

Pharmacy employees' self-rated knowledge, use and attitudes toward homeopathy: A comparative survey in Sweden and Germany

Original research article/Review

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Abstract **Background:** Homeopathy is being increasingly practiced within different medical areas of use. Homeopathic medicines are sold in German pharmacies, whereas the assortment of Swedish pharmacies does not include homeopathic medicines. Despite differences between Sweden and Germany, homeopathic medicines are classified as drugs in both countries.
Objective: The aim of this study was to compare the pharmacy employees' self-rated knowledge, use and attitudes toward homeopathy in Sweden and Germany.
Methods: A quantitative web-survey was sent to 30 pharmacies in Sweden and 30 pharmacies in Germany, which were selected by using a multi-stage clustering sampling. The questionnaire contained closed-ended rating scales. To compare the self-rated knowledge, use and attitudes toward homeopathy of Swedish and German pharmacy employees, chi-square tests and Mann-Whitney tests were performed in SPSS.
Results: A total of 209 pharmacy employees answered the survey (108 in Sweden and 101 in Germany). German participants estimated their knowledge higher than the Swedish participants ($p < 0.01$). In both countries, most participants thought that pharmacy employees should have knowledge about homeopathy. Although most Swedish participants stated that they receive questions about homeopathy, the German pharmacy employees receive questions about homeopathy more frequently ($p < 0.01$). Swedish participants reported less experience of own use of homeopathic medicines and less belief in their effectiveness as compared to the German participants ($p < 0.01$). However, in both countries, most participants stated that homeopathic medicines should be sold in pharmacies.
Conclusion: As pharmacy employees should act professionally to advice customers on all drugs, increased homeopathic knowledge in pharmacy employees could potentially improve pharmaceutical practice.

Keywords Homeopathy – pharmacy – attitudes – use – knowledge – Sweden – Germany

INTRODUCTION

Background on homeopathy

Complementary and alternative medicines (CAM) include homeopathy (Rosser 2004), which is based on the principle of similarities meaning that a substance that causes symptoms in a healthy person is given to a sick person that has the same symptoms. The effect is said to increase with increasing dilutions (Molski 2011), which is the main controversy to the conventional medicines. Although homeopathy meets great scepticism (Ernst 2010), it is increasingly used in western countries (Betti et al. 2013). Placebo-controlled trials have shown that there is weak evidence for a specific effect of homeopathic medicines (Shang et al. 2005). However, such

trials may not be reliable, as homeopathy intends to treat each person individually, which requires great knowledge (Vithoulkas 2017). Evidence suggests that the highly diluted homeopathic medicines cannot be considered just placebos, but the pharmacodynamics of homeopathic medicines are not fully understood (Bellavite et al. 2014b; Bellavite et al. 2014a). Homeopathy is increasingly practiced all over the world within different medical areas of use (Betti et al. 2013; Relton et al. 2017). The most frequent areas of use are oncology and obstetrics (Trimborn et al. 2013; Harren, Georgi, and Hackethal 2011; Kalder and Knoblauch 2011), but also general medicine (Harren, Georgi, and Hackethal 2011) and veterinary medicine (Hektoen 2005).

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CAM including homeopathy in Germany and Sweden

No studies about pharmacy employees' knowledge, use and attitudes toward homeopathy exist and only few studies report on health care professions' knowledge, use and attitudes on CAM including homeopathy.

In Germany, CAM is most commonly recommended by physicians, midwives and pharmacists (Kalder and Knoblauch 2011; Maisch and Hübner 2014). Studies on health care professionals' attitudes and knowledge about CAM have shown that two-thirds of all employees are interested in CAM. In contrast, participants rated their own knowledge in CAM as inadequate (Trimborn et al. 2013; Conrad et al. 2014; Längler et al. 2013; Maisch and Hübner 2014).

With regard to Sweden, the small amount of data on health care professions' view on CAM indicates that there is more scepticism among health care professions (Bjerså, Forsberg, and Fagevik 2011) as well as less knowledge (Bjerså, Victorin, and Olsén 2012) compared to the German health care professions. CAM is less frequently recommended to patients in Sweden (Bjerså, Forsberg, and Fagevik 2011; Bjerså, Victorin, and Olsén 2012) than in Germany (Kalder and Knoblauch 2011; Maisch and Hübner 2014).

Health care professionals' attitudes toward CAM may differ from their attitudes toward homeopathy, as CAM comprises a wide range of therapies (Trimborn et al. 2013; Molassiotis et al. 2005). As homeopathy is among the most frequently used treatments in CAM (Molassiotis et al. 2005), it is of importance to study the attitudes of healthcare professionals including pharmacy employees towards homeopathy specifically.

Differences between Germany and Sweden

In Germany, CAM including homeopathy is widely used for different complaints by the general population (Bücker et al. 2008). Homeopathic medicines have long been recommended and prescribed by German physicians and sold in German pharmacies, whereas the assortment of Swedish pharmacies does not include homeopathic medicines. Swedish physicians were not allowed to recommend homeopathic medicines until the year 2011 (Küchler 2011; European-Committee-for-Homeopathy-(ECH) 2017). In Sweden, the use of CAM including homeopathy has increased (Nilsson, Trehn, and Asplund 2001), but is still less frequent compared to Germany (Bücker et al. 2008) that has a longer history of homeopathy (Rosser 2004). Despite these differences regarding the use of homeopathic medicines in Germany and Sweden, today homeopathic medicines are classified as drugs in both countries regarding to the applicable rules of the European Union (EU) relating to the medicinal products for human use (2001/83/EG) (Community 2004).

In view of the above, this survey was conducted in both Sweden and Germany to compare the self-rated knowledge, use and attitudes of pharmacy employees to analyse differences in the pharmaceutical practice regarding

homeopathy in these two countries. As Sweden and Germany have the same regulations on homeopathic medicines but differ in respect to the pharmacy assortment and the historical background regarding homeopathy, a comparison of Swedish and German pharmacy employees' experiences with homeopathic medicines in their daily work may be useful in the discussion if homeopathic medicines should be included in the pharmacy assortment or not. To gain knowledge about pharmacy employees' knowledge, use and attitudes on homeopathy is important, as these insights could be used to improve the daily work in pharmacies.

AIM

The aim of this study was to compare the pharmacy employees' self-rated knowledge, use and attitudes toward homeopathy in Sweden and Germany.

METHODS

Study design

A quantitative survey method was chosen to examine the self-rated knowledge, use and attitudes about homeopathy among the pharmacy employees in Germany and Sweden. The selected design is a cross-sectional study aiming to collect data on the entire population under study (Bowden 2011; Ejlerstsson 2014), which is an appropriate design for the purpose of this study, because large representative populations can be used (Bowden 2011). This is important for this study, because it is addressed to the pharmacy employees in two different countries requiring more participants to be able to make comparisons between them.

Questionnaire design

The questionnaire was translated into Swedish and German. Google Forms was used to create an online survey that was available in October 2017. The questionnaire contained four sections. The aim of the first section was to summarize the background information of the participants, and it commenced with the close end nonintrusive way (Ejlerstsson 2014). The second section contained Likert-scale questions regarding the knowledge about homeopathy. Section three commenced with Likert-scale questions about attitudes on homeopathy and section four was about the use of homeopathic medicines to gain insight into how widely homeopathic medicines are used in Sweden and Germany. Descriptive graphic rating scales with 3–5 possible alternatives were used, as this type of scaling provides a valid and reliable measure of self-assessed perceptions (Tesler et al. 1991). All questions were close ended with one single choice. Subdivisions such as often/sometimes/seldom/never or some/moderate/good/very good were based on the responders' self-estimation, as they were not pre-defined.

Reliability and validity

To increase the reliability and validity, pre-tests were performed. As reliability refers to the extent a study will give the same result if it was repeated (Kazdin 2009; Creswell 2009), two pharmacists that work at a Swedish pharmacy as well as seven persons from different health professions (three from Sweden and four from Germany) were asked to answer the survey two months before it was sent out. After three weeks, they answered the survey again and similar results were obtained, which means that no differences could be observed in any of the questions. To address face validity, which refers to whether the scale items represent the proposed concepts that the questionnaire is intended to as well as content validity, which refers to whether the method includes the different facets of the concepts (Kazdin 2009; Creswell 2009), some of the questions were modified to be clear after the pre-tests. Modifications included the more precise description of the questions and rating alternatives such as 'No effect or just placebo' instead of 'No effect' added to the question 'What do you think about the efficacy of homeopathic medicines?' in the attitudes section.

Data collection and participants

To achieve an even geographical distribution of pharmacies and to include the pharmacies that are located both in larger cities as well as in the countryside, the multi-stage clustering sampling method was used for the selection of pharmacies in both countries. This refers to the sampling in multiple stages where randomly selected subsets of a cluster get smaller at each stage (Cochran 1977). In the present study, this method involved the selection of three pharmacies in ten counties in both Sweden and Germany, which made up 60 pharmacies in total (Figure 1).

To each of the 60 selected pharmacies, an inquiry to distribute the survey to the drug counselling employees of that pharmacy was sent via email. The email containing a link to the survey including study information to participants was sent to the contact email-address of all the selected pharmacies, because all employees working with drug counselling at the pharmacies are possible responders. No reminding emails were sent out.

By using this method, no information about drop-outs could be obtained. The number of possible respondents could not be exactly calculated, because the number of drug counselling employees is not known for all the pharmacies. The approximate number of possible respondents was estimated to a total of about 450 assuming an average of 7.5 drug counselling pharmacy employees at each of the 60 selected pharmacies. The number of participants that are required to achieve the study aims was estimated to at least 208 participants. This number was calculated by using Raosoft® online sample size calculator (Raosoft.Inc. 2004) based on the estimated population size of 450 and a

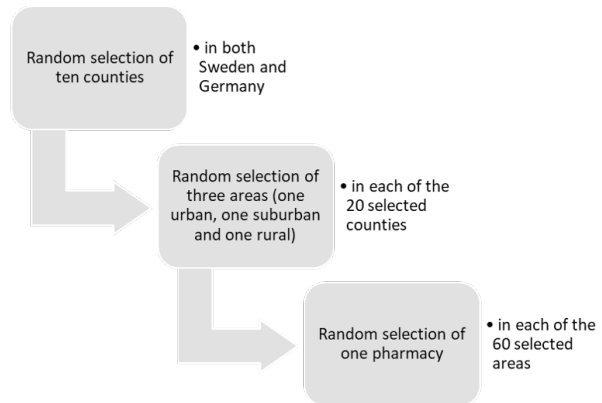


Figure 1. Selection of pharmacies.

response distribution of 50% assuming a 5% error marginal and 95% confidence level. The aim of the estimated sample size was to propose the sample size that is required to study the differences between the two countries (Whitley and Ball 2002). To achieve the estimated sample size, all the drug counselling pharmacy employees were included; so, no exclusion criteria were chosen. However, this implies that those in sick leave, parental leave or those not being active in their profession are not included, although they could contribute with their work experience; thus, the convenience selection method was used.

Data analysis

Descriptive statistics was used to categorize the survey participants' demographic information and to summarize the data. To explore if there were differences between Germany and Sweden regarding the pharmacy employees' self-rated knowledge, use and attitudes on homeopathy, non-parametric tests were performed to compare the German and Swedish pharmacy employees. The significance level was set to 5%. For the group comparison of categorical nominal variables, a chi-square test was performed to test if the distribution of observations differs between German and Swedish pharmacy employees. To test for group differences regarding the ordinal variables of the scaled questions, a Mann-Whitney U-test was performed to compare the distributions of ranks between the German and Swedish pharmacy employees. All analyses were performed in IBM SPSS Statistics 23 (IBM® Corp. 2015).

Ethics

The participation in this survey was anonymous and participants were informed about the aim of the study and that the data will be used for research purposes. The authors have no conflict of interest. The present study required no ethical approval according to the Act in Swedish law concerning Ethical Review of Research involving Humans (SFS 2003:460) from the Ministry of Education and Cultural

Table 1. Descriptive statistics of Swedish and German survey respondents.

		Sweden (n = 108)	Germany (n = 101)	p-value
Profession	Pharmacist	77 (71.3 %)	63 (62.4 %)	> 0.05 ^a
	Pharmaceutical technician	31 (28.7 %)	38 (37.6 %)	
Years working	< 1 year	5 (4.6 %)	10 (9.9 %)	> 0.05 ^a
	1 – 10 years	49 (45.4 %)	34 (33.7 %)	
	> 10 years	54 (50 %)	57 (56.4 %)	
Age	< 26 years	14 (12.9 %)	10 (9.9 %)	> 0.05 ^a
	26 – 35 years	33 (30.6 %)	24 (23.8 %)	
	36 – 45 years	30 (27.8 %)	23 (22.8 %)	
	46 – 55 years	16 (14.8 %)	26 (25.7 %)	
	56 – 65 years	13 (12.0 %)	13 (12.9 %)	
	> 65	2 (1.9 %)	5 (4.9 %)	
Gender	Female	81 (75.0 %)	70 (69.3 %)	> 0.05 ^a
	Male	26 (24.1 %)	31 (30.7 %)	
	Others	1 (0.9 %)	0 (0 %)	

a: Chi-Square test

Affairs and according to the non-binding recommendations of the Central Ethics Committee in Germany.

RESULTS

A total of 209 pharmacy employees answered the survey. In Sweden, 108 (51.7% of total respondents) pharmacy employees answered the survey and in Germany, 101 (48.3% of total respondents) participated. In both Sweden and Germany, most participants were middle-aged female pharmacists. Descriptive statistics for the Swedish and German survey respondents are summarized in Table 1. As shown in Table 1, the background variables did not differ between the countries.

Self-rated knowledge about homeopathy

In both countries, participants think that pharmacy employees should have knowledge about homeopathy, but the German pharmacy employees think that this is more important compared to the Swedish employees (Table 2). German pharmacy employees estimated their knowledge significantly higher than the Swedish pharmacy employees (Figure 2) and they also had received significantly more education about homeopathy (Table 2).

Use of homeopathic medicines

German pharmacy employees receive questions about homeopathic medicines more frequently than the Swedish pharmacy employees and they also recommend

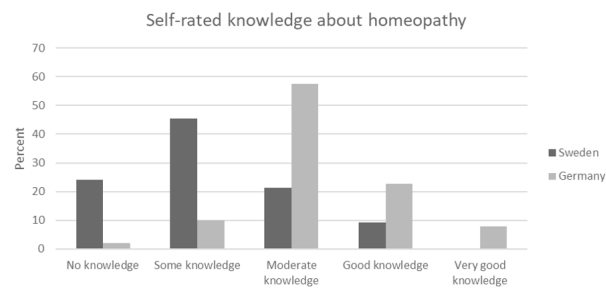


Figure 2. Pharmacy employees' self-estimated knowledge about homeopathy ($p < 0.01$, Mann-Whitney U-test).

homeopathic medicines more frequently compared to the Swedish pharmacy employees (Table 3). Regarding the question if participants have used homeopathic medicines by themselves or given to their children or pets and the effect they have experienced, there was a significant difference between Sweden and Germany, as the Swedish pharmacy employees have less personal experience of using homeopathic medicines (Figure 3).

The question about having friends or someone in the family who use homeopathic medicines also revealed significant differences between Sweden and Germany, as the German participants knew more homeopathy users. However, in Sweden, most participants had some or several friends or family members that use homeopathic medicines (Table 3).

Attitudes about homeopathy

As shown in Figure 4 and Table 4, the view about homeopathy differs significantly in Germany and Sweden. In Sweden,

Table 2. Self-rated knowledge about homeopathy.

		Sweden (n = 108)	Germany (n = 101)	p-value
Was homeopathy included in your educational studies?	Don't know	4 (3.7 %)	5 (5.0 %)	< 0.01 ^a
	Yes	5 (4.6 %)	22 (21.8 %)	
	Yes, a little	39 (36.1 %)	55 (54.4 %)	
	No	60 (55.6)	19 (18.8 %)	
Should pharmacy employees have knowledge about homeopathy?	Don't know	4 (3.7 %)	2 (2.0 %)	< 0.01 ^a
	Yes, it is important	35 (32.4 %)	54 (53.4 %)	
	Yes, some knowledge could be useful	58 (53.7 %)	32 (31.7 %)	
	No	11 (10.2 %)	13 (12.9 %)	

a: Chi-Square test

Table 3. Use of homeopathic medicines.

		Sweden (n = 108)	Germany (n = 101)	p-value
Questions about homeopathy from customers	Often	2 (1.9 %)	33 (32.6 %)	< 0.01 ^a
	Sometimes	24 (22.2 %)	52 (51.5 %)	
	Seldom	49 (45.4 %)	14 (13.9 %)	
	Never	33 (30.6 %)	2 (2.0 %)	
Recommendation of homeopathy to customers	Often	0 (0 %)	30 (29.7 %)	< 0.01 ^a
	Sometimes	3 (2.8 %)	36 (35.6 %)	
	Seldom	17 (15.7 %)	19 (18.8 %)	
	Never	88 (81.5 %)	16 (15.9 %)	
Friends or family members that use homeopathy	Don't know	22 (20.4 %)	1 (1.0 %)	< 0.01 ^b
	Yes, several	16 (14.8 %)	72 (71.3 %)	
	Yes, some	43 (39.8 %)	24 (23.7 %)	
	No, no one	27 (25.0 %)	4 (4.0 %)	

a: Mann-Whitney U-test

b: Chi-Square test

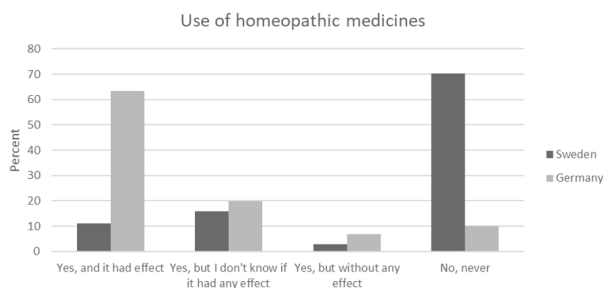


Figure 3. Pharmacy employees' experiences of using homeopathic medicines (p -value < 0.01, Mann-Whitney U-test).

most participants don't believe that homeopathic medicines have any effect, more than placebo, whereas most German participants believe that homeopathic medicines could have good effect in many diseases/conditions (Figure 4).

Regarding the question about the fact that homeopathic medicines are classified as drugs, more German participants think that this is right and similar results were obtained when participants were asked if homeopathic medicines should be sold in pharmacies (Table 4). Although most Swedish participants stated that homeopathic medicines should be sold in pharmacies, there is still a significant difference between Sweden and Germany regarding this question,

Table 4. Attitudes about homeopathy.

		Sweden (n = 108)	Germany (n = 101)	p-value
Is it right that homeopathic medicines are classified as drugs?	Don't know	35 (32.4 %)	8 (7.9 %)	< 0.01 ^a
	It is right	34 (31.5 %)	66 (65.3 %)	
	It is wrong	39 (36.1 %)	27 (26.7 %)	
Should homeopathic medicines be sold in pharmacies?	Don't know	16 (14.8 %)	5 (5.0 %)	< 0.05 ^a
	Yes	65 (60.2 %)	80 (79.2 %)	
	No	27 (25.0 %)	16 (15.8 %)	

a: Chi-Square test

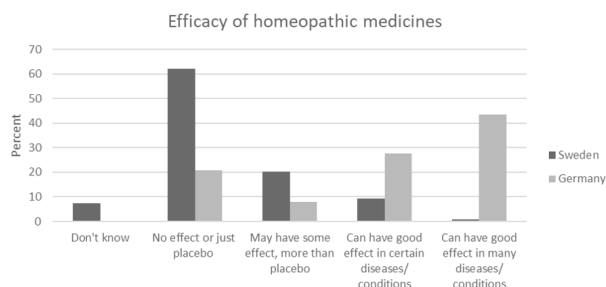


Figure 4. Pharmacy employees' attitudes about the efficacy of homeopathic medicines ($p < 0.01$, Mann-Whitney U-test).

as more German participants stated that homeopathic medicines should be sold in pharmacies compared to the Swedish participants (Table 4).

DISCUSSION

This study explored the self-rated knowledge, use and attitudes about homeopathy among the Swedish and German pharmacy employees. The results show that the Swedish and German pharmacy employees differ significantly regarding their self-rated knowledge, use and attitudes about homeopathy.

Self-rated knowledge

Although Swedish participants differ from the German participants regarding their self-rated knowledge and education about homeopathy, most of the Swedish participants think that some knowledge could be useful. These findings may indicate that there is a knowledge gap regarding homeopathy among the Swedish pharmacy employees and that knowledge about homeopathy could be needed for development in the profession. A desire for more continuing medical education on CAM including homeopathy was expressed by 85.2% of paediatric oncologists in a German survey about attitudes on CAM in

paediatric oncology (Maisch and Hübner 2014). However, in the present study, the participants were not asked if they are satisfied with the amount of education about homeopathy they had received or if they wish to continue education on homeopathy to develop in their profession.

In a survey from 2005, the Canadian citizens were asked about their use of natural health products including homeopathy. In this survey, 27% of participants stated that they wanted to buy natural health products at pharmacies and 43% said that they completely trusted pharmacists for advice on natural health products. These results indicate that consumers of natural health products including homeopathic medicines expect pharmacists to have knowledge about these products (Natural Health Products Directorate 2005). Related to the findings from the present study, the higher self-estimated knowledge in Germany could be explained by the fact that the German pharmacy employees are expected to have knowledge about homeopathy.

Use

Even though homeopathic medicines are not sold in the Swedish pharmacies, about 70 % of the Swedish participants reported that they receive questions about homeopathy. This may reflect that there is a demand for homeopathic medicines in Sweden and that customers may wish consultation about homeopathy from pharmacy professionals. As evidence suggests, the pharmacy employees are expected to have knowledge about natural products including homeopathy (Natural Health Products Directorate 2005), which may also apply to countries where homeopathic medicines are not sold in pharmacies such as Sweden.

Swedish pharmacy employees have less experience of using homeopathic medicines than the German participants. Interestingly, in both countries, the majority that answered that they have used homeopathic medicines have also experienced effect indicating that pharmacy employees that have own experience with the use of homeopathic medicines are more likely to believe in homeopathy. This explanation is

in accordance to the findings from the previous mentioned study about attitudes on CAM in paediatric oncology, as homeopathy was among the CAM therapies with which physicians had most own experience and the personal experience of CAM had a significantly positive influence on their attitudes and the wish for further continuing medical education (Maisch and Hübner 2014).

The demand on homeopathic medicines in Sweden is confirmed by the finding that a majority of participants had some or several friends or family members that use homeopathic medicines, although the use of such medicines is more prevalent in Germany (Bücker et al. 2008).

Attitudes

The results from this study demonstrate that there are great differences between the Swedish and German pharmacy employees regarding their view about homeopathy. However, 22% of the German participants don't believe in the efficacy of homeopathy showing that the German participants are not a homogenous population regarding their attitudes about the efficacy of homeopathy. Another interesting finding is that about 10% of the Swedish participants stated that they don't know if homeopathic medicines are effective or not, compared to 0% in the German populations. That some Swedish participants had no opinion about the efficacy of homeopathic medicines may be associated with the lower rated knowledge among the Swedish participants.

Notwithstanding the difference between the German and Swedish participants regarding the question if homeopathy should be sold in pharmacies, most of the Swedish participants stated that homeopathic medicines should be sold in pharmacies. Although the reasons behind that are not known, this finding may be important in the discussion if homeopathic medicines should be included in the Swedish pharmacy assortment. It could influence attitudes on homeopathy if homeopathic medicines are sold in pharmacies or not. In Sweden, homeopathic medicines are not sold in pharmacies, which may lead to a lower valuation of homeopathy in Sweden. On the other hand, the fact that homeopathic medicines are sold in pharmacies may cause overestimation of homeopathic medicines in Germany. According to Amanda Henderson, a researcher in nursing practice, attitudes influence medical knowledge, which applies power during health practice. She refers to Foucault who states that power is constituted by social practices and that attitudes formulate knowledge. He means that attitudes may determine the methods of health care practice and that this power is controlled by social practices and prejudices (Henderson et al. 1994). Related to the findings from the present study, the differences between German and Swedish pharmacy employees may originate in the different history of homeopathy (Rosser 2004) as well as cultures and healthcare systems that might not be comparable (Bjerså, Forsberg, and Fagevik 2011; Bjerså, Victorin, and Olsén 2012).

Strengths and limitations

To our knowledge, this is the first survey regarding the pharmacy employees' self-rated knowledge, use and attitudes toward homeopathy. The study was conducted in two countries that differ in respect to the pharmacy assortment regarding homeopathy, which enables comparisons between different pharmaceutical practices.

A limitation of this study is the relative small study population. In addition, no information about the response rate or the geographical distribution could be obtained by using the chosen survey distribution method. Since the actual potential participants were not known, the response rate hence could not be calculated. This could negatively affect the generalizability of the findings, because the characteristics of non-responders could theoretically differ from responders (Kazdin 2009; Creswell 2009). Moreover, a back translation was not conducted, which might have increased the risk for dissimilarities between the Swedish and the German versions of the questionnaire. Noteworthy is that the translation into both languages started from the English version of the questionnaire so any back-translation should have been into the English language.

Regarding the study design, it should be noted that cross-sectional studies, like any other research design has limitations. Observational studies cannot provide explanations of causalities nor do they provide an in-depth explanation of a phenomenon. Causal relationships cannot be proven, because time relations between variables are not studied in a cross-sectional design. However, the cross-sectional design has the potential to give associations and generate prevalence data (Bowden 2011; Ejlerstsson 2014).

Implications and suggestions for the future

Findings from this study are important, because it may be useful to understand that pharmacy employees' self-rated knowledge, use and attitudes about homeopathy differs in the two countries that have a different history of homeopathy but similar regulations, because these insights can be used to analyse and improve pharmaceutical practice. To make comparisons between the pharmacy employees in these countries is especially important regarding the fact that homeopathic medicines are included in the German pharmacy assortment but not in the Swedish. It could be discussed if homeopathic medicines should be included in the Swedish pharmacy assortment or not. It could also be discussed if Swedish pharmacy education should focus more on homeopathy. To address these questions, future studies should evaluate if the Swedish pharmacy employees wish more education about homeopathy as well as the reasons why homeopathy should be sold in pharmacies or not. Such studies would be of great importance, as homeopathy is increasingly used in the Western World (Betti et al. 2013; Relton et al. 2017).

CONCLUSION

Pharmacy employees in Germany had a higher self-rated knowledge about homeopathy, more experiences of using homeopathic medicines and they had more positive attitudes about homeopathy compared to the pharmacy employees in Sweden. In both countries, most participants stated that homeopathic medicines should be sold in

pharmacies. Pharmacy employees should act professionally to advice customers on all drugs, which include homeopathic medicines in countries where the homeopathic medicines are regulated as drugs. Therefore, increased homeopathic knowledge in pharmacy employees could potentially improve pharmaceutical practice. If homeopathic medicines should be sold in pharmacies or not remain a discussion issue that could be addressed in future studies.

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