexual activity, 15 (24%) showed a decrease in sexual frequency, 12 (19%) reported sexual dissatisfaction, and 62 reported minimal or no changes. In 1997, Greenstein et al. (15) examined the effect of coronary artery disease (CAD) on the erectile function of 40 men with documented angiographies and an average age of 56 years. The results revealed that 15 (37.5%) men had an occlusion of one coronary vessel. These men were more likely to have (p,0.04) and maintain (p,0.007) an erection than the 8 men with two occluded coronary vessels (20%) and the 17 men with three occluded coronary vessels (42.5%). Age, diabetes and hypertension negatively affected the erection quality (p,0.05) of all patients. In 1998, Drory et al. (15) examined whether demographics and psychological and medical variables affected the indicators of satisfaction and sexual frequency in 276 men between the ages of 30 and 65 years after their first MI. The results revealed that a change in sexual frequency (32%) was associated with age and education. Age was the only variable that explained variation in patient sexual satisfaction (23%). Medical and psychological variables (i.e., diabetes and depression) were non-significant contributors.

In 2000, Drory et al. (17) examined gender differences in sexual activity and their relationship with demographic and medical variables six months after the first MI. The participants included 462 men and 51 women with average ages of 52 and 56 years, espectively, for a total of 513 patients. The results revealed that women reported reduc-tions in sexual frequency (p = 0.77) and sexual satisfaction (p = 0.42). Men showed decreased sexual activity (p = 0.45) and sexual satisfaction (p = 0.42). The medical and demo-graphic variables did not predict the sexual activity of either sex. In 2001, Burkhart et al. (18) investigated ED associated with cardiovascular complications in patients with hyper-tension. This sample was composed of 104 men aged 18-75 years. The results revealed that ED (70.6%) was correlated with cardiovascular complications (p,0.05). Of the 22 men with ED, 30.6% showed symptoms of depression. The study concluded that ED is a marker of cardiovascular complica-tions in patients with hypertension. In 2003, Montorsi et al. (19) evaluated the prevalence of ED and its chronological and etiological associations in 300 men with angiography-documented CAD (average age = 62 years). The data revealed the presence of ED in 49% of the patients. Specifically, these 147 patients were classified as mild (21; 14%), mild to moderate (31; 21%), moderate (20; 14%) , and severe (75; 51%). ED occurred 38.8 months before the advent of CAD in 99 (67%) men.

In 2005, Vacanti et al. (20) examined changes in sexual activity six months after MI and identified variables possibly associated with ED in 37 men (age range = 18-75 years). The results revealed 15 patients (40.5%) with ED and 9 patients with symptoms of depression. Of the 28 (89%) patients without symptoms of depression, 7 (25%) had ED. This study concluded that patients with MI showed a significantly high incidence of ED. A study by Addis et al. (21) in 2005 investigated the sexual activity of 2,763 postmenopausal women with heart disease (average age = 67 years). SD was prevalent in 1,091 sexually active individuals. In total, 140 (13%) reported at least one sexual complaint (e.g., lack of interest, inability to relax, difficulty achieving arousal or orgasm or sexual discomfort), and 570 (52%) reported two or more sexual problems.

In 2006, Shi et al. (22) investigated the incidence of SD and the changes associated with ED among 467 men with CAD (,70 years old). The data revealed that patients with CAD presented ED during both the acute (p.0.05) and chronic (p,0.05) phases of the disease. The average frequency of sexual activity declined each month in these patients (p,0.05 and p,0.01, respectively). Of the total sample, 58% showed a decrease in sexual frequency, 33.8% returned to a normal sexual life, and 8.1% did not return to sexual activity. The average time interval between the beginning of ED and the development of CAD was 33 months. The variables associated with ED included age, diabetes, the occlusion of two or three coronary vessels and smoking. In 2007, Kazemi-Saleh (23) investigated the presence of sexual fear in 87 married men with MI (average age = 59 years). The clinical, demographic and psychological symptoms of individuals with or without sexual fear were investigated. The results revealed sexual fear in 29 (33.3%) men with a lower frequency of sexual activity and symptoms of depression.

In 2007, Eyada et al. (24) investigated the effect of cardiac rehabilitation on the resumption of sexual activity in 35 women with angina pectoris (age range = 34-65 years). The results revealed that 17 (48.7%) women resumed sexual activity; however, 7 (41.2%) reported sexual dissatisfaction. Eighteen (43%) women did not resume sexual activity, 83.3% reported a decreased sex drive, 12 (66.7%) decreased their sexual activity, 72.2% reported symptoms of anxiety, 65% showed symptoms of depression, and 38.9% reported sexual fears. Patients who participated in a rehabilitation program were 3.77-fold more likely to return to sexual activity. The following year, Lunelli et al. (26) examined return to sexual activity after the first MI event in a sample of 96 patients (67 men and 29 women) with an average age of 59 years. The results revealed that 63% of patients had an active sex life, 71% showed an interest in maintaining their sexual activity, 60% doubted their return to sexual activity, and 44% had reduced their sexual frequency. Only 4% were provided information about returning to sexual activity. This study indicated the importance of sexual education in aiding patient return to sexual activity.

In 2008, Cook et al. (27) conducted the first study of ED in 86 young men with congenital heart disease (average age = 34 years). Patients were treated with cardiac medications, including beta-blockers (BBs; 24%), angiotensin converting enzyme (ACE) inhibitors (8%), calcium-channel blockers (CCBs; 6%) or a combination of BBs and ACE inhibitors (16%). The results revealed ED in 87 (38%) patients. Men who used BBs were three times more likely to have ED (p = 0.045). Dyspnea was the cardiovascular symptom reported most often during the sexual activity of 45 (52%) men. In 2008, Schwarz et al. (29) investigated the prevalence of SD among 100 patients (76 men and 24 women) with CVDs during outpatient treatment. The results revealed that 87% of women reported arousal disorders, 84% had decreased vaginal lubrication, 62% had difficulty reaching orgasm, 50% reported moderate to severe sexual pain, and 29% had reduced their sexual activity over six months. Regarding the men, 84% had trouble maintaining an erection after penetration, 76% had reduced sexual desire and excitement, 62% had difficulty reaching orgasm, and 31% had difficulty having an erection for penetration.

In 2010, Lemoge et al. (31) examined the association between ED and depressed mood among 85 men with CAD (average age = 75 years). Significant ED was found in 57.6% of the patients. ED was independently predicted by depressive mood, hypertension, age (p = 0.007, p = 0.017 and p = 0.082) respectively. Kriston et al. (32) investigated the prevalence of sexual disorders and depressive symp-toms among 493 patients with CAD (395 men and 98 women) with an age range of 55-69 years. The results revealed the presence of ED in 20.3% of men and SD in 43.1% of women. Moderate depressive symptoms were present in 16.5% of

men and 14.4% of women.

Table 1 - Published studies regarding the prevalence of sexual dysfunction in patients with cardiovascular diseases.

Authors and year	Population	Instrument/Measure	Summary
Wabrek et al., 1980 (11)	Male	IIEF (35)	Six weeks after their first MI, 64% of patients presented with ED, 28% presented with decreased sexual frequency, and 8% presented with premature ejaculation.
Jaarsma et al., 1996 (12)	Male and Female	SAS and PAIS (36)	Heart failure resulted in significant changes in sexual desire and the frequency of sexual activity.
Greenstein et al., 1997 (13)	Male	Questionnaire by O'Leary (37)	The severity of CAD decreased the frequency of erections.
Abramov LA et al., 1997 (14)	Female	Student's *t*-test and X^2 contingency (38)	High prevalence of reduced desire and sexual dissatisfaction among 50 patients (65%) after MI compared with 20 (24%) controls.
Drory et al., 1998 (15)	Male	QSF (39)	After MI, patients showed changes in sexual frequency (32%) associated with age and education. For 23%, sexual dissatisfaction was correlated with age.
Hultgren et al., 1999 (16)	Female	FSFI (40)	Patients with AIOD experienced negative effects on sexual arousal, orgasm and vulvar sensitivity.
Drory et al., 2000 (17)	Male and Female	QSF (39)	The frequency of and satisfaction with sexual activity were similarly reduced for both sexes.
Burchardt et al., 2001 (18)	Male	IIEF (35) and CESD (41)	ED was considered as a marker of cardiovascular complications ($p<0.05$) in 70 patients (70.6%) with hypertension. In total, 22 (30.6%) patients with ED showed signs of depression.
Montorsi et al., 2003 (19)	Male	IIEF (35)	ED occurred 38.8 months before the advent of CAD in 99 patients (67%) men. ED was evident before heart disease in 70% of all cases.
Vacanti et al., 2005 (20)	Male	IIEF (35) and HADS (42)	After MI, patients showed an incidence of 40.5% of ED and depressive symptoms.
Addis et al., 2005 (21)	Female	Logistic regression	A total of 1,091 patients had SD, of whom 140 (13%) complained of one sexual problem, and 570 (52%) complained of two or more.
Shi et al., 2006 (22)	Male	IIEF (35)	Patients with CAD in the acute ($p>0.05$) and chronic ($p<0.05$) phases.
Kazemi-Saleh et al., 2007 (23)	Male	HADS (42) and RSS (43)	Twenty-nine patients (33.3%) showed sexual fear, depressive symptoms and a decreased frequency of sexual activity.
Eyada et al., 2007 (24)	Female	ASEX (44)	Pectoral angina had a negative effect on the frequency and sexual satisfaction of patients.
Kaya et al., 2007 (25)	Female	FSFI (40)	All FSFI domain scores, except satisfaction, were lower in patients with CAD compared with healthy individuals ($p<0.05$).
Lunelli et al., 2008 (26)	Male and Female	Mann-Whitney tests (26)	In total, 60% of patients had doubts about their return to sexual activity, and 44% had reduced their sexual frequency.
Cook et al., 2008 (27)	Male	*t*-tests with Bonferroni correction (45)	Patients using BBs reported three times more ED ($p=0.045$).
Kazemi et al., 2008 (28)	Male and Female	RSS (46) and HADS (42)	Male and female patients with CAD and symptoms of depression had sex less frequently. Male depression was correlated with the couple's fear of sexual intercourse.
Schwarz et al., 2008 (29)	Male and Female	IIEF (35) and FSFI (40)	Male and female patients showed a high prevalence of SD.
Hoffman et al., 2010 (30)	Male	ASEX (44)	ED was associated with greater CVD risk and impaired vascular endothelial function in depressed men.
Lemogne et al., 2010 (31)	Male	IIEF-5 (47), BDI-13 (48), STAI (49) and DS-14 (50)	The prevalence of ED (57.6%) was negatively associated with age and depressed mood.
Kriston et al., 2010 (32)	Male and Female	IIEF (35), FSFI (40) and HADS (42)	ED was found in 20.3% of men, and SD was found in 43.1% of women. Symptoms of moderate depression were found in 16.5% and 14.4% of men and women, respectively.
Foruzan-Nia et al., 2011 (33)	Male	IIEF (35)	SD was prevalent one year after MI.
Lindau et al., 2012 (34)	Male and Female	PHQ-9 (51) and F-12 PCS (52)	A lack of sexual desire contributed to a decrease in sexual frequency among 59% of women and 48% of men.

IIEF = International Index of Erectile Function; SAS = Adjustment Sexual Scale; PAIS = Psychosocial Adjustment to Illness Scale; QSF = Sexual Function Questionnaire; CESD = Center for Epidemiologic Studies, Depression Scale; HADS = Hospital Anxiety and Depression Scale; RSS = Relationship and Sexuality Scale; ASEX = Arizona Sexual Experience Scale; FSFI = Female Sexual Function Index; BDI = Beck Depression Inventory; STAI = State-Trait Anxiety Inventory; DS-14 = Type-D Personality Scale-14; PHQ-9 = 9-item Patient Health Questionnaire; and SF-12 PCS = 12-item Short-Form Health Survey, Physical Composite Score.

In 2011, Foruzan-Nia et al. (33) evaluated the incidence of ED and SD one year before and after MI among 279 men with an age range 25-69 years. Before MI, 6.5% of men reported ED, 4.3% reported premature ejaculation, and 9.3% showed a decrease in or loss of libido. The rates of SD increased to 34.8%, 21.5% and 20.1%, respectively, 12 weeks after MI. Finally, in 2007, Kazemi et al. (28) examined sexual activity and psychiatric symptoms among patients with CAD and the relationships between these variables for each gender in 550 married patients with CAD (397 men and 153 females; average age = 57 years). The data revealed that 45.8% of women with CAD showed anxiety symptoms and that 20.3% suffered from depression. Of the men with CAD, 16.6% reported anxiety symptoms, and 9.6% reported depressive symptoms. A greater decrease in sexual activity correlated with

depressive symptoms in both genders. However, fear of sexual relations correlated with depressive symptoms only in men with CAD and their spouses ($r = 0.18$, $p = 0.001$).

Case-Control Studies

In 1997, Abramov (14) examined aspects of the sexual lives of 100 women aged 40-60 years after their first MI over a three-year period compared with 100 women with other diseases (i.e., hypertension, valvular heart disease, respira-tory disorder, urinary tract diseases, diabetes mellitus, gastrointestinal disease, joint diseases and allergies). The results revealed that 50 (65%) women in the former group reported underactive desire and sexual dissatisfaction, whereas only 20 (24%) women in the control group did the same. In 1999, Hultgren et al. (16) investigated the sexual functioning of 36 women who suffered from aortoiliac occlusive disease (AIOD). These patients were divided into two groups: 20 women who were interviewed before starting medical treatment (i.e., the untreated group) and 16 who were surveyed after beginning medical treatment (i.e., the treated group). All participants were under 70 years old and married. The control group was composed of 18 women in treatment for pain or urinary tract infections, and their age and marital status were similar to those of the experimental groups. The results revealed that treated patients with AIOD showed significantly impaired physical wellbeing compared with the other groups (p,0.001). Vascular disease had a negative effect on the sexual functioning of 11 (69%) patients in the treated group compared with only 8 (40%) in the untreated group. A lack of vaginal lubrication during sexual intercourse was reported by 7 (64%) women in the untreated group, 5 (45%) in the treated group and 4 (25%) in the control group. Orgasm disorders were found in 6 (43%) women in the untreated group, 4 (31%) in the treated group and 4 (25%) in the control group. Vulvar sensitivity was impaired in 7 (44%) women in the treated group, 2 (11%) women in the untreated group and 4 (22%) control patients. Finally, in 2007, Kaya et al. (25) investigated the sexual functioning of 20 women with CAD (average age = 38 years) and 15 healthy subjects. The patients with CAD and the healthy women were comparable in age, body mass index and education level. The results revealed SD in 12 (60%) women with CAD compared with 15 (33.3%) women in the control group. All Female Sexual Function Index (FSFI) domain scores, except satisfaction, were lower in the group with CAD compared with the healthy participants (p,0.05). This preliminary study demonstrated that female patients with CAD had a high prevalence of SD compared with healthy controls.

Randomized Clinical Trials

In 2010, Hoffman et al. (30) investigated the association between CVD risk factors and vascular endothelial function among 46 men (average age = 53 years) with major depressive disorder. The results indicated that ED was not associated with depression severity ($r = 0.00$, $p = 0.09$). In contrast, greater ED was associated with higher CVD risk ($r = 0.42$, $p = 0.004$), and age was strongly associated with ED ($r = 0.43$, $p = 0.003$). ED was associated with greater CVD risk and impaired vascular endothelial function in depressed men.

DISCUSSION

The current review indicates that a high prevalence of SD exists among men and women with CVDs. Physiological changes in sexual satisfaction, such as ED in men and sexual arousal in women, were correlated with CAD severity. In certain studies (11,13,19,22,29), men with severe CAD (i.e., two or more occluded coronary vessels) had the most difficulty attaining and maintaining penile erection com-pared with men with only one coronary vessel occlusion. In other individuals, SD was related to desire, arousal, orgasm and ejaculation. This dysfunction is due to peripheral artery disease and CAD, for which atherosclerosis is a common risk factor. This disease is responsible for the formation of fatty plaques that narrow the arteries. Hence, an insufficient amount of blood flows to the body, including through the small arteries that irrigate the genital tissues of men and women (5-6). ED affects the muscles of the penis and associated fibrous tissue, which alters sexual arousal and orgasm because of reduced penile rigidity, erection time and ejaculation (53). The literature has demonstrated that ED affects 46% of men with CAD; of these men, 75% present problems achieving erections, and 67% have problems maintaining erections (54).

Similar to male erections, female genital arousal is achieved when the vascular system increases blood flow to the labia via vasodilatation, which is accompanied by vaginal lubrication and clitoral erection (3). Certain studies (16-17,24-25,27,32) have revealed an effect of CVD on women's sexual desire; arousal dysfunction, with decreased sensitivity of the clitoris and vaginal labia; and orgasm. Certain women with heart failure present problems with vaginal lubrication before and during sexual intercourse, and many report moderate to severe sexual pain (29).

In addition, the frequency of ED increases with the use of BBs in men (27). Cardiovascular medications often have sexual side effects that can affect male erections and sexual desire (55). This study did not include a bibliographic review paper concerning the effects of cardiovascular drugs on female SD.

In certain studies (20,31,32), age and depressive symptoms predicted SD in male and female patients. The free testosterone levels of humans decrease almost yearly between the ages of 40 and 70 years, resulting in a serious testosterone decline of 0.4 per year (3). Decreases in testosterone can diminish the erectile esponse, satisfaction and sexual frequency (17). In women, this process occurs during menopause and can cause various sexual problems (21). Depression is an important risk factor for SD, as this condition may compromise sexual desire, and unsatisfying sexual performance is related to depression (20,23,24,28). In the absence of sexual desire, sexual fantasies are rare or fleeting sexual stimuli and may not occur efficiently, preventing completion of the sexual response cycle (2). Depressive symptoms have different effects on the emergence of SD. Antidepressant drugs affect penile erection, sexual arousal and vaginal lubrication (2). The biological mechanism related to depression can reduce the ability to relax the smooth muscles of erectile tissue. Depressive symptoms might reduce erotic focus and the psychogenic stimulus, thereby impairing the sexual response cycle (8,20).

Importantly, a randomized clinical review study (30) did not find an association between depression severity and ED in men with CVDs. The authors indicated that depression might influence ED but that depression does not contribute to ED.

In certain studies (11,7,20,22,34), patients showed reduced sexual desire, less sexual satisfaction and ED after MI. CVDs can alter sexual desire because the physical and psychological manifestations of a medical illness can decrease sexual interest (10).

One study (20) in this review reported the existence of a literature-based estimate that 58% of patients recovering from CVD have psychological problems. Heart disease and depression are very common, frequently concomitant conditions that were previously speculated by the World Health Organization to be the first and second leading causes, respectively, of disability. Depressive symptoms can occur when individuals remain hospitalized and persist throughout the recovery period in addition to affecting patients' energy levels and the time needed to return to sexual activity (56). One study reported that after a cardiac event, 25% of patients returned to a normal sexual life, 50%
showed a decrease in sexual activity, and 25% did not return to sexual activity (9).

Fear of sexual intercourse, a mental factor in the context of CAD, is comorbid with decreased desire, satisfaction and sexual frequency among male and female patients (23,24,28). After the onset of CVD, SD might be due to apprehension regarding sexual activity. Patients consider the physical exertion of intercourse to be harmful and dangerous to their hearts and fear sudden death during sex. These fears significantly contribute to the decline in sexual frequency and consequently delay the resumption of sexual activity.

CVDs contribute to changes in the sexual response cycles of a patient. Certain studies (24,26,34) indicated the importance of sexual education offered by health professionals for returning patients to sexual activity and possibly reducing the onset of the SD that affects these individuals (33).

In conclusion, CVDs are risk factors for the emergence of SD. The severity of heart disease increases the occurrence of SD. In addition, symptoms of depression associated with CVD and SD, which emerge during the recovery of patients with heart disease, marked by physical and psychological adaptations, contribute to the impairment of sexual responses. Therefore, SD can occur following the development of CVD.

AUTHOR CONTRIBUTIONS

Nascimento ER selected the articles on the web, revised the manuscript and wrote the text about sexual function and heart failure. Maia AC, Pereira V, Soares-Filho G, Nardi AE and Silva AC selected the articles on the web and revised the manuscript.

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Research report

Sexual dysfunction in arterial hypertension women: The role of depression and anxiety

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abstract

Introduction: Although high blood pressure is known to be associated with sexual dysfunction, this phenomenon has been little studied in females and has received little intervention in clinical practice. Objective: To identify the presence of sexual dysfunction, considering the different possible domains and to evaluate its relationship with the presence of symptoms of anxiety and depression in women with arterial hypertension.

Methodology: One hundred fifty seven women (from 56.4 years) with a diagnosis of arterial hypertension were evaluated with media through the Female Sexual Function Index (FSFI) and the Hospital Anxiety and Depression Scale (HADS).

Results: High rates of sexual dysfunction were detected in the women evaluated, and this dysfunction was in all domains as follows: desire (68.2%), excitement (68.2%), lubrication (41.1%), orgasm (55.4%), satisfaction (66.42%) and pain (56.1%). Elevated rates of symptoms of anxiety (43.3%) and depression (26.8%) were also found in our sample. Nevertheless, in the present study, such symptoms showed no relationship with sexual dysfunction levels for any of the domains assessed.

Conclusion: Hypertensive patients exhibit an elevated presence of sexual dysfunction, as well as anxious and depressive symptoms. Although the literature on female sexuality indicates influences of these symptoms on sexual functions, this study did not identify such a relationship in the studied population. Sexuality is an important element in patient quality of life, and a broad understanding of female sexual function is fundamental for good follow-up in these patients.

1. Introduction

Systemic arterial hypertension (SAH) is a chronic degenerative disease of multi-factorial etiology comprising the vessels of the organism, which results in a change in vasomotor tone, vasocon-striction, and increased blood pressure. In 90% of cases the cause is unknown; however, there is thought to be a connection with genetic factors (Castro and Rolim, 2005). According to guidelines issued in 2013 by the European Society for Hypertension (ESH) and the European Society for Cardiology C), there is a prevalence of hypertension in the general population of approximately 30–45%, although this value shows a sharp increase in relation to aging. The representation of women in randomized controlled trials on hypertension is 44% (Mancia et al., 2013).

SAH is responsible for morbidity and mortality as cardiovascular disease, which often features diseases associated with hypertension, is the leading cause of death in the world. The quality of life of SAH patients may also be significantly impaired due to the side effects of drugs and the diagnostic effect on mood alteration (Castro and Rolim, 2005; Gusmão et al., 2009).

Female sexual dysfunction (FDS) includes sexual disorders of desire, arousal, orgasm, pain and satisfaction (Aslan and Fynes, 2009), and these sexual domains may be mutually affected. Hypertension can affect various aspects of sexual functioning, either directly or indirectly through vascular problems, the side effects of drugs which may aggravate sexual function (Gusmão et al., 2009; Burchardt et al., 2002), or associated psychological disorders, such as, some antihypertensive drugs may aggravate sexual function, so you can reduce adherence to drug treatment
(Gusmão et al., 2009; Burchardt et al., 2002). In addition, anxiety, loss of self-esteem, sadness or depression associated with chronic disease, which can also impair sexual satisfaction (Mclnnes, 2003).

Although male sexual dysfunction has been studied extensively concerning the relationship between hypertension, coronary heart disease and erectile dysfunction, data on female sexual dysfunc-tion and hypertension are still scant (Burchardt et al., 2002). The objective of the present study was to identify the presence of sexual dysfunction, considering multiple domains, and to evaluate its relationship with the presence of symptoms of anxiety and depression in women with arterial hypertension.

2. Methodology

An observational, prospective, cross-sectional descriptive study was conducted from October 2013 to April 2014, on a random sample of 157 women aged between 27 and 84 years (average 56.4 years) with a diagnosis of arterial hypertension. The data were collected in an interview after medical consultation at Cardiology Ambulatory Health Care, in the city of Rio de Janeiro, Brazil. The survey respondents were informed of the justifications, objectives and procedures, and gave signed consent to participate. The inclusion criteria were as follows: age greater than 18 years old, female, a diagnosis of hypertension, being in medical follow-up with a cardiologist at the time at which the survey was conducted, having attended a medical consultation, no amnesia, possessing sufficient cognitive capacity to understand the instructions provided and answering all the questions on the questionnaire and protocols. Exclusion criteria were as follows: arterial hypertension without accompaniment, cardiologic patients found outside the ambulatory healthcare environment and individuals who did not respond completely to the questionnaire and/or psychometric tests. The research protocols were submitted and approved by the Ethics and Research
The protocols involved interview and oral administration instruments, individually conducted after medical consultation with the cardiologist. The entire interview was conducted in a quiet, naturally ventilated room and all procedures were applied by medically trained staff, using the same technique and sequence. The study participants initially completed an identification ques-tionnaire to evaluate demographic data and prior or current psychiatric treatment.

3. Study instruments

The patients were evaluated with the Female Sexual Functioning Index (FSFI), described by Rosen et al. (2000), which is an instrument with a standard model of a brief structured interview composed of 19 items detailing the degree of female sexual functioning during the previous four weeks. The interview covers the areas of desire (two items), excitement (four items), lubrication (four items), orgasm (three items), satisfaction (three items) and pain during sexual intercourse (three items). Scales ranged from 0 to 5 for each sexual domain and the total score was obtained from the sum of the items in each domain multiplied by scaling factors as follows: wish/ desire¼.6, arousal and lubrication¼.3 and orgasm, satisfaction and pain¼.4. Final scores ranged from 2.0 to 36.0 (Safarinejad, 2006), with lower scores indicating a higher degree of sexual dysfunction. In the present study, a cut-off of r26 for the total score was used to determine sexual dysfunction. After evaluation of the different sexual areas, a total score of r65 (3.9) was considered an indicator of sexual dysfunction (Wiegel et al., 2005). The FSFI standardized Cronbach alpha was .96 and the evaluation by domains varied from

The Hospital Anxiety and Depression Scale (HADS) (Zigmond and Snaith, 1983) is an instrument with a brief (14-item), self-reported measure of anxiety and depression. HADS-total has good consistency (.87) and the same holds true for its subscales HADS-A (.81) and HADS-D (.78). The clinical interpretation of HADS is based primarily on the use of cut-off scores, the authors of the test recommended that, for anxiety and depression scales, scores between zero and eight indicate the absence of symptoms of mental disorders and scores Z8 indicate symptoms of anxiety and depression.

4. Statistical analysis

We used descriptive statistics for sociodemographic data, con-sidering the raw data and percentage or mean and standard deviation, and the classifications obtained through the HADS and FSFI instruments were demonstrated with the gross values and the percentages shown in the tables. In addition, general character-istics were correlated with all variables under investigation, including the areas of sexual dysfunction, and an association was made between the different female sexual dysfunctions and HADS (HADS-A and HADS-D). The normal distribution and the variability between the variance tables will be analyzed with the Chi-square test and the Pearson test. We adopted an alpha p-value ¼.05 to establish statistical significance, considering the total of 157 patients. Statistical analysis was performed using the computer based statistical package SPSS/9.0 (SPSS, Chicago, II, USA) (Norusis, 1998).

5. Results

In the present study, 157 patients with hypertension partici-pated in the survey and answered all items from all the instru-ments used. Table 1 shows data of participants related to age, education, occupation, religion, children and prior or current psychiatric treatment. According to analysis, statistical significance was not found between general features and sexual domain scores.

Furthermore, in Table 2 it can be observed that the prevalence of psychiatric diseases in this specific population was found to be higher for anxiety, 43.3% (N ¼68), and lower for depression, 26.8% (N ¼42). These results were obtained in accordance with the classification of the HADS cutoff point determined as Z8 for possible presence of symptoms of anxiety and depression.

A high prevalence of sexual dysfunction was also found across all domains of sexual function. The highest frequency was shown in relation to desire and arousal (68.2%), followed by pain (56.1%), orgasm (55.4%), satisfaction (42%) and lubrication (41.4%). The results are shown in Table 2.

Finally, when evaluating the correlation through the Pearson test, an initial positive correlation was found between symptoms of depression and anxiety (p o.000), although in their analysis with the different domains of sexual dysfunction there was no statistical significance. Nevertheless, among the sexual domains themselves, all domains showed significant positive correlations with each other (desire, arousal, lubrication, orgasm, satisfaction and pain; po.000), as shown in Table 3.

6. Discussion

This study showed that a high prevalence of women with arterial hypertension suffer from sexual dysfunction, with higher reported rates of difficulty with desire, arousal and pain, whereas lower rates were found for orgasm and sexual satisfaction. The high sexual dysfunction rate of 43% of the female population was confirmed in epidemiological study (Laumann et al., 2005), in which the most reported domains of sexual dysfunction were sexual desire, arousal disorder and sexual pain.

Table 1
Socio-demographic characteristics.

Age	Number (%)or mean (standard deviation) 56.40 (10.06) Minimum=27; maximum=84
Marital Status	
Single	17 (10.8%)
Married	84 (53.5%)
Divorced	24 (15.3%)
Widowed	32 (20.4%)
Schooling	
Without formal Schooling	7 (4.5%)
Literate	11 (7%)
Elementary School, Incomplete	72 (45.9%)
Elementary School, Complete	15 (9.6%)
High School, Incomplete	11 (7%)
High School, Complete	30 (19.1%)
Higher education	11 (7%)
Religion	
Without religion	9 (5.7%)
Catholic	80 (51%)
Evangelical	63 (40.1%)
Spiritualist	2 (1.3%)
Other	3 (1.9%)
Occupation	
Home	55 (35%)
Unemployed	1 (.6%)
Employee with wallet	26 (16.6%)
Employee without wallet	23 (14.6%)
Medical license	4 (2.5%)
Retired pensioner	48 (30.6%)
Kids	145 (91.1%)
Psychiatric treatment	
No	128 (81.5%)
Yes, in the past	19 (12.1%)
Yes, currently	10 (6.4%)

Table 2
Data from symptoms of anxiety, depression and sexual dysfunction in its different domains.

	N (%)
Anxiety	68 (43.3%)
Depression	42 (26.8%)
Sexual dysfunctions	
Desire	107 (68.2%)
Excitement	107 (68.2%)
Lubrication	65 (41.4%)
Orgasm	87 (55.4%)
Satisfaction	66 (42%)
Pain	88 (56.1%)

The results of this study agree with those of a control case study (Chen et al., 2012), which showed that hypertensive and normotensive subjects of both sexes differed in the frequency of their orgasm and sexual activity (po.01). In this population, 172 (62.1%) hypertensive women showed orgasm disorder and 28.9% showed sexual dissatisfaction. Similarly the study (Okeahialam and Obeka, 2006), showed that sexual desire disorder was found in six of 44 (13.6%) patients in a study of untreated hypertensive women seeing a cardiologist, in five of 29 (17.2%) hypertensive patients in treatment and in two of 43 (4.7%) in the control group. In a review of 24 studies, including a delineation of cross-sectional studies, prospective and randomized control cases, investigated the prevalence of sexual dysfunction in patients with cardiovascular diseases (Nascimento et al., 2013). The results of these studies showed that all areas of sexual functioning (desire, arousal, vaginal lubrication, orgasm, sexual dissatisfaction and pain) were affected in women with cardiac SD.

This study showed that a high prevalence of women with arterial hypertension suffer from sexual dysfunction, with higher reported rates of difficulty with desire, arousal and pain, whereas lower rates were found for orgasm and sexual satisfaction. The high rates of 43% sexual dysfunctions of the female population were confirmed in epidemiological study (Laumann et al., 2005) in which the sexual domains more reported were sexual desire, arousal disorder, sexual pain. The results of this study agree with those of a control case study (Chen et al., 2012), which showed that hypertensive and normotensive of both sexes differed in the frequency of their orgasm and sexual activity (p o.01). In this population, 172 (62.1%) hypertensive women showed orgasm disorder and 28.9% showed sexual dissatisfaction. Similarly the study (Okeahialam and Obeka, 2006) showed that sexual desire disorder was found in six of 44 (13.6%) patients in one study of untreated hypertensive women seeing a cardiologist versus in five of 29 (17.2%) hypertensive patients in treatment and in two of 43 (4.7%) in the control group. In a review of 24 studies, including a delineation of cross-sectional studies, prospective and randomized control cases, investigated the prevalence of sexual dysfunction in patients with cardiovascular diseases (Nascimento et al., 2013). The results of these studies showed that all areas of sexual functioning (desire, arousal, vaginal lubrication, orgasm, sexual dissatisfaction and pain) were affected in women with cardiac SD.

A possible explanation for the high rate of sexual dysfunction found in the overall results is that hypertension is a chronic vascular disease associated with functional or structural alterations in target organs such as the heart, brain, kidneys and blood vessels (Mancia et al., 2013). In addition, pathophysiology of sexual dysfunction in hypertension might be related to nitric oxide (NO) and Phosphodiesterase-5, which have been identified in the smooth muscle of the human clitoris, indicating a vital role for NO in female sexual arousal, similar to erectile function. Once the function of NO is decreased, as in essential hypertension, chronic elevation of systolic blood pressure can result in FSD due to insufficient blood to the genital tissue, which is fundamental to sexual functioning (Doumas et al., 2006).

In the present study, a positive correlation was also found between all sexual domains (desire, arousal, lubrication, orgasm, satisfaction, pain; p o.001; Table 3). Study have shown that women with hypertension diagnosed within 10 years of the study, also showed high correlations between their desire, sexual arousal, orgasm and sexual satisfaction. However, for patients with hyper-tension diagnosed more than 10 years previously, there was only a relationship between lubrication and orgasm. In the current study, there was no measured correlation between time of diagnosis of hypertension and the different female sexual domains (Latif et al., 2014).

This sample investigating sexual dysfunction broadly encom-passed women aged between 27 and 84 years with a low level of education (Table 1). A study suggested a high prevalence of sexual dysfunction in general for similar types of patient (Palacios et al., 2009). The studies revealed that in 32 women aged between 18 and 59 years, sexual desire disorder was the most common of the sexual disorder domains reported. Disorder of arousal in women aged 60 and above was more common than in women aged between 50 and 59 years (Latif et al., 2014; Palacios et al., 2009). Women aged between 18 and 29 years had three times more pain during intercourse than women aged between 50 and 59 years. In addition, a low level of education was a risk factor associated with sexual pain (Latif et al., 2014; Palacios et al., 2009).

Although chronic illness is common among men and women of advanced age, the relationship between sexual dysfunction and age is less clear (Mclnnes, 2003). In our study population, no statistically significant relationships between age and sexual dysfunction in any of its domains were found. These results contrast with those of a previous report in a research (Doumas et al., 2006), in a sample of 216 women with hypertension, 136 treated and 80 untreated, and 201 normotensive women. They observed a negative correlation between increasing age and FSD in hypertensive women (r¼.493; po.001) versus normotensive individuals (r¼.184; po.009). An association was also found between FSD and the duration of hypertension recorded in the medical record (r¼.655; po.001).

The correlation between symptoms of anxiety and depression (po.01) found in this study may suggest a possible common etiological basis for the disorder. In the literature, anxiety and depression have been found to be related to a reduction in heart rate variability, reflecting a decrease in parasympathetic output to the heart (Bajkó et al., 2012). The possible increase

in anxiety symptoms found in this study population (Table 2) corresponds with the recent discovery in study (Bajkó et al., 2012), who found that anxiety levels are significantly higher in patients of both sexes with hypertension. These authors suggested that anxiety could play a more important role than depression because of the psychosomatic element in the pathogenesis of hypertension. Thus, changes in the autonomic control of the heart could be considered as constituting a link between hypertension and physiopathological psychiatric disorders. In a review (Huffman et al., 2010) similarly investigated the pre-valence of depression and anxiety in patients with cardiovascular diseases. The results of these studies showed that 36% of subjects with coronary heart disease fulfilled the criteria for anxiety at the time of evaluation and that there were higher levels of anxiety in these patients than in the general population, with prevalence ranging from 16% to

42%. Although relatively high rates of depression (15%) were observed in our patients compared to the general population (4% and 5%) or primary care patients (8% and 10%), and despite the high rate of mental disorders found in hypertensive women, few of the patients were in therapeutic treatment (Table 1). The average age of 56.4 years of women in this study indicates a phase of menopause, so disturbances of mood during this period may be triggered by the loss of the effects of estrogen and progesterone modulators (Abdo, 2010). In spite of these results in the present study, no relationship was found between sexual dysfunctions and symptoms of depression and anxiety.

A possible limitation of this study was the lack of control over the antihypertensive drugs and the dosages taken by the study participants. According to the literature (Latif et al., 2014), the side effects of some medications may interfere negatively with female sexuality in this population, so future scientific papers should

directly address this subject. In addition, the lack of a control group was a further limitation.

However, in this work, the main contributions were the assessment of symptoms of anxiety and depression with an appropriate tool, which differentiated with respect to somatic problems, thus ensuring the validity of the results in patients with organic symptoms, as well as the investigation of female sexual dysfunction, in different domains, in hypertensive women. Few studies have been published on these subjects; therefore, the significance of the present research is that it broadens scientific knowledge of the subject.

7. Conclusion

Sexual dysfunction in all domains was found to be highly prevalent in women with arterial hypertension. This result is particularly relevant, because hypertension is a chronic disease whose treatment requires patients to attend medical appoint-ments regularly and during such routine treatment, there is a possibility that medical providers could also begin to investigate other health problems. The women in this study were found to have high levels of symptoms of mental illness, with significant levels of anxiety and depression, but few of them were undergoing area-specific psychiatric treatment.

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he present study had no source of external financing.

Conflict of interest
All authors have no conflicts of interest involving this manuscript.

Table 3
Correlation between anxiety, depression and different domains of sexual dysfunction in 157 patients.

		HADSD	Desire	Excitement	Lubrication	Orgasm	Satisfaction	Pain
HADSA	Corr Pearson	.593[a]	.072	_.096	_.010	_.023	_.036	_.020
	Sig.	.000	.372	.233	.901	.776	.656	.807
HADSD	Corr Pearson		_.068	_.011	.068	.051	.027	.131
	Sig.		.397	.891	.397	.526	.736	.102
Desire	Corr Pearson			.395[n]	.427[a]	.428[a]	.347[a]	.361[a]
	Sig.			.000	.000	.000	.000	.000
Excitement	Corr Pearson				.870[a]	.862[a]	.695[a]	.828[a]
	Sig.				.000	.000	.000	.000
Lubrication	Corr Pearson					.954[a]	.774[a]	.907[a]
	Sig.					.000	.000	.000
Orgasm	Corr Pearson						.794[a]	.880[a]
	Sig.						.000	.000
Satisfaction	Corr Pearson							.758[a]
	Sig.							.000

[a] The correlation is significant at the .01 level (2 ends).

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Predictors of suicidal ideation in coronary artery disease

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Abstract

Context: In clinical practice, the importance of screening for anxiety and depression in patients with medical illness is highlighted. In many cases, the suicidal ideation makes up the framework of mental disorders, which may be exacerbated in these individuals.
Objective: To investigate the role of symptoms of mental disorders in the presence of suicidal ideation.
Methods: A total of 103 patients with diagnosis of coronary artery disease in cardiac treatment were interviewed for symptoms of anxiety and depression using the Beck Depression Inventory and Hospital Anxiety and Depression Scale. All patients were also analyzed for presence of suicidal ideation, wishes, attitude and suicidal plans using the Beck Suicidal Ideation Scale. The relationship between social and demographic variables and mental disturbances and the presence of suicidal ideation was assessed using chi-square test and coefficient of sperm. Logistic regression analysis was used to explain the change in the role of each of the variables in suicidal ideation.
Results: The results showed that predictors for suicidal ideation were isolated anxiety (B = 0.29; Wald 4.77; p = 0.03) with an odds ratio of 1.34 (CI 1.03–1.75) and isolated depression (B = 0.33; Wald 5.35; p = 0.02) with an odds ratio of 1.39 (CI 1.05–1.85). Frequencies of interaction depression and anxiety were higher among patients who were single, widowed and divorced. Chi-square test and the coefficient of sperm showed an association between marital status and suicidal ideation ($\chi^2(2) = 9.17$; p = 0.01).
Conclusion: Anxiety and depression are risk factors for isolated patients with suicidal ideation. Early clinical identification of mental disorders in patients with medical illness contributed to preventing the risk of suicide.

1. Introduction

Coronary artery disease (CAD) is a leading cause of cardiovascular death and the fourth largest in the ranking of diseases around the world [1,2]. Research in individuals over 40 years of age have been stepped up in the light of am increase in the number of acute myocardial infarction (AMI) and arterial hypertension cases as a result of a lifetime of stress, physical inactivity and inadequate diet [3].

Mental disorders such as depression and anxiety were studied as additional factors to CAD, where it was concluded that patients with CAD tend to experience more anxiety related to their cardiac symptoms [4]. On the other hand, the depressive symptoms present in the short term, tend to worsen state of health [5].

The lack of motivation, inability to concentrate and low power consumption can directly affect health behaviors, due to greater risk of non-adherence to medical recommendations, rehospitalization, increased perception of unexplained phys-ical symptoms, less functional capacity, poorer quality of life and difficulty for participation of cardiovascular rehabilitation program [6–8].

Some indirect measures may be used to evaluate symptoms of depression in patients with chronic disease, such as the inability to get pleasure in conversations with roommates and family visits, the inability to experience pleasurable activities and lack of desire to make plans. However, some symptoms may be associated with increased risk of mortality, such as: indecision, insomnia, low self-esteem, hopelessness, loss of the ability to feel pleasure, thoughts of death and suicide [6].

An individual with suicidal ideation has plans and wishes to commit suicide, but still makes no attempt of doing it. Ideation is seen as a first stage before the suicide attempt. Most of the attempts occur during the first year after the onset of suicidal thoughts [9]. Risk factors include some clinical symptoms, previous attempts at suicide, depression, question related to the absence of social support and psyciatric disorders [10]

A population-based case–control study showed that suicide risk rate was high in the first month after myocardial infarction high (MI), both for patients with some mental disorder and for patients without mental illness, and the risk of suicide increased at least five years after MI [11]. Thus, symptoms of psychiatric disorders in patients after acute cardiac events, are particularly an issue of great importance.

The objective of this study is to evaluate the role of psychiatric and socio-demographic variables in the presence of suicidal ideation in patients of a coronary artery disease outpatient cardiology clinic, in order to improve the collection of data regarding the proposed theme and identify occurrences based on earlier diagnostic evaluations.

2. Methodology

A cross sectional study of 103 patients with coronary artery disease aged between 35 and 87 years, in a public health clinic, all diagnosed with coronary artery disease who were under medical upervision of a cardiologist, was conducted. The criteria for inclusion in this study were: have medical follow-up; have watched the initial interview and have it performed in its entirety; have sufficient cognitive capacity to understand the instructions given; and are 18 or over years old. Patients signed a consent form and were aware of the experimental protocol (approved by the Ethics Committee of the Universidade Federal do Rio de Janeiro) before the start of the participation.

Patients were evaluated with Mini International Neuropsy-chiatric Interview (MINI 5.0) [12]; this is considered to be an instrument that has the default template a short structured interview (approximately 25 minutes) for the assessment of the existence of Axis I psychiatric disorders according to DSM-IV and the 10th revision of International Classification Of Diseases (ICD-10), and in accordance with the criteria of cut-off point of the current risk of suicide, the scores are the scores are classified as follows: 1–6 = mild; from 6 to 9 = moderate and ≥10 = high.

The Beck Depression Inventory (BDI) [13] is an instrument applied to identify and quantify symptoms of depression. This consists of 21 items that assess cognitive components, affective, somatic and behavioral depression. The BDI is an investigation of sadness, pessimism, sense of failure, lack of satisfaction, a feeling of guilt, feeling of punishment, auto depreciation charges, suicidal ideas, bouts of crying, irritability, social downturn, indecision, distortion of body image, inhibition for work, sleep disturbance, fatigue, loss of appetite, weight loss, and somatic concern. For samples of patients with affective disorder the recommended cut-off points are as follows: 10, no depression or symptoms of depression minimal; 10–18, mild depression to moderate; 19–29, moderate to severe depression; and 30–63, severe depression [14].

For the evaluation of anxiety and depression, Hospital anxiety and Depression Scale (HADS) [15] was applied. This instrument consists of 14 questions – seven for anxiety and seven for depression – with a response scale ranging from zero to three, and maximum score for both mental symptoms. Scores of cut-off points for both subscales were: HAD-anxiety (HAD it)—without anxiety 0 to 8 and with anxiety, ≥9, and scale HAD-depression (HAD-D)—no depression, 0–8 and depressed ≥9.

Other instrument used was Beck Suicidal Ideation Scale (BSI). The BSI [16] is an instrument for measuring the presence of suicidal ideation, wishes, attitude and suicide plans. This scale was developed based on psychiatric patients, adults admitted and outpatients. The scale consists of 21 items, each with response alternatives 0 to 2 points; it assesses three dimensions of suicidal ideation: active, passive and prior suicide attempt. With a cut-off oint of ≥8, suicidal ideation was considered clinically significant.

The social and demographic descriptive data, including gender, age, education, occupation, religion, children, psychiatric or psychological treatment past or current and the use of psychotropic substances were also checked by means of a registration form.

For statistical analysis descriptive statistics was used for social and demographic data, considering the raw data and percentage or mean values and standard deviation. The possible relationships between the various variables and the presence of suicidal ideation were evaluated by the chi-square test and coefficient of sperm; with p values b0.05 considered as statistically significant. Logistic regression was considered for explanation of the role of each of the variables in the variance of suicidal ideation.

3. Results

Of the 103 patients with coronary artery disease, 60 (58.3%) were women and 43 (41.7%) were men. The age ranged between 35 and 87 years (mean = 63.14; standard deviation = 12.76). In total, 55 (53.45%) were married, 87 (84.5%) had kids, 65 (63.1%) were catholic, 65 (63.1%), attended elementary school, and 48 (46.6%) were retired. The clinical aspects were anxiety (median = 5.81; standard deviation = 4.18 and range = 0 to 20) and depression (median = 4.52; standar d deviation = 4 and range = 0 to17). These results are shown in Table 1.

Table 1
Descriptive data of participants and psychiatric aspects.

	Number or average (standard deviation)	%
Age	63.4 (12.76); minimum = 35; maximum = 87	
Sex		
Female	60	58.3
Male	43	41.7
Religion		
Without religion	1	1
Catholic	65	63.1
Evangelical	36	35
Spiritualist	1	1
Marital status		
Single	23	22.3
Married	55	53.4
Separated/divorced/ widowed	25	24.3
Schooling		
Without formal schooling	15	14.6
Elementary school	65	63.1
High School	22	21.4
Graduation	1	1
Occupation		
Unemployed	2	1.9
Home	19	18.4
Employee	34	33
Retired	48	46.6
Kids		
No	16	15.5
Yes	87	84.5
Anxiety	5.81 (4.18); minimum = 0; maximum = 20	
Depression	4.52 (4.00), minimum = 0; maximum = 17	

The result of the analysis of the chi-square test and the coefficient of sperm showed an association between marital status and suicidal ideation ($\chi 2(2) = 9.17$; p = 0.01). However, gender, education, occupation and kinds were not found to have statistical significance ($p < 0.05$).

Correlation was observed between the symptoms of anxiety (ρ 0.32; p 0.01) and depression (ρ 0.41; p 0.01). In logistic regression analysis was found that anxiety and depression as predictors of suicidal ideation.

According to the data in Table 2, where cut-off points defined by the measuring instrument were medically classified, there was a verified distribution of frequency of CAD patients with and without the presence of suicidal ideation. In relation to marital status and depression and anxiety, a prevalence of depression in individuals with suicidal ideation and those who were unmarried, widowed and separated was found.

Table 2
Data from symptoms of anxiety, depression and sexual dysfunction in its different domains.

	N (%)
Anxiety	68 (43.3%)
Depression	42 (26.8%)
Sexual dysfunctions	
Desire	107 (68.2%)
Excitement	107 (68.2%)
Lubrication	65 (41.4%)
Orgasm	87 (55.4%)
Satisfaction	66 (42%)
Pain	88 (56.1%)

The frequency of interaction depression and anxiety was higher among patients who were single, widowed and divorced (Table 3).

Table 3
Correlation between anxiety, depression and different domains of sexual dysfunction in 157 patients.

		HADSD	Desire	Excitement	Lubrication	Orgasm	Satisfaction	Pain
HADSA	Corr Pearson	.593[a]	.072	−.096	−.010	−.023	−.036	−.020
	Sig.	.000	.372	.233	.901	.776	.656	.807
HADSD	Corr Pearson		−.068	−.011	.068	.051	.027	.131
	Sig.		.397	.891	.397	.526	.736	.102
Desire	Corr Pearson			.395[a]	.427[a]	.428[a]	.347[a]	.361[a]
	Sig.			.000	.000	.000	.000	.000
Excitement	Corr Pearson				.870[a]	.862[a]	.695[a]	.828[a]
	Sig.				.000	.000	.000	.000
Lubrication	Corr Pearson					.954[a]	.774[a]	.907[a]
	Sig.					.000	.000	.000
Orgasm	Corr Pearson						.794[a]	.880[a]
	Sig.						.000	.000
Satisfaction	Corr Pearson							.758[a]
	Sig.							.000

[a] The correlation is significant at the .01 level (2 ends).

Table 4 presents the role of each variable in the model when considered together. It is observed that both marital status and the interaction between anxiety and depression lose their explanatory power, remaining just as relevant to isolated anxiety (B = 0.29; Wald = 4.77; p = 0.03) with an odds ratio of 1.34 (CI = 1.03–1.75) and isolated depression (B = 0.33; Wald = 5.35; p = 0.02) with an odds ratio of 1.39 (CI = 1.05–1.85).

Table 4
Variables in the equation.

		B	S.E.	Wald	*df*	Sig.	Exp(*B*)	95% CI for Exp(*B*)	
								Lower	Upper
Step 1[a]	Anxiety	.96	.136	4.774	1	.029	1.345	1.031	1.755
	Depression	.334	.144	5.350	1	.021	1.396	1.052	1.853
	Anxiety by depression	.023	.015	2.198	1	.138	.978	.949	1.007
	Marital status			3.832	2	.147			
	Marital status (1)	1.276	.736	3.010	1	.083	3.583	.848	15.150
	Marital status (2)	.146	.722	.041	1	.840	1.157	.281	4.766
	Constant	4.636	1.258	13.582	1	.000	.010		

4. Discussion

The results of this study indicate that isolated anxiety and depression only play a role as a suicide ideation predictor, contributing to similar results found in the literature, and highlight the importance of considering these psychiatric disorders as risk factors for the later emergence of suicidal thinking among patients suffering from cardiovascular problems.

The data found in this study correspond to a report earlier by Sareen et al [17], in which a preexisting anxiety disorder was an independent risk factor for the presence of suicidal ideation and, yet, have shown that anxiety in associated comorbidity with other anxiety disorders has increased the risk of suicide attempts in people with mood disorder. Similarly, the study by Nock et al. [18], used survey data from the World Health Organization Mental Health around the world, and made a series of coordinated epidemiological surveys in 21 countries. These authors showed that anxiety disorders were “”planned for suicidal thoughts.

Several factors can interact with the presence of anxiety and contribute to the risk of suicidal behavior: high levels of worry, fear, and significant apprehension about the future can contribute to the early practice of an unusual act that often causes damage if there is no intervention of others. Biological factors such as low levels of hydroxyindole acetic acid in cerebrospinal fluid (CSF-HIAA, a metabolite of serotonin) can bind both anxiety disorders and suicidal behavior [17].

Anxiety disorders have been increasingly identified as an independent risk factor for depression in patients with cardiac diagnosis. An evaluation with HADS anxiety subscale found that improvement in depression was independently associated with adherence to exercise, diet and other behavior of secondary prevention within six weeks, while improvement in anxiety showed no relationship to treatment adherence. A possible explanation for this difference is that the symptoms of depression can affect health behavior, while the symptoms of anxiety may have less of an impact on the outcome of adherence to treatment [19]. In the present study isolated anxiety was found as risk for suicidal ideation in this population. Research on the exploration of this theme is warranted, as the suicidal ideation is one of the symptoms of a depressive episode according to criteria the Statistical Manual of Mental Disorders DSM-IV [20] in contrast with the symptoms of anxiety toward avoidance behavior.

In this study, isolated depression as risk for suicidal ideation is consistent with previous studies [21], in which lifelong recurrent depression increases the risk of suicidal ideation and self-mutilation ideas. A study by Shemesh et al. [22] showed that, among cardiac depressed patients, reports of suicidal ideation and some cases who were hospitalized in psychiatric clinics were found, and none of those hospitalized were in psychiatric treatment at the time of screening.

Suicidal ideation is the most stable of symptom episode of depression. This stability can be caused by greater cognitive reactivity of mood, sadness and, possibly, being strengthened by every episode of depression that leads to suicidal ideation. Depressed mood was considered a marker of risk of suicide in depression presenting recommendations for its assessment and treatment in cognitive response patterns that arise in the face of a negative mood, so that measures are taken to a significant decrease of suicidal thoughts [23]. In the present study, the occurrence of depression symptoms was found in individuals with suicidal ideation and those who were single, widowed and separated.

Previous studies have reported an association between marital status and suicide.Kishi et al [24] showed that patients with acute suicidal ideation had risk factors associated with psychiatric history and less frequently with being married. Kposowa [25] revealed that divorced persons were significantly more likely to die from suicide than their married counterparts (RR = 1.76; 95 % CI = 1.35, 2.28).

This study, contrary to the expectation, found no risk on the interaction between anxiety and depression to suicidal ideation (Table 4). Other study of Artero et al. [26] showed am association between anxiety and depression suicide attempt. A possible explanation would be the study's sample number. Therefore, a need for the reproduction of results in studies with larger samples was mentioned.

5. Conclusion

In this study patients diagnosed with coronary artery disease in outpatient treatment, anxiety and depression found were independent risk factors for suicidal ideation. This research draws attention to the medical gap with regard to investigations of those patients with a history ofmental illness, which presents risk of suicidal thinking.

The results reinforce the realization of careful screening of anxiety and depression, since the symptoms of mental disorders are often found in cardiovascular diseases. In addition, the results highlight the importance of early identification of these psychiatric disorders for reducing the risk of suicide, as well as for the benefit of prevention in the first stage of a suicide attempt. Psychiatry is relevant follow-up in patientswithCAD.Also, a preventive evaluation of physical and mental health can minimize the risk of depression, anxiety and suicide ideation.

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The Role of Depression on Glycemic Control

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Abstract

Diabetes mellitus (DM) is a chronic disease with clinical complications and is responsible for many hospital stays. The complications of DM are related to hyperglycemia and other related diseases. Comorbidity of depression decreases glycemic control due to a depressed mood that interferes with self-care, as an irregularity in the low glycemic index diet, prescribed medication and lack of physical activity.

Keywords: Diabetes mellitus; Glycemic control; Self-care; Depression

Introduction

Diabetes mellitus type 2 (DM2) is an important risk factor for cardiovascular disease (CVD). The CVDs are responsible for 80% of the deaths in these patients. Diabetics are three times higher risk of death from CVD compared to the general population [1].

The DM2 is characterized by insulin resistance and secre tion of hormones deficiency. The increase of glucose in the bloodstream causes several serious symptoms, such as weight loss or significant increase, sensations of cold and heat, pain, cardiac, among others, generating the need for self-monitoring of blood glucose several times 1 day [2].

The central component in the treatment of DM is self-care. Disease management requires a comprehensive approach that includes changes in lifestyle: changes of eating habits, physical activities, watching your feet and the use of medications on a regular basis. For these reasons, many patients with DM2 may develop changes in mood and even depression [3].

The DM and depression often occur in comorbidity [4, 5]. In diabetic patients the depression has been linked with poor glycemic control and low adherence to self-care activities. The lack of self care in diabetics is seen as one of the explanations for depression-related hyperglycemia [6].

The Multi-Ethnic Study on Atherosclerosis (MESA) in- vestigated the incidence of DM2 in 5,201 diabetics during a period of 3.2 years, and noted that individuals with high rate of depression showed risk 1.42 times of occurrence of DM2. The depression risk factor for diabetics was linked to lifestyle, such as eating habits, physical inactivity and smoking [7].

This mental disorder may precede or follow the start of diabetes complications depending on the individual or the course of the disease [8]. Therefore, knowing the impact of depression can be beneficial to guide therapeutic intervention targeted to depressed diabetics, and it is very important. The evidence from controlled studies suggests that the diagnosis and treatment of depression may lead to an improvement in the evolution of these individuals [9].

Depression and Glycemic Control

The neurochemical and hormonal changes present depression that cause hyperglycemic effects, and glycemic metabolism disorders may result. The increased activity of the hypotha- lamic pituitary adrenal glands and the sympathetic nervous system, results in increased release of cortisol and release of catecholamine. Also, epinephrine and norepinephrine can lead to increased blood sugar via decreased insulin synthesis or in- creased peripheral resistance to insulin action [3].

Depression in patient with diabetes has been suggested as one of the possible causes of poor metabolic control. In 2002, Martins et al [10] observed poorer control of blood glucose and glycated hemoglobin (HbA1c) among diabetic women with depression compared to non-depressed, showing the negative effect of depression on adherence to treatment and risk of complications of DM2.

The study of Papelbaum and colleagues showed that patients with DM2 depression showed higher levels of HbA1c when compared with those who did not present mood disorder. The authors observed still high rate of depression in individuals who made use of insulin as compared to patients who used oral hypoglycemic [11].

These authors showed that diabetics with depression have attitudes that result in a negative impact on fasting glucose and HbA1c, whether by difficulties with regard to changing habits of life, as well as presenting greater body mass index and smoking.

The symptoms of depression are related to decreased adherence to dietary guidelines, greater risk of interruption in the use of medications, and worst overall operation contributing to the possible difficulty of change of habit and the capillary glycemic, insulin application and control of hyperglycemic diet. A meta-analysis containing 47 independent studies demonstrated that depression in patients with DM was significantly associated with non-adherence to treatment. There was a negative effect for patients with DM with depressive symptoms in the absence of medical consultations attendance [12]. In addition, it has been shown that diabetic adults with little humor changes respond to programs intended for weight control and smoking cessation, among others. Also the functional impairment associated with an increase in symptoms of depression, in turn, would make it even more functional style modifications related to the low quality of life of individuals with DM2 [5, 10]. The adherence to treatment is important to reduce the risk of complications of DM. Thus, the appropriate use of prescription drugs, such as oral medications and insulin, as well as a healthy diet and exercise, is fundamental to the adequate control of blood glucose.

Conclusion

The impact of depression may influence the clinical course of the DM2. Diabetics with mood present difficulty to daily glycemic monitoring, implementation of physical exercise, diet control and lack of adherence to the medication. Therefore, depression can contribute to poor glycemic control in the treatment of individuals with DM2.

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Discussão

Esta dissertação mostra os resultados de compilação de quatros trabalhos nos últimos dois anos publicados. As descobertas dos artigos originais são consistentes com outros estudos da literatura publicada anteriormente.

Observamos que a presença disfunção sexual feminina está relacionada com todos os domínios da resposta sexual, sendo que as maiores prevalências foram encontradas na disfunção sexual do desejo e da excitação na população de mulheres com diagnóstico de hipertensão arterial (artigo 2). Vale ressaltar que resultados similares foram encontrados entre pacientes com doenças cardiovasculares (artigo 1).

Os pacientes cardiopatas podem apresentar dificuldade na vida conjugal após o período de readequação às suas atividades sexuais, devido à diminuição do interesse em praticar a atividade sexual ou até mesmo disfunção sexual[30]. A alteração do desejo sexual pode sofrer influência do estado de saúde geral, pois a fadiga e o desconforto podem contribuir para redução da atividade sexual. Isto faz com que um número considerável da população de cardiopatas diminua ou cesse a atividade sexual[31].

O estudo com população de cardiopata constatou que os pacientes com maiores números de vasos coronarianos afetados pela aterosclerose apresentaram taxas altas de disfunção erétil grave (artigo1). Os fatores de risco relacionados com as disfunções sexuais incluem condições médicas, como doenças cardiovasculares e hipertensão (artigos 1,2). As doenças vasculares podem ter um impacto direto no funcionamento sexual devido a estreitamento das artérias coronárias e o aumento da pressão sanguínea. As condições mórbidas sistêmicas da doença vascular contribuem para insuficiência do fluxo sanguíneo do tecido genital (artigo 1).

No estudo de mulheres com hipertensão arterial e idade média de 56 anos foi encontrada maior taxa de 43,3% de ansiedade em relação a 26,8% de depressão. No entanto não houve associação de disfunção sexual e distúrbios mentais e idade nesta população estudada (artigo2), apesar de existir

evidência na literatura de associação entre disfunções do desejo e satisfação sexual e idade elevada e depressão (artigo 1).

Neste estudo (artigo1), encontrou-se que pacientes após o Infarto Agudo do Miocárdio apresentaram redução de frequência da atividade sexual. Diversos aspectos foram encontrados como medo de complicação cardíaca durante o ato sexual, exaustões entre outros. O medo infundado e equivocado de morte subida na prática da atividade sexual pode gerar ansiedade e depressão no indivíduo, este fator psicológico compromete a satisfação sexual do paciente[32].

Em cardiopatas em atendimento ambulatorial foi encontrada em pacientes com depressão e ansiedade isolada a presença de ideação suicida (artigo 3). Nesse artigo, o ponto chave dos resultados mostrou que os transtornos psiquiátricos em pacientes cardiopatas, incluindo a ideação suicida, estão associados à depressão e ansiedade sozinhos. Além disso, não foi encontrado associação de ideação suicida com variáveis sócio demográficas.

A ideação suicida em pacientes cardiopatias é aumentada quando os mesmos apresentam comorbidades em ansiedade e depressão. Estudo da literatura revelou que dados anteriores de amostra de pacientes com doença crônica em atendimento de cuidados primários encontrou evidência de alta taxa de ideação suicida nesta população[33].

A comorbidade depressão em pacientes diabéticos relacionou-se a um pior controle glicêmico, maior dificuldade de dietas, baixa aderência ao tratamento e aumento do risco de complicação clinica de DM (artigo 4). A adesão ao tratamento é um fator de fundamental importância quando se lida com doenças que tem curso crônico, com necessidade de modificações no estilo de vida, longo prazo de dependência a medicamentos e grande necessidade de envolvimento do individuo na estratégia do tratamento.

Considerações Finais

O desenvolvimento da medicina e programas de reabilitação física com especialidade médica tem proporcionado maior expectativa de vida aos portadores de doenças crônicas. Este fato justifica a importância de avaliação de aspectos do processo de adoecimento, que podem contribuir para limitação da atividade diária da vida do paciente.

Esta dissertação ressalta que problema sexual deve ser integrado à consulta regular dos pacientes cardiopatas e hipertensos, uma vez que elevado indicie de disfunções sexuais ocorre nesta população. A condição vascular sistêmica dessas doenças também afeta o funcionamento do fluxo sanguíneo do tecido genital, e compromete o ciclo de resposta sexual.

Além disso, um fator mental no contexto da vida sexual de pacientes cardiopatas e seus cônjuges é o medo sexual de que o esforço físico, o aumento da frequência cardiorrespiratória e a pressão arterial ao longo do ato sexual sejam perigosos para o coração.

Outro destaque deste trabalho é a atenção para a presença de depressão em pacientes com doenças crônicas. A depressão é um dos mais prevalentes transtornos psiquiátricos e associado a um declínio do funcionamento diário e utilização de serviços de saúde. Os pacientes cardiopatas deprimidos que apresentam sintomas de desesperança, pessimismo e falta de prazer nas atividades diárias devem ser investigados a respeito de ideação de suicídio. A depressão pode favorecer para a falta de adesão ao tratamento médico, bem como dificuldade de adquirir novos hábitos de vida necessários para o controle da doença crônica.

Portanto, aumento de números de casos de doença médica e depressão leva à questão de como essa comorbidade pode ter um impacto sobre a saúde geral do paciente. Sendo necessário que profissionais de saúde estejam atentos a avaliação e tratamento de aspectos psiquiátricos, a fim de intervir para minimizar o sofrimento e a angústia dos pacientes com doenças crônicas.

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