

Original Article

Physician gender and lifestyle counselling to prevent cardiovascular disease: a nationwide representative study

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Significance for public health

Lifestyle counselling is an important instrument to reduce the burden of cardiovascular disease. Here, primary care physicians (PCPs) play an important role as health advisors. Our study was able to identify deficits in the health promotion behaviour of PCPs. Because of the gender differences revealed in our study, male PCPs in particular should be sensitized to the importance and the potentials of prevention and health promotion. Overcoming the barriers of prevention and health promotion identified by the PCPs may be an important starting point. If, for instance, PCPs were better financially compensated for offering lifestyle counselling, which was rated as the most important barrier, it is conceivable that more PCPs would start to incorporate such measures into their daily routine. Additionally, a stronger focus on prevention and health promotion during advanced training programs for PCPs could increase the use of lifestyle counselling.

Abstract

Background. Primary care physicians (PCPs) have a key role in the prevention of cardiovascular diseases (CVD). However, it is not clear whether lifestyle counselling behaviour differs between female and male PCPs. Nonetheless, this information might be helpful to develop need-based advanced training for female and male PCPs. Therefore, our aim was to identify potential gender differences in the implementation of health promotion and the prevention of CVD in primary care.

Design and Methods. In a Germany-wide survey called the ÄSP-kardio Study, we collected data from 4074 PCPs (40% female; from October 2011 to March 2012). We compared the provision of prevention measures, the attitude towards counselling, and the potential barriers in counselling among female and male German PCPs. We used chi² tests, Mann-Whitney U tests, and logistic regression analysis.

Results. We found differences in all of the above-mentioned aspects. Female PCPs were less likely to perceive barriers than male and more likely to ask patients about lifestyle, for example, nutrition (OR=1.62, P≤0.001). Additionally, female PCPs were more likely to feel well prepared (84.2% vs. 76.0%, P≤0.001) and successful (75.6% vs. 68.0%, P≤0.001). Male PCPs were more likely to mention barriers in daily practice that hinder lifestyle counselling.

Conclusions. Overall, both female and male PCPs had a positive attitude towards lifestyle counselling. Nevertheless, in view of the barriers that they indicated, incentives such as better reimbursement may help output-oriented PCPs to translate their positive attitude into action. Moreover, awareness of gender differences may help PCPs to acquire

the specific advanced training that they need for effective lifestyle counselling in CVD.

Introduction

Lifestyle counselling is an important instrument to reduce the burden of cardiovascular diseases (CVD).¹ In this respect, primary care physicians (PCPs) play an important role as health advisors since they are often the patient's first person of contact in questions of cardiovascular care.² Following the idea of social equity, characteristics of the PCPs should not influence lifestyle counselling.

However, one PCP is not like another. Therefore, it seems to be important to identify core characteristics that might lead to different counselling behaviours. One example could be gender. Identifying potential differences in lifestyle counselling between female and male PCPs could be a first step towards the development of gender-specific and needs-based advanced training.

Previous studies have shown first evidence of a link between the gender of PCPs and the prevention measures they offer.^{3,4} For instance, female physicians were more likely to offer dietary treatment,⁵ control risk factors for CVD,⁶ and reach treatment goals.⁷ A review by Jefferson *et al.*⁸ revealed that female physicians spent on average more than two minutes more per patient consultation than male physicians. Additionally, they were more engaged in positive talk and the consultation was more patient-cantered.⁸

Despite the important results of previous studies about gender influences on lifestyle counselling, PCP gender has often been neglected, especially in larger quantitative studies. Clark *et al.*⁹ ascribe this neglect to a *traditional lack of variation* in the medical profession, which was prevalent for a long time. However, nowadays about 40% of the PCPs in Germany are female.¹⁰

The lack of research on PCP gender in lifestyle counselling, combined with today's high percentage of female PCPs, makes it necessary to re-evaluate the extent and the impact of gender differences in lifestyle counselling. Ramirez *et al.*¹¹ came to the conclusion that future studies should investigate the greater likelihood of female physicians to discuss general prevention practices. Jefferson *et al.*⁸ call for future studies that use larger samples, show clear sample frameworks, and are from other health care settings than the United States.

Additionally, many initiatives and associations in Germany and other countries call for more gender-sensitive research. We want to take these requests into account. Therefore, this manuscript focuses on PCP gender in CVD prevention rather than just treating it as a covariate. In this manuscript we chose the term *gender* rather than *sex*

to express not only the biological and physiological characteristics of female and male PCPs but also social, cultural, and psychological norms and roles.

Our aim was to identify potential gender differences in the provision of lifestyle counselling. Since identifying risk factors and potentially unhealthy behaviours is the first step towards a comprehensive prevention strategy,¹² we analysed if gender differences exist. We were able to confirm or disconfirm the link between PCP gender and prevention measures by using a large representative database. Additionally, we aimed at identifying potential gender differences and determining their importance both in PCP attitudes towards providing lifestyle counselling and in perceived barriers to the provision of lifestyle counselling. Female and male PCPs may differ in their perception of the importance of lifestyle counselling and its potential difficulties. As a result, it is essential to recognize these potential differences in female and male PCPs in order to supply them with gender-specific advanced training for lifestyle counselling.

Design and Methods

The data for this manuscript were drawn from the Germany-wide representative physician survey *ÄSP-kardio* (Physician Survey on Cardiovascular Disease Prevention), which included 4074 PCPs (general and medical practitioners as well as general internists with practices in Germany) and was conducted by the authors.¹³ The study was approved by the ethics committee of the Medical Faculty Mannheim, Heidelberg University (2008-272E-MA).

Data collection

Data of the *ÄSP-kardio* Study were collected from October 2011 to March 2012. Altogether, 13,294 PCPs were randomly selected by gender, medical specialty, and region from the largest PCP register existing for Germany, which was provided by ArztData GmbH, Hamburg. These PCPs were asked to fill in a four-page standardized questionnaire. The questionnaire included 145 items on PCP, patient, and practice characteristics; attitudes towards prevention and health promotion; and potential barriers to prevention and health promotion. The PCPs were given a compensation of 20 € for the time they needed to fill in the questionnaire (about 20 minutes). The questionnaire was carefully evaluated in a regional pilot study^{14,15} and in in-depth cognitive interviews¹⁶ with female and male PCPs.

Before the questionnaire was sent to the PCPs, information about the *ÄSP-kardio* Study was published in relevant medical journals and all of the randomly selected 13,294 PCPs received personal study information. The questionnaire was sent out one week after the study announcement, together with a personalized letter, a data protection statement, and a prepaid self-addressed envelope. One week later we sent out a postcard reminder. Four weeks later we sent out the questionnaire with all supplementary documents for a second time to all PCPs who had not yet answered the questionnaire. In addition, we offered the possibility of filling in an online questionnaire. The response rate was 33.9% (n=4074). Our response rate was higher compared to most other German physician surveys (e.g., 7% or 15%).^{17,18} Only surveys with a smaller sample size reached a higher response (e.g., 48%).¹⁹ There were no significant differences between the participating PCPs and the total German PCP population with regard to gender, medical specialty, and region (P-values: 0.902, 0.792 and 0.928).

Measures

The PCPs indicated their gender by ticking *female* or *male*. Since different socially constructed roles, behaviours, activities, and attributes

that a given society considers appropriate for men and women are attached to this simple answer, we use the term *gender* instead of *sex*.

To measure the provision of prevention measures, we used several items (I measure their height and weight, I ask them about their dietary habits/their physical activity/their tobacco consumption/their alcohol consumption/their stress, I measure their blood pressure at rest, I ask them about their family history of CVD, I ask them about their job and/or education).^{20,21} Here, we recoded the original answer categories [No patient, About a third, About half, About two thirds, (Almost) all] into measures provided to (almost) all patients *vs.* not provided to (almost) all patients.

To measure the attitude towards health promotion and prevention, we used eight statements (e.g., I can offer a wide range of lifestyle advice to my patients);^{22,23} that the PCPs could rate (Completely true, Rather true, Rather not true, Not true at all). For the analysis we distinguish between PCPs that rated the statements as completely or rather true and those who rated them as rather not true or not true at all.

To measure potential barriers in lifestyle counselling, we asked the PCPs to what extent predefined barriers (e.g., Insufficient reimbursement) hamper them.²⁴⁻²⁷ For the analysis, we combined the answer categories *Completely true* and *Rather true*, as well as the categories *Rather not true* and *Not true at all*.

Statistics

In order to compare individual and practice characteristics between female and male PCPs, we used chi² tests and Mann-Whitney U tests. We used chi² statistics and logistic regression models (crude OR and OR adjusted for PCPs' age, years since residence, medical specialty, and number of patient contacts per week) to analyse the relationship between PCP gender and provision of prevention measures.

Additionally, we used chi² statistics to analyse the attitude towards prevention and health promotion (agreement in females *vs.* in males). We also analysed (predefined) potential barriers for prevention and health promotion in female and male PCPs (agreement in females *vs.* in males) using chi² statistics. P-values <0.05 were considered to be significant. All analyses were conducted with IBM SPSS Statistics Version 21 (IBM Corporation, Armonk, USA).

Results

In the *ÄSP-kardio* Study, 40.0% of the PCPs were female. Our analysis showed that female PCPs were on average younger than their male colleagues (49.9 *vs.* 52.4 years of age, P<0.001). While about one quarter of the female PCPs were 55 years of age and older (24.9%), 39.8% of male PCPs fell into this category. Female PCPs were less likely to work in a single practice compared to male PCPs (49.9% *vs.* 53.7%, P<0.001) and had a lower number of patient contacts per week (203.8 *vs.* 236.3, P<0.001).

Provision of prevention measures

Female PCPs were more likely to check the blood pressure of (almost) all of their patients compared to male PCPs (75.9% *vs.* 71.8%, P=0.004; OR=1.24, P=0.004). In addition, they were more likely to ask patients about their family history of CVD (67.3% *vs.* 59.3%, P≤0.001; OR=1.41, P≤0.001) and about their occupation and/or educational status than their male counterparts (55.8% *vs.* 47.0%, P≤0.001; OR=1.43, P≤0.001; Table 1).

We found that female PCPs were significantly more likely to ask their patients about dietary habits (OR=1.62, P≤0.001), physical activity (OR=1.39, P≤0.001), alcohol consumption (OR=1.38, P≤0.001), and tobacco consumption (OR=1.24, P=0.002). The highest OR was found for asking

about stress (OR=1.78, $P \leq 0.001$), with 47.2% of female PCPs and 33.5% of male PCPs asking (almost) all patients about their perceived stress. The results remained stable after adjusting for age, medical speciality, years since residence, and number of patient contacts per week (Table 1).

Attitudes towards prevention and health promotion

There was no significant difference between male PCPs and female PCPs in their attitudes towards prevention and health promotion (Figure 1). Both groups said that they are not only responsible for the treatment of a disease but are also a kind of health advisor. However, female PCPs were more likely to feel well prepared for and successful in prevention. In contrast, male PCPs were more likely to state that it is difficult to give good advice to the patients.

Potential barriers in prevention and health promotion

Female and male PCPs also differed in the perception of barriers that hamper the provision of prevention and health promotion in their daily business. Male PCPs were more likely to perceive the nine given barriers as relevant to their daily practice (Figure 2). The biggest difference in percentage points was found for the item *too many prevention guidelines* (8.8 percentage points), followed by *unclear recommendations* (7.5 percentage points). However, for female and male PCPs the most frequently mentioned barrier was *insufficient reimbursement* (89.0% vs. 92.1%, $P=0.001$).

Discussion

Differences between female and male PCPs were prevalent in lifestyle counselling, attitudes towards prevention, and individual (*e.g.*, age) and practice characteristics (*e.g.*, patient contacts per week). Gender differences in the prevention measures remained stable after controlling for age, years since residence, medical speciality, and patient contacts per week. This result implies that the differences are not merely a result of the objective characteristics of the PCPs and their practices. Explanations why female PCPs are more likely to engage in prevention and health promotion are still lacking.²⁸ However, findings from gender research, psychology, and sociology might help to provide reasons for the differences in the attitude and practice of female and male PCPs.

A reason for the differences in lifestyle counselling between female and male PCPs might be the different subjective values between female and male PCPs.²⁹ These differences could result from the internalisation of gender roles during socialisation,³⁰ with parents, peers, teachers, and media determining what constitutes a woman and a man.³¹ It is important to note that today's socialisation process might be less gender stereotyped in western societies. However, when most of the included PCPs were being socialised, classic gender roles were more prevalent.³² Gender-role socialisation can lead to different hierarchies

Table 1. Prevention measures provided to (almost) all patients by female and male primary care physicians in Germany (ÄSP-kardio Study 2012).

Prevention measures provided to (almost) all patients	Bivariate results (chi ²)		Logistic regressions			
	Proportion (%)	P-value	OR [CI]	P-value	OR _{adj} [CI]	P-value
Measuring weight and height		0.003		0.003		0.001
Female PCPs	35.4		1.23 [1.07-1.41]		1.27 [1.10-1.47]	
Male PCPs	30.8		1.00 [Ref.]		1.00 [Ref.]	
Asking about dietary habits		≤ 0.001		≤ 0.001		≤ 0.001
Female PCPs	28.4		1.62 [1.39-1.89]		1.63 [1.39-1.92]	
Male PCPs	19.7		1.00 [Ref.]		1.00 [Ref.]	
Asking about physical activity		≤ 0.001		≤ 0.001		≤ 0.001
Female PCPs	39.1		1.39 [1.21-1.59]		1.30 [1.13-1.50]	
Male PCPs	31.7		1.00 [Ref.]		1.00 [Ref.]	
Asking about tobacco consumption		0.002		0.002		0.008
Female PCPs	66.1		1.24 [1.08-1.42]		1.21 [1.05-1.40]	
Male PCPs	61.2		1.00 [Ref.]		1.00 [Ref.]	
Asking about alcohol consumption		≤ 0.001		≤ 0.001		≤ 0.001
Female PCPs	50.6		1.38 [1.21-1.57]		1.39 [1.21-1.60]	
Male PCPs	42.7		1.00 [Ref.]		1.00 [Ref.]	
Asking about stress		≤ 0.001		≤ 0.001		≤ 0.001
Female PCPs	47.2		1.78 [1.56-2.03]		1.75 [1.52-2.01]	
Male PCPs	33.5		1.00 [Ref.]		1.00 [Ref.]	
Measuring blood pressure		0.004		0.004		≤ 0.001
Female PCPs	75.9		1.24 [1.07-1.43]		1.33 [1.14-1.55]	
Male PCPs	71.8		1.00 [Ref.]		1.00 [Ref.]	
Asking about family history of CVD		≤ 0.001		≤ 0.001		≤ 0.001
Female PCPs	67.3		1.41 [1.24-1.61]		1.41 [1.22-1.63]	
Male PCPs	59.3		1.00 [Ref.]		1.00 [Ref.]	
Asking about job and/or education		≤ 0.001		≤ 0.001		≤ 0.001
Female PCPs	55.8		1.43 [1.26-1.62]		1.39 [1.22-1.60]	
Male PCPs	47.0		1.00 [Ref.]		1.00 [Ref.]	

PCPs, primary care physicians; OR, odds ratio; CI, confidence interval; OR_{adj}, odds ratio adjusted for PCPs' age, years since residence, medical speciality, and number of patient contacts per week. n=4074 German PCPs.

of personal values.²⁹ Female PCPs, for example, were more likely to be engaged in prevention and health promotion counselling.¹¹ Indeed, studies have shown that females tended to rate social values like helping others and caring for others higher compared with males.^{29,33-35}

Additionally, females are more likely to feel competent in social activities compared to males.³² Following Bandura,³⁶ these competence beliefs are a strong predictor for behaviour: If individuals believe that they are competent in a specific behaviour, they are more likely to behave like that.³² It is also possible that female PCPs are more likely to enjoy helping patients to modify their lifestyle to prevent CVD.³⁵ Previous studies showed that women in general are more likely to enjoy helping others and to show communal qualities than men.³⁷⁻³⁹

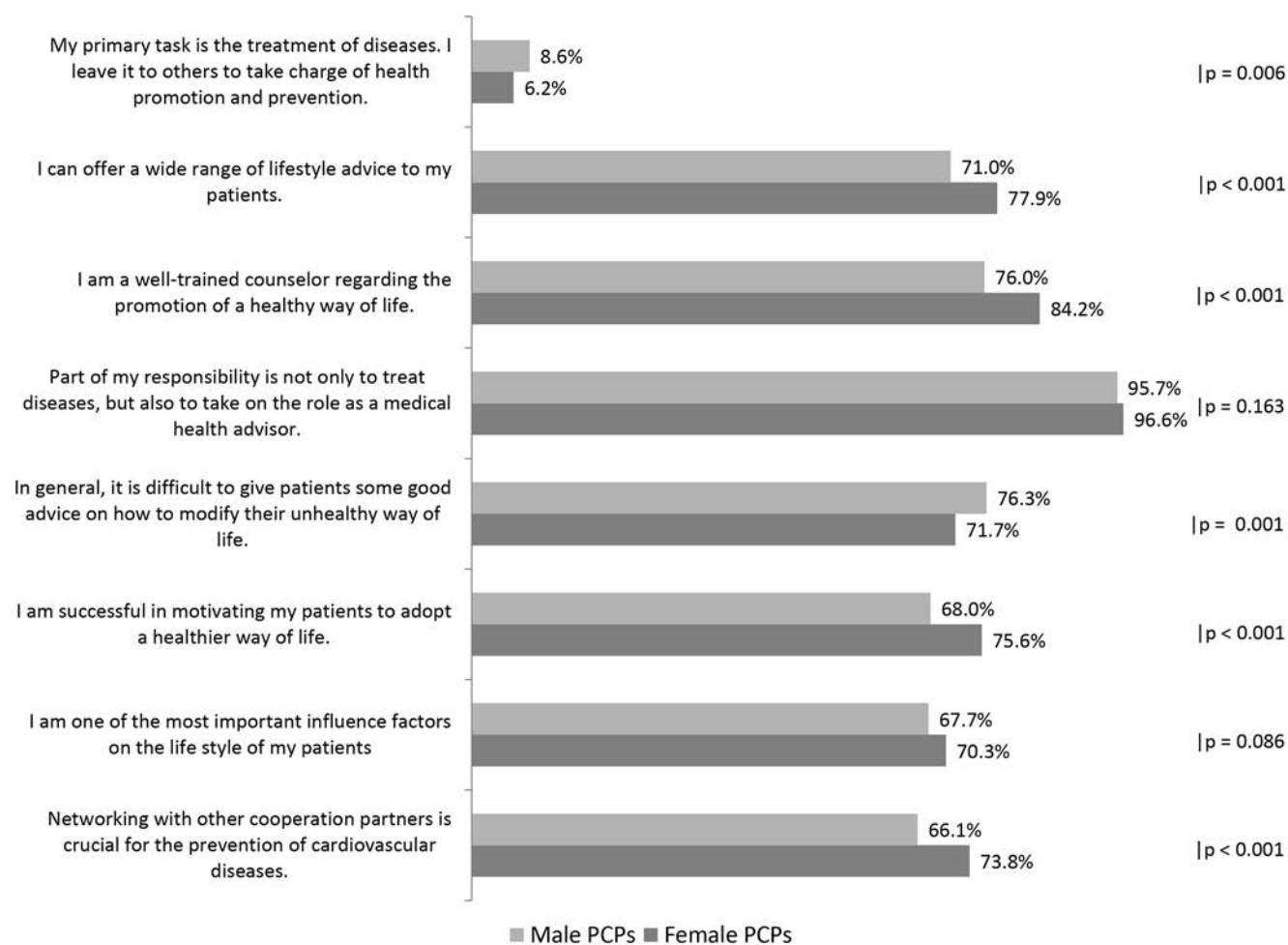
However, besides these traditional gender roles, female PCPs need qualities for their non-traditional occupational roles.⁴⁰ Although female PCPs may internalize traditionally masculine characteristics (*e.g.*, being active and ambitious), they often differ from men in their attitudes and behaviours.⁴¹ For example, female PCPs might invest more time in informal talks and be more patient oriented,⁴² while male PCPs may be more output oriented and focus on the number of patient contacts per week.

Indeed, the higher number of patient contacts per week for male

PCPs could explain why male PCPs perceive more barriers in lifestyle counselling than their female counterparts. They have less time available per patient – and lifestyle counselling takes time, either directly (*e.g.*, discussing lifestyle changes with non-compliant and undiscerning patients) or indirectly (*e.g.*, acquiring knowledge on recommendations and guidelines). Taking more time with patients and establishing a more intimate relationship with them could lead to greater perceived success.

Strengths and limitations

When interpreting our results, several limitations should be considered. First of all, we cannot exclude a social desirability bias. It is possible that the PCPs gave particular answers to fit into their prescribed gender role. An alternative method would be direct observation; however, this approach can increase the risk of socially desirable behaviour. Second, the focus of the whole ÄSP-kardio Study was not primarily on gender differences but on lifestyle counselling in general. That is why we did not investigate the relationship between physician and patient gender.⁴³ Nonetheless, we followed the demand for investigating general prevention practices of female and male physicians in large samples.^{8,11} Third, there might be a selection bias because PCPs that were



PCPs=primary care physicians; CVD=cardiovascular diseases; p-value from chi²-testing; n=4074 German PCPs. Shown is the proportion of PCPs that (fully) agreed with the statements.

Figure 1. Attitude towards prevention and health promotion of cardiovascular diseases among male and female primary care physicians in Germany (ÄSP-kardio Study 2012).

more engaged in preventive measures might have been more likely to participate in this study. However, there were no significant differences between the participating PCPs and the total German PCP population with regard to gender, medical specialty, and region. Fourth, unfortunately, we cannot say how much training the PCPs received in prevention and health promotion. However, since the PCPs in this study had a mean age of 49.9 (women) and 52.4 (men), prevention and health promotion were not a core element in the medical curricula of their studies. Nowadays, a major focus is placed on these topics in medical studies in Germany.

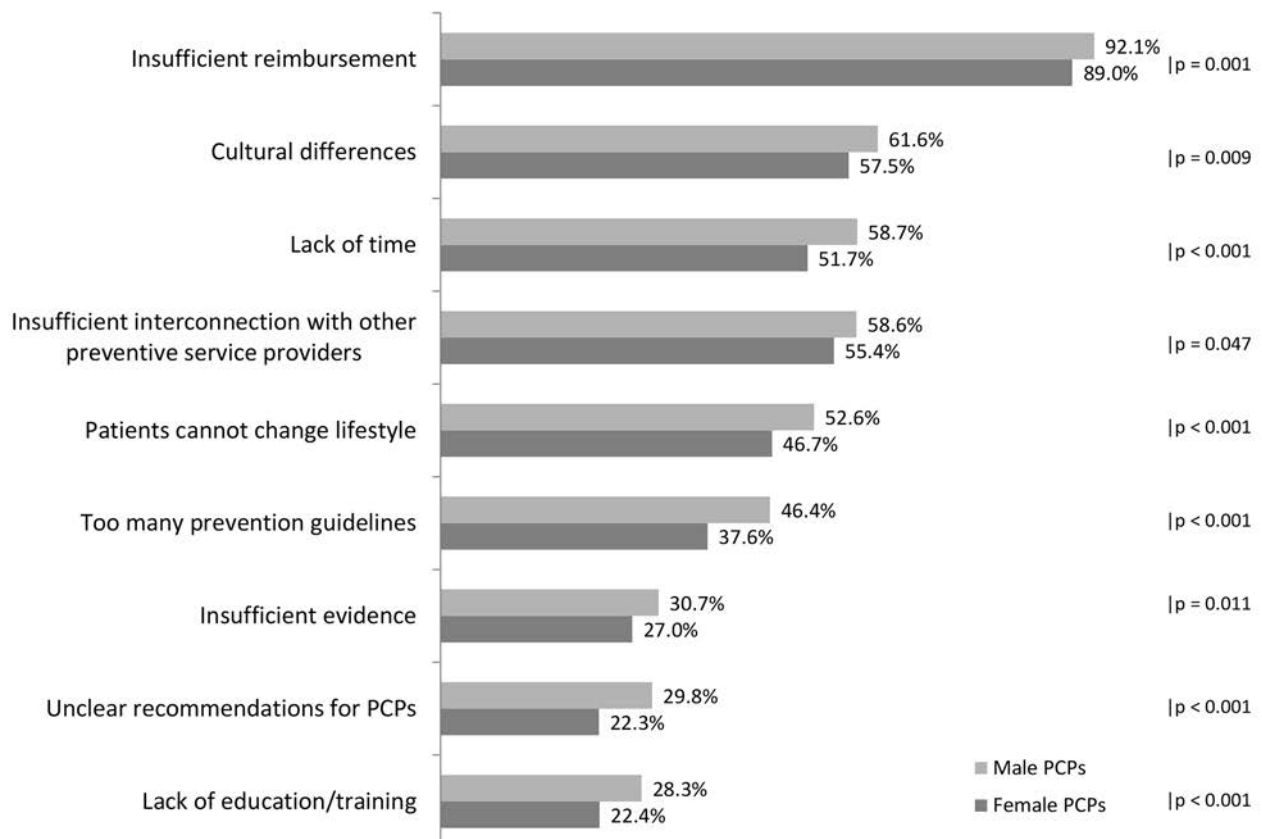
Conclusions

Previous studies have shown first evidence of a link between PCP gender and prevention measures offered. Based on our results we could confirm findings of previous studies on gender differences in lifestyle counselling. Our study showed that female PCPs were more likely to be engaged in prevention, even after controlling for age, years since residence, medical specialty, and number of patient contacts per week.

Additionally, we were able to expand scientifically proven results to Europe by using a large sample size from a health care setting other than the United States, as called for by Jefferson *et al.*⁸ The perceived barriers to lifestyle counselling seem to be a topic of particular interest for further research, both with respect to gender differences and to the general significance of perceived barriers among female and male PCPs.

Overcoming the identified barriers may be an important starting point for enabling a larger portion of PCPs to offer preventive measures to all of their patients.¹⁶ Inadequate compensation for lifestyle counselling, for example, was rated as the most important barrier to offering such measures. Thus, if PCPs were financially better compensated for offering lifestyle counselling, it is conceivable that they would increasingly incorporate it into their daily routine. This might be an extrinsic motivation, particularly for output-oriented male PCPs.

Additionally, it is necessary to put a stronger focus on the prevention of CVD during both medical studies and postgraduate courses for PCPs. The gender differences revealed by our results imply that male PCPs in particular should be sensitized to the importance and the potential of such prevention. In general, a stronger focus on lifestyle counselling in needs-based advanced training for female and male PCPs could increase the use of lifestyle counselling in daily practice to prevent CVD.



PCPs=primary care physicians; p-value from chi²-testing; n=4074 German PCPs. Shown is the proportion of PCPs that (fully) agreed with the potential barrier.

Figure 2. Perceived barriers by male and female primary care physicians in Germany (ÄSP-kardio Study 2012).

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Contributions: conception and design of the study (RMH, TG, CB, SvS), acquisition of data (RMH, TG), analysis of data (KD), interpretation of data (KD, DG, RMH, TG, CB, MM, SvS); drafting the article (KD), revising the article critically (DG, RMH, TG, CB, MM, SvS).

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