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Patients with chronic diseases: Is sexual health brought up by general practitioners during appointments? A web-based study

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ABSTRACT

Objectives: Many chronic diseases and their medications may induce sexual problems. This study aimed to evaluate whether general practitioners (GPs) raise sexual health issues during appointments with patients who have chronic diseases.
Study design: A web-based questionnaire was distributed to a random sample of 1,000 GPs in Finland.
Main outcome measures: The study aim was to determine GPs' self-reported inquiry into sexual problems with patients who have chronic diseases and GPs' awareness of medications inducing sexual problems.
Results: Only 16.2% of the GPs inquired about sexual health issues, typically during appointments dealing with reproductive organs. A majority (66.9%) considered sexual problems to be side-effects of medications, but only 17.9% followed up about them. Compared to male GPs, female GPs were more likely to inquire about gynecologic patients' sexual issues (OR 1.77, 95% CI 1.05–2.99), but less likely to ask about them with urologic (OR 0.56, 95% CI 0.35–0.91) and neurologic patients (OR 0.35, 95% CI 0.17–0.72). The GPs aged 40–49 and 50–65 were more likely than those aged 27–39 to inquire about sexual health issues among patients with cardiovascular (OR 2.87, 95% CI 1.11–7.44, OR 2.89, 95% CI 1.16–7.19) and neurologic (OR 4.63, 95% CI 1.45–14.82, OR 5.68, 95% CI 1.87–17.23) diseases.
Conclusions: GPs seldom inquire about sexual problems with patients who have chronic diseases or after prescribing medications for these conditions, which may lead to underdiagnosis and undertreatment of sexual problems.

1. Introduction

Sexual health is important for overall health and well-being. Although many patients wish to address their sexual health issues during appointments, they do not necessarily take the initiative themselves. One reason for this is that they believe that their sexual problems cannot be helped [1]. Furthermore, these problems are often considered too intimate to bring up, leading to underdiagnosis and undertreatment. For instance, for many men, erectile dysfunction or premature ejaculation can be such sensitive topics that they are unable to bring them up out of embarrassment [2,3]. According to a study by Nazareth et al. [4], 30% of women and 21% of men have sought advice about their sexual problems from their general practitioners (GPs). However, it is seldom routine for GPs to address sexual health issues with their patients [5] or to take a sexual history [6,7].

Many chronic diseases and/or their medications can affect quality of life, including sexual life [8]. For instance, sexual dysfunction is common among people with diabetes [9–11]: for type I diabetes, the prevalence is approximately 40% [9], and for type II diabetes, it is around 70% [11]. In terms of medications, 30% of patients diagnosed with cardiovascular diseases identify their medication as the source of their sexual difficulty [12]. In a six-year retrospective study of post-stroke experiences, patients reported decreased sexual interest, and male patients also reported erectile dysfunction [13]. In a study of gynecologic cancer and breast cancer patients, 70% of the women were concerned about their sexual function. They mostly reported vaginal dryness (55%) and loss of libido (51%) [14]. Despite wishing that their physicians would bring up sexual health issues, nearly 50% of these patients had

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never spoken about their sexual health with their healthcare providers [14]. In addition, mental illnesses or their medications typically affect sexual health. In one study [15] nearly 30% of patients with anxiety or depressive disorders reported having sexual dysfunctions, and the frequency clearly increased after the onset of antidepressant medication.

As for sexual health in patients with chronic diseases, physicians may also assume that their patient is too old or too sick to be sexually active. However, reportedly 40% of partnered women and 50% of partnered men aged 65 and older are sexually active [16]. Furthermore, sexuality is increasingly shown to be an important aspect of life [17], emphasizing that elderly patients' sexual health issues should also be addressed during appointments.

The patient's background may hinder physicians from bringing up sexual health issues. Sexual problems are frequent, for instance, in substance abusers [18,19]. Furthermore, young patients with a migrant or refugee background report that physicians often dismiss their sexual problems during appointments [20]. On these occasions, cultural barriers may also prevent the patients from bringing up sexual health issues [21].

The main aim of our study was to evaluate whether the GPs bring up sexual health issues with patients presenting with chronic diseases or health conditions. Additionally, we aimed to assess the GPs' awareness of chronic diseases and their medications inducing sexual problems as side effects. We hypothesized that GPs bring up sexual health issues infrequently and that the awareness of the interrelation between chronic diseases or health conditions and sexual problems is minimal, which may lead to underdiagnosing and undertreating sexual problems in patients with chronic diseases.

2. Methods

2.1. Subjects

The respondents in this Sexual Medicine Education (SexMEdu) study were a random sample of GPs who were current members of the Finnish Medical Association (FMA) and who had indicated a municipal health center as their primary workplace. Contact information was restricted to 1000 Finnish GPs, according to the FMA's general policy. Of the cohort, 75 physicians reported not being a part of the target group (e.g., they belonged to another specialty or were retired), leading to their exclusion. Of the 925 remaining, 402 replied, resulting in a response rate of 43.5%. Of the respondents, 75% were female ($n = 302$) and 25% were male ($n = 100$), representing age groups of 27–39 years ($n = 147$), 40–49 years ($n = 111$), and 50–65 years ($n = 144$). According to the FMA's statistics [22], 65% of GPs in Finland are female, and the age distribution is comparable to the age distribution in our study. In terms of background information, the hospital districts in which the respondents worked were also inquired about, and according to the replies, all hospital districts in Finland were covered. In addition, the numbers of patients with whom the GPs discussed sexual health issues in general per week was obtained, and the respondents were divided into three groups accordingly (0 patients, n = 77; 1–5 patients, $n = 265$; ≥6 patients, $n = 60$).

2.2. Questionnaires

The SexMEdu study questionnaire was slightly modified from the Portuguese SEXOS study [23]. Permission to use the questionnaire was received from the researchers. The modifications mainly consisted of changes to some response options or scales. After modifying the questionnaire, it was piloted with 11 physicians, which resulted in amending the content. This part of the study consisted of four fields (A–D):

A) *The frequency of inquiring about patients' sexual problems (one question):*

"I frequently inquire about sexual problems during appointments in general" (options: totally disagree / disagree / agree / totally agree / cannot say).

B) *The frequency of inquiring about sexual problems from various patient groups* (ten items):

"How often do you inquire about sexual problems from the following patient groups? 1) Patients with cardiovascular diseases, 2) patients with neurological diseases, 3) patients with endocrine diseases, 4) gynecologic patients, 5) urologic patients, 6) menopause/andropause patients, 7) family planning patients, 8) patients with mental illnesses, 9) patients with substance abuse issues, and 10) patients with an immigrant background" (options: never / sometimes / usually / always / cannot say).

C) *The knowledge of medications inducing sexual problems* (eleven items):

"Which of the following medications do you consider to induce sexual problems? Medications for 1) hypertension, 2) arrhythmia, 3) hypercholesterolemia, 4) diabetes, 5) systemic cortisone, 6) prostate, 7) antiandrogens, 8) hormonal contraception, 9) menopausal hormone treatment, 10) antidepressants, or 11) I do not know of any medication that induces sexual problems." For this question, more than one option could be chosen.

D) *The awareness of sexual problems being side effects of medications and the frequency of inquiring about such issues* (three questions):

1) "Sexual problems are often side effects of medications for other pathologies." 2) "I change patients' medication if it causes sexual problems as a side effect." (For both questions, the options were: totally disagree / disagree / agree / totally agree / cannot say.) 3) "After prescribing a medication, do you ask the patient about possible side effects in sexual function during the next appointment?" (Options: always / usually / seldom / never.)

2.3. Statistical analysis

Data are described using frequencies (percentages). The associations of the GPs' genders, ages (27–39, 40–49, and 50–65 years), and the numbers of patients with sexual health issues discussed in general weekly (0, 1–5, and ≥6 patients) with the four fields of interests (A–D) were analyzed using multivariable logistic regression. In the analyses, the responses in fields A (totally agree or agree versus disagree or totally disagree) and B (always or usually versus sometimes or never) were dichotomized. Furthermore, in fields A, B, and D, the "cannot say" responses were omitted from analyses. In field C, not selecting one or more medication or responding "I do not know of any medication that induces sexual problems" were interpreted as "not inducing sexual problems." The results are presented using adjusted odds ratios (ORs) with 95% confidence intervals (CIs). P-values less than 0.05 were considered statistically significant. Statistical analyses were performed using the SAS System for Windows, version 9.4 (SAS Institute Inc., Cary, NC).

2.4. Ethics

The Ethics Committee of Turku University approved the study protocol (44/2017). The SexMEdu study respected the principles of the Helsinki Declaration in terms of the respondents' anonymity and obtaining informed consent. Replying to the questionnaire implied consent, which was made clear to the respondents via the questionnaire.

3. Results

3.1. A) The frequency of inquiring about patients' sexual problems

Of all the GPs, 16.2% asked about sexual problems during appointments. Compared to the GPs in the age group of 27–39 years, the GPs in the age groups of 40–49 years (OR 2.23, 95% CI 1.04–4.77, $p = 0.039$) and 50–65 years (OR 3.29, 95% CI 1.62–6.68, $p = 0.001$) were more likely to inquire about sexual problems; additionally, there were no differences between the latter two age groups. No differences between the GPs' genders emerged.

3.2. B) The frequency of inquiring about sexual problems from various patient groups

The GPs most often inquired about sexual problems from urologic, family planning, gynecologic, and menopause/andropause patients, whereas they were unlikely to inquire about these problems from patients with an immigrant background or substance abuse history. Compared to the male GPs, the female GPs inquired about sexual problems more frequently from gynecologic patients (OR 1.77, 95% CI 1.05–2.99, $p = 0.033$) and less frequently from urologic (OR 0.56, 95% CI 0.35–0.91, $p = 0.020$) and neurologic patients (OR 0.35, 95% CI 0.17–0.72, $p = 0.005$). As for the different age groups, GPs in the 40–49 and 50–65 age groups were more likely to inquire about sexual problems from cardiovascular (OR 2.87, 95% CI 1.11–7.44, $p = 0.030$ and OR 2.89, 95% CI 1.16–7.19, $p = 0.023$, respectively) and neurologic patients (OR 4.63, 95% CI 1.45–14.82, $p = 0.010$ and OR 5.68, 95% CI 1.87–17.23, $p = 0.002$, respectively) compared to the 27–39 age group. In addition, compared to the 27–39 age group, GPs in the 50–65 age group were more likely to inquire about problems from patients with endocrine diseases (OR 2.36, 95% CI 1.09–5.11, $p = 0.029$) and patients with substance abuse histories (OR 9.43, 95% CI 1.17–75.73, $p = 0.035$). Furthermore, compared to the 50–65 age group, GPs in the 40–49 age group were more likely to inquire about problems from patients with mental illnesses (OR 2.02, 95% CI 1.06–3.87, $p = 0.034$). The more often the GPs self-reported discussing sexual health issues in general with patients weekly, the more likely they were to inquire about sexual problems from gynecologic ($p = 0.001$), menopause/andropause ($p<0.001$), and family planning patients ($p<0.001$). Other subgroup differences are described in Table 1.

3.3. C) The knowledge of medications inducing sexual problems

The medications most often reported to induce sexual problems were antidepressants, antiandrogens, and hormonal contraception, whereas medications for hypercholesterolemia and diabetes were rarely considered to induce sexual problems. Compared to the male GPs, the female GPs were more likely to consider hormonal contraception (OR 3.04, 95% CI 1.81–5.08, $p<0.001$) and less likely to consider prostate medication (OR 0.53, 95% CI 0.32–0.90, $p = 0.017$) to induce sexual problems. Compared to the 27–39 age group, the older age groups were more likely to consider medications for hypertension (40–49 versus 27–39 OR 2.05, 95% CI 1.16–3.61, $p = 0.013$; 50–65 versus 27–39 OR 2.62, 95% CI 1.52–4.52, $p = 0.001$) and less likely to consider antiandrogens (40–49 versus 27–39 OR 0.42, 95% CI 0.22–0.79, $p = 0.008$; 50–65 versus 27–39 OR 0.42, 95% CI 0.23–0.78, $p = 0.006$) to induce sexual problems. In addition, compared to the 27–39 age group, the GPs were more likely to report medication-induced sexual problems from diabetes medications in the 40–49 age group (OR 2.07, 95% CI 1.13–3.79, $p = 0.018$) and arrhythmia medications in the 50–65 age group (OR 1.65, 95% CI 1.03–2.64, $p = 0.036$). Furthermore, the GPs in the 50–65 age group were less likely to consider systemic cortisone and menopausal hormone treatment to induce sexual problems compared to both the 27–39 (OR 0.55, 95% CI 0.32–0.95, $p = 0.032$ and OR 0.42, 95% CI 0.24–0.73, $p = 0.002$, respectively) and the 40–49 age groups (OR 1.82, 95% CI 1.02–3.25, $p = 0.042$ and OR 1.84, 95% CI 1.00–3.39, $p = 0.050$, respectively; in this comparison, the 40–49 age group was compared to the 50–65 age group). No differences emerged between the GPs with various numbers of patients in terms of discussions about sexual health issues (Table 2).

3.4. D) The awareness of sexual problems being side effects of medications and the frequency of inquiring about such issues

Of all the GPs, 66.9% considered sexual problems to often be side effects of medications prescribed for other pathologies. There was only one finding, which was also partly inconsistent, when comparing the GPs in different categories according to the numbers of patients with whom the GPs self-reported discussing sexual health issues in general weekly: the GPs discussing sexual health issues with 1–5 patients weekly were more likely to consider sexual problems to be side effects of medications prescribed for other pathologies compared to the GPs discussing these issues with ≥6 patients (OR 1.97, 95% CI 1.06–3.69, $p = 0.033$). No differences between the GPs' genders or age groups emerged. After prescribing medications for chronic diseases, of all the GPs, 1.0% ($n = 4$) always, 16.9% ($n = 68$) usually, 68.7% ($n = 276$) seldom, and 13.4% ($n = 54$) never followed up about whether the medications caused side effects in sexual functions. The less the GPs self-reported discussing sexual health issues with patients in general weekly, the less frequently they inquired in follow-up appointments about possible side effects impacting sexual function after prescribing medications (0 versus 1–5 OR 0.42, 95% CI 0.24–0.72, $p = 0.002$; 0 versus ≥6 OR 0.20, 95% CI 0.10–0.42, $p<0.0001$; 1–5 versus ≥6 OR 0.48, 95% CI 0.27–0.88, $p = 0.017$). There were no differences between the genders or age groups. When medications were found to induce sexual problems as a side effect, 88.1% of the GPs reported changing the medications; there were no differences between genders, age groups, or the numbers of patients with whom they discussed sexual health issues weekly.

4. Discussion

Our study showed that inquiry into possible sexual problems was seldom included in the GPs' general history taking. Additionally, possible sexual problems were mainly inquired from patients whose appointments were dealing, at least partly, with reproductive organs, namely urologic, gynecologic, menopause/andropause, and family planning patients. Although most of the GPs considered sexual problems to be common side effects of medications prescribed for other pathologies, only a minority of the GPs inquired about these side effects during follow-up visits. There were only a few differences between female and male GPs, but the age of the GP was important: the younger GPs were less likely to inquire about sexual problems in patients with chronic diseases.

In our previous SexMEdu sub-study [24], GPs self-reported mainly using open conversation as the method of taking a patient's sexual history. In the current study, we found that only some of the GPs inquired about sexual problems from patients with chronic diseases. For instance, under 10% of the GPs addressed the issue with cardiovascular patients. Byrne et al. [6] also found similar figures in their study with 61 GPs. On the contrary, however, Ribeiro et al. [7] reported higher frequencies in their study with 50 GPs from one Lisbon Region Health Cluster among patients with diabetes (84%), cardiovascular diseases (56%), neurological diseases (30%), and mental illnesses (36%), as well as with patients with family planning (72%), urologic (66%), menopause (64%), and andropause (48%) issues. As for medications prescribed for chronic diseases, although more than half of our study's GPs considered sexual problems to be side effects of medications, surprisingly, these side effects were rarely evaluated during follow-up visits. The most common medications considered to cause sexual problems were antidepressants, antihypertensive drugs, and medications used for prostatic disease, which was consistent with the results presented by

Table 1
Frequency of inquiring sexual problems among various patient groups (total $n = 402$).

	Patients with cardiovascular diseases		Patients with neurological diseases		Patients with endocrine diseases		Gynecologic patients		Urologic patients		Menopause/ Andropause patients		Family planning patients		Patients with mental illnesses		Patients with substance abuse issues		Patients with an immigrant background	
	Always or usually 10.1%		Always or usually 9.7%		Always or usually 13.2%		Always or usually 48.3%		Always or usually 50.0%		Always or usually 45.7%		Always or usually 55.9%		Always or usually 21.0%		Always or usually 3.8%		Always or usually 1.9%	
Entire group	($n = 387$/ 402)		($n = 381$/ 402)		($n = 371$/ 402)		($n = 379$/ 402)		($n = 384$/ 402)		($n = 383$/ 402)		($n = 338$/ 402)		($n = 381$/ 402)		($n = 369$/ 402)		($n = 319$/ 402)	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Gender	$p = 0.078$		$p = 0.005$		$p = 0.053$		$p = 0.033$		$p = 0.020$		$p = 0.699$		$p = 0.951$		$p = 0.236$		$p = 0.144$		$p = 0.525$	
women versus men	0.52	0.26–1.08	0.35	0.17–0.72	0.52	0.27–1.01	1.77	1.05–2.99	0.56	0.35–0.91	1.10	0.67–1.81	0.98	0.57–1.70	0.71	0.40–1.25	0.44	0.15–1.32	0.56	0.09–3.35
Age	$p = 0.051$		$p = 0.009$		$p = 0.089$		$p = 0.626$		$p = 0.245$		$p = 0.166$		$p = 0.900$		$p = 0.086$		$p = 0.092$		$p = 0.274$	
40–49 versus 27–39	2.87	1.11–7.44	4.63	1.45–14.82	1.94	0.84–4.47	0.76	0.43–1.33	0.68	0.40–1.16	0.59	0.34–1.02	0.90	0.50–1.61	1.17	0.65–2.13	5.23	0.57–47.73	1.17	0.07–19.33
50–65 versus 27–39	2.89	1.16–7.19	5.68	1.87–17.23	2.36	1.09–5.11	0.92	0.55–1.52	1.05	0.65–1.70	0.82	0.50–1.35	0.90	0.53–1.51	0.58	0.31–1.08	9.43	1.17–75.73	4.53	0.48–42.56
40–49 versus 50–65	1.00	0.46–2.13	0.82	0.38–1.77	0.82	0.40–1.70	0.83	0.47–1.45	0.65	0.38–1.11	0.72	0.41–1.24	1.00	0.56–1.79	2.02	1.06–3.87	0.56	0.16–1.88	0.26	0.03–2.43
Number of discussions about sexual health issues weekly	$p = 0.367$		$p = 0.237$		$p = 0.045$		$p < 0.001$		$p < 0.001$		$p < 0.001$		$p < 0.001$		$p = 0.089$		$p = 0.950$		$p = 0.467$	
0 versus 1–5	0.78	0.30–1.99	0.81	0.38–1.77	0.46	0.17–1.23	0.35	0.19–0.64	0.57	0.33–1.00	0.42	0.23–0.76	0.40	0.21–0.74	0.56	0.26–1.21	1.14	0.30–4.41	N/A	N/A
0 versus ≥ 6	0.45	0.14–1.45	0.40	0.31–2.12	0.23	0.07–0.74	0.07	0.03–0.16	0.18	0.08–0.39	0.09	0.04–0.20	0.10	0.40–0.24	0.36	0.14–0.89	0.90	0.14–5.81	N/A	N/A
1–5 versus ≥ 6	0.59	0.24–1.42	0.49	0.20–1.23	0.51	0.23–1.13	0.19	0.09–0.39	0.31	0.16–0.59	0.21	0.11–0.42	0.25	0.12–0.51	0.64	0.33–1.23	0.79	0.16–3.92	0.32	0.05–1.95

P-values are over the groups.
OR higher than 1 indicates higher frequency of inquiring sexual problems (two categories: "always" or "usually" versus "sometimes" or "never").
OR less than 1 indicates lower frequency of inquiring sexual problems.
N-values indicate replies to response options "always, usually, sometimes, never" (in the analyses responses "cannot say" were omitted).
OR = odds ratio; multivariable logistic regression
CI = confidence interval.
N/*A*=non available, due to zero frequency in category "always" or "usually" in 0-group.

Table 2
General practitioners' opinion whether the medication induces sexual problems (total $n = 402$).

	Hypertension		Arrhythmia		Hypercholesterolemia		Diabetes		Systemic cortisone		Prostate		Antiandrogens		Hormonal contraception		Menopausal hormone treatment		Antidepressants	
Amount of replies in each option n=	299		183		22		92		108		268		316		314		102		393	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
	$p = 0.302$		$p = 0.382$		$p = 0.051$		$p = 0.426$		$p = 0.881$		$p = 0.017$		$p = 0.623$		$p < 0.001$		$p = 0.296$		$p = 0.356$	
Gender																				
women versus men	1.31	0.78–2.21	0.81	0.51–1.29	0.40	0.16–1.00	0.80	0.47–1.38	1.04	0.62–1.75	0.53	0.32–0.90	0.87	0.49–1.54	3.04	1.81–5.08	0.76	0.45–1.26	0.37	0.05–3.06
Age	$p = 0.001$		$p = 0.095$		$p = 0.397$		$p = 0.046$		$p = 0.059$		$p = 0.765$		$p = 0.010$		$p = 0.137$		$p = 0.009$		$p = 0.109$	
40–49 versus 27–39	2.05	1.16–3.61	1.46	0.88–2.40	2.03	0.69–5.93	2.07	1.13–3.79	1.01	0.59–1.73	0.82	0.49–1.40	0.42	0.22–0.79	0.54	0.29–1.01	0.77	0.44–1.32	N/A	N/A
50–65 versus 27–39	2.62	1.52–4.52	1.65	1.03–2.64	1.24	0.40–3.80	1.78	0.99–3.18	0.55	0.32–0.95	0.90	0.55–1.47	0.42	0.23–0.78	0.65	0.36–1.18	0.42	0.24–0.73	0.10	0.01–0.85
40–49 versus 50–65	0.78	0.42–1.46	0.88	0.54–1.46	1.64	0.58–4.62	1.16	0.66–2.05	1.82	1.02–3.25	0.92	0.54–1.56	0.98	0.56–1.74	0.83	0.46–1.50	1.84	1.00–3.39	N/A	N/A
Number of discussions about sexual health issues weekly	$p = 0.564$		$p = 0.480$		$p = 0.413$		$p = 0.151$		$p = 0.316$		$p = 0.463$		$p = 0.396$		$p = 0.292$		$p = 0.636$		$p = 0.504$	
0 versus 1–5	0.75	0.42–1.33	0.73	0.43–1.22	0.69	0.19–2.48	0.57	0.29–1.12	1.42	0.81–2.47	1.08	0.63–1.87	0.70	0.39–1.27	1.32	0.70–2.50	0.74	0.40–1.39	2.03	0.24–17.54
0 versus ≥ 6	0.70	0.32–1.56	0.76	0.38–1.53	0.38	0.08–1.72	0.44	0.19–1.04	1.76	0.81–3.86	0.73	0.34–1.54	0.60	0.26–1.39	0.73	0.28–1.89	0.75	0.33–1.69	4.19	0.35–50.07
1–5 versus ≥ 6	0.94	0.45–1.85	1.05	0.59–1.86	0.55	0.18–1.66	0.78	0.41–1.49	1.25	0.64–2.43	0.67	0.36–1.26	0.85	0.41–1.77	0.55	0.24–1.25	1.00	0.53–1.92	2.06	0.38–11.14

Instructions on questionnaire: "choose of multiple options possible".
P-values are over the groups.
OR higher than 1 indicates that medicine induces more sexual problems.
OR less than 1 indicates that medicine induces less sexual problems.
OR = odds ratio; multivariable logistic regression.
CI = confidence interval.
N/A=non available, due to zero frequency in category "no reply" in age group 40–49 years.

Ribeiro et al. [7].

In our study, female GPs were more likely to inquire about sexual problems from gynecologic patients and male GPs from urologic patients (who are more likely male). This confirmed some earlier results regarding the preference for same-gender GPs in appointments concerning sexual health [5,25]. A UK study with 22 GPs [5], a US study with 78 physicians [25], and a study in Trinidad and Tobago [26] with 155 primary care physicians showed that female physicians were more comfortable bringing up sexual health issues with female patients and male physicians with male patients. Furthermore, a US study [27] with 416 physicians found that female physicians took sexual histories more often than male physicians. In contrast, however, in a Malaysian study [28] with 379 final-year medical students, male students reported sexual history taking to be easier than female students. When considering the patient's perspective, according to a Korean study [29] with 287 participants, female patients felt more comfortable discussing their sexual health issues with female physicians. Cultural differences may be reflected in the results of the different studies.

We found that the GPs in the youngest age group were less likely to inquire about sexual problems in general. This was also the case for sexual problems related to various chronic diseases and knowledge of medication inducing sexual health side effects. Of note is that a majority of the patients with chronic diseases are presumably middle-aged or older, and are thus considerably older than the GPs in our youngest age group. Previous studies have proposed that a large age difference between the GP and the patient may hinder sexual history taking [6,26]. Furthermore, it could be hypothesized that in addition to sexual medicine education, both professional and personal life experiences could provide more understanding of the existence of sexual problems. However, contradictory results regarding the effects of the GP's age have also been reported. In the Wimberly et al. [27] study with 416 primary care physicians, no differences were found according to the physicians' ages, and in an Italian study [2] with 127 GPs, the older physicians were less likely to prescribe treatment for erectile dysfunction or to send the patient to a specialist. Furthermore, in the SEXOS study [7] with 50 GPs, the participants were categorized according to years of practice (20 or less versus more than 20 years), which indirectly also categorized the participants by their ages. The GPs practicing for 20 or fewer years were more likely to inquire about sexual problems from patients with diabetes, family planning issues, or other endocrinological diseases and when prescribing medications with adverse effects on sexuality, whereas the GPs practicing for more than 20 years were more likely to inquire about sexual problems from andropause patients.

Our finding that the GPs who self-reported discussing sexual health issues more often in general discussed the issues also with patients with chronic diseases, was logical and expected. It confirmed the earlier results of an Australian study [21] with 79 healthcare providers that extensive work experience with sexual health issues improves their confidence to mention and discuss the topics. The same result was found in a Greek study [30] with 222 physicians and in a Portuguese study [23] with 50 GPs. In a smaller Norwegian study [31] with 22 GPs, however, no association was found. Nevertheless, these previous results might confirm that the more clinicians know about sexual medicine and the related sexual health issues, the more competent they are at bringing up these issues in general appointments. Thus, sufficient knowledge of sexual medicine is essential.

Our study was the first in this field in Finland and one of the few in Scandinavia overall. It was merited by the relatively high number of participating GPs. However, our response rate of 43.5% can be considered only moderate, although it fell into the range of previous studies [6,7]. Because of the method of enrollment, it was impossible to gain information about and analyze the reasons for dropouts. It is probable that our target group often receives web-based surveys and therefore our questionnaire did not arouse higher interest. Using a web-based structured questionnaire with anonymity, however, might result in the GPs being more honest in replies. Furthermore, the web-based questionnaire

was a user-friendly and modern tool to obtain responses from a large sample, and it was programmed not to allow proceeding if replies were missing, ensuring that the questionnaire was complete. However, this could result in dropouts, as some respondents might prefer to answer only some of the questions. In addition, we evaluated the effects of the GPs' genders and ages. As the gender and age distributions of our respondents were comparable with the distributions of Finnish GPs in general [22], we consider our respondents to represent the typical Finnish GP population. The questionnaire was distributed among Finnish GPs only; thus, our results may not be directly applicable to physicians in other countries and specialties.

5. Conclusion

Our study confirmed our hypothesis that GPs infrequently ask about the sexual health issues of patients with chronic diseases. Furthermore, despite the majority of the GPs acknowledging that several medications induce sexual problems as side effects, they rarely inquired about side effects in follow-up appointments. In the future, additional sexual medicine education would improve awareness of the effects of chronic diseases on sexual health and thus lead to better patient care. In our previous study [24], GPs reported sexual medicine education gained from medical schools to be insufficient. Thus, increasing sexual medicine education in the medical schools' curricula—for instance, integrating it into various specialties—would most likely also increase knowledge of the interrelation between chronic diseases and sexual problems.

Contributors

Sanna-Mari Manninen is the principal investigator and the main writer of the paper.

Päivi Polo-Kantola is a leader of the Sexual Medicine Education (SexMEdu) study, a co-investigator, and a co-writer.

Tero Vahlberg is the study's statistician.

Katja Kero is a leader of the Sexual Medicine Education (SexMEdu) study, a co-investigator, and a co-writer.

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Research data (data sharing and collaboration)

There are no linked research data sets for this paper. Data will be made available on request.

Declaration of competing interests

The authors have no competing interests pertaining to this paper.

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