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This is the accepted version of a paper published in *Sexuality and disability*. This paper has been peer-reviewed but does not include the final publisher proof-corrections or journal pagination.

Citation for the original published paper (version of record):

Areskoug-Josefsson, K., Larsson, A., Gard, G., Rolander, B., Juuso, P. (2016)
Health care students' attitudes towards working with sexual health in their professional roles:
Survey of students at nursing, physiotherapy and occupational therapy programmes.
Sexuality and disability, 34(3): 289-302
<https://doi.org/10.1007/s11195-016-9442-z>

Access to the published version may require subscription.

N.B. When citing this work, cite the original published paper.

Permanent link to this version:

<http://urn.kb.se/resolve?urn=urn:nbn:se:hj:diva-29943>

Health Care Students' Attitudes Towards Addressing Sexual Health in Their Future Professional Work: Psychometrics of the Danish Version of the Students' Attitudes Towards Addressing Sexual Health Scale (SA-SH)

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Abstract

Students' attitudes and educational needs regarding sexual health are important, since their ability to promote sexual health in their future profession can be challenged by their attitudes and knowledge of sexuality and sexual health. There are no existing Danish instruments able to measure students' attitudes towards working with and communicating about sexual health; thus, to be able to use the Students' Attitudes Towards Addressing Sexual Health (SA-SH) questionnaire in a Danish context, it is necessary to translate and test the translated questionnaire psychometrically. The aim of the project was to translate and psychometrically test the Danish version of the SA-SH. Translation and psychometric testing of a Danish version of the SA-SH included testing of internal consistency reliability, content validity construct validity, and analysis of floor and ceiling effects. The Danish version of the SA-SH (SA-SH-D) had a Cronbach's alpha of 0.67. The content validity index showed high relevance (item context validity index 0.82–1.0), and item scale correlation was satisfactory. The SA-SH-D is a valid and reliable questionnaire, which can be used to measure health care professional students' attitudes towards working with sexual health in their future profession.

Keywords: Health care professional students, sexual health, reliability, validity, physical therapy, occupational therapy, nursing

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European sexology is now more multidisciplinary than ever before, an ongoing trend in European countries (Kontula, 2011). However, health care providers often lack education concerning sexological issues, and their attitudes towards working to promote sexual health can be challenged by their own believed non-importance of sexual health for persons with disease or disability (Esmail, Darry, Walter, & Knupp, 2010; Low & Zubir, 2000). Sexual health is strongly related to feelings of well-being and general health (Field et al., 2013; Lindau & Gavrilova, 2010; Ratner, Erekson, Minkin, & Foran-Tuller, 2011), and previous research has shown that rehabilitation can promote sexual health (Kristina Areskoug-Josefsson & Gard, 2015; K. Areskoug-Josefsson & Oberg, 2009; Egan et al., 2013; Josefsson & Gard, 2012; Rosenbaum, 2006). To provide sufficient sexual health rehabilitation, health care professionals need not only to recognize the biomedical view of sexual health, which is common among health professionals, but also to incorporate in their caring practice the biopsychosocial model of sexual health (Papaharitou et al., 2008; Penwell-Waines et al., 2014). In this study the definition of sexual health by the World Health Organization will be used (World Health Organization, 2006):

Sexual health is a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe

sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled.

In the study by Haboubi and Lincoln, health professionals agreed that sexual health could be part of care and rehabilitation for patients, but there was a need for more knowledge and education concerning sexual health and communication about sexual health issues (Coleman et al., 2013; Haboubi & Lincoln, 2003). In some research, health professionals (physiotherapists, occupational therapists, nurses, and doctors) considered themselves to have sufficient knowledge about sexual health, but experienced barriers limiting the implementation of knowledge in clinical practice (Haboubi & Lincoln, 2003; Ussher et al., 2013). Attitudes and/or beliefs about the importance of sexual health for persons with different types of physical, psychological, or sexual dysfunctions may affect how health care professionals interact with patients (Evans, 2013; Gianotten, Bender, Post, & Höing, 2006; Haboubi & Lincoln, 2003; Shakespeare, Iezzoni, & Groce, 2009). Patients want health professionals to take the initiative, and to be competent and confident in discussing sexual health concerns (Post et al., 2008; Taylor & Davis, 2006; Wittenberg & Gerber, 2009). Therefore, education regarding sexuality and sexual health is essential in order to give health care professions sufficient knowledge and security in how to address sexual health. It is of importance to find out how students regard their need for education addressing sexual health and also how educational interventions can affect their attitudes towards working to promote sexual health. Health care students often have a high level of discomfort concerning communication about sexual issues, which shows that it is not easier for younger or more recently educated health professionals to deal with this than it is for older, more established, and more experienced health professionals (Weerakoon, Jones, Pynor, & Kilburn-Watt, 2004).

The level of sexual health knowledge in basic education for health professionals is limited, and health professionals might thus lack necessary competence to treat decreased sexual health (Coleman et al., 2013; Evans, 2013; Penwell-Waines et al., 2014). There is research showing that the type of pedagogical model used in teaching sexual health and communication about sexual health affects the outcome of the intervention (Carabez, Pellegrini, Mankovitz, Eliason, & Dariotis, 2015; Coleman et al., 2013; Parish & Rubio-Aurioles, 2010; Penwell-Waines et al., 2014). To highlight sexual health in the health care professions, increased knowledge and education concerning sexual health is advisable (Evans, 2013; Helland, Garratt, Kjekken, Kvien, & Dagfinrud, 2013). In some instances, sexuality education programs are offered as elective in the health professional curriculum (Kontula, 2011).

Research has shown that physical therapy and occupational therapy students are in more need of such interventions than other health professionals, especially since their interventions might be important to sexual health care (Penwell-Waines et al., 2014). Sexual health education increases the confidence and the likelihood for health care professionals to address sexual health with their patients (Helland et al., 2013). Denmark has national guidelines concerning rehabilitation for various diseases and functional disabilities, and those guidelines include sexual health, thus indicating that health care professionals must be prepared to promote sexual health in their professional work (Sundhedsstyrelsen, 2007, 2012, 2013). There is a recent Swedish study showing differences in health care students' attitudes towards their future work, depending on the gender and future profession of the student (Kristina Areskoug-Josefsson, Larsson, Gard, Rolander, & Juuso, 2016). However, the question of whether the health care professional students feel ready to take an active role in clinical health care and rehabilitation in promoting sexual health, presuming that they have sufficient knowledge about sexual

health, needs further research. There are (to the authors' knowledge) no existing Danish instruments measuring the attitudes towards working with and communicating about sexual health, but there is a relevant, valid, and reliable Swedish questionnaire, the Students' Attitudes Towards Addressing Sexual Health (SA-SH) (Kristina Areskoug-Josefsson et al., 2016; Areskoug Josefsson, Juuso, Gard, Rolander, & Larsson, 2016). There are questionnaires in related areas in other languages, but none covering the same area as the SA-SH. There are cultural differences and language differences between the Nordic countries, so to be able to use the SH-AS, it is necessary to translate and test the translated questionnaire psychometrically in a Danish context.

Aim

The aim of the project was to translate and to psychometrically test the Danish version of the questionnaire Students' Attitudes Towards Addressing Sexual Health (SA-SH).

Method

The method included first the translation and adaptation of the original SA-SH (Areskoug Josefsson et al., 2016) to Danish, and second, psychometric tests of relevance, reliability, and validity of the SA-SH-D, the translated questionnaire.

The SA-SH Questionnaire

The SA-SH consists of 22 items to be answered on a Likert scale with five options: disagree, partly disagree, partly agree, agree, and strongly agree. In addition, there are descriptive questions regarding gender, age, educational program, and educational level within the program.

Translation and Adaptation of the SA-SH-D

The adaptation of the SA-SH to a Danish version (SA-SH-D) was performed according to the guidelines by Guillemin et al. (Beaton, Bombardier, Guillemin, & Ferraz, 2000; Guillemin, Bombardier, & Beaton, 1993), which include the following steps:

1. Translation of the SA-SH-D by two independent, bilingual, qualified translators. The translators had the target language (Danish) as their mother tongue and the original language (Swedish) as their working language for 15 years. One of the translators was a female journalist, age 59, and the other translator was a male psychologist, age 67.
2. Synthesis of the translations, which meant comparing the translated versions to achieve coherence in translations. This was performed by one of the authors together with the two translators.
3. Back-translation by three independent bilingual back-translators (a female midwife, age 51; a male urologist (master in sexology), age 55; and a bachelor in relaxation and psychomotor therapy, age 30. The translators had the original language as their mother tongue. The researchers who created the original SA-SH approved the back-translated version of the SA-SH-D.
4. Committee review by the research group and the translators to compose a preliminary Danish version prior to the face validity test. The face validity test was performed with two groups of physiotherapy, nursing, and occupational therapy students, and one of the researchers, after the translation and adaptation of the SA-SH-D. The groups consisted of four and seven participants, respectively. As a final part of the face validity test, a professor at a health professional program was asked to comment on the face validity of the questionnaire.

5. Informants (25 students) tested the questionnaire with a researcher present. The researcher served as an explanatory resource, if needed. The researcher observed whether there were problems reading or responding to the questionnaire and asked about the ease of completion of the questionnaire. This step was revised from the original guidelines by Guillemín and follows the protocol by Hedin et al. (Hedin, McKenna, & Meads, 2006)

Psychometric Testing of the SA-SH-D

Procedures. The paper-based questionnaire was handed out in the classroom to achieve the best response rate. Prior to the receiving the questionnaire, students were given both oral and written information concerning the study and were assured that participation was voluntary.

Participants. The participants were students at an interprofessional health sciences program in health care in Denmark. The program includes physiotherapists, nurses, radiographic nurses, and occupational therapists. The participants had an eligible two-week course on either project leadership or sexology during the time of the tests of the questionnaire. All students from both courses were invited to participate in the study. Those who accepted were 23 of 25 students in the sexology course (92% response rate) and 17 of 19 students in project leadership (89% response rate). The sample size was due to practical limitations (number of enrolled students), but it is recommended that reliability test groups include >20 participants, which this study exceeds (Hobart, Cano, Warner, & Thompson, 2012).

Table 1 about here

Test of Validity

The relevance of each included item was assessed with a content validity index (CVI) on a four-point scale (1 = extremely relevant, 2 = quite relevant, 3 = slightly relevant, 4 = not relevant). The scale was dichotomized by combining extremely relevant/quite relevant (1 & 2) in one group and slightly relevant/not relevant (3 & 4) in the other group. The items were considered to be relevant if the item-level CVI was >0.78 per item and if the sum of the CVI for each item was >0.90 (Polit & Beck, 2006; Polit, Beck, & Owen, 2007).

Test of validity was performed by the prior face validity test and CVI test, as well as with the construct validity test with a multitrait/multi-item correlation matrix of the factors found in the original Swedish factor analysis (Ware & Gandek, 1998). The factors in original SA-SH were (a) present feelings of comfortableness, (b) future working environment, and (c) fear of negative influence on future patient relations (Areskoug Josefsson et al., 2016).

The standard deviation should not differ too much between the items and preferably be around the value 1.0 to show an acceptable precision. To test the item internal consistency, correlation analyses were performed to evaluate that these items also were linearly related to the same factors as in the Swedish study of the original SA-SH. Item internal consistencies were considered satisfactory if an item correlated 0.40 or more with its factor (Ware et al., 1998).

In addition to evaluating whether items measure what they are supposed to measure, additional analyses were performed. Those analyses were conducted to determine the extent of an item's correlation with factors other than the factor it was supposed to correlate with. This was done by comparing whether there was any significant difference between correlations of an item and its factor and the correlation between the same item

and other factors. If a correlation coefficient between two factors is less than their reliability coefficient, it is very likely that these factors measure a unique reliable variance and have a clear difference between them. However, if the correlation coefficients between two factors are equal or higher than the reliability coefficient, there is an indication that these factors do not have any unique reliable variance, and consequently, do not have a clear difference between them. Item discriminant validity is supported if the correlation between an item and its factor and the same item and other factors are significantly different (Ware et al., 1998; Campbell and Fiske, 1959).

Floor and ceiling effects of the SA-SH-D were evaluated. Floor effects were considered to be present if $\geq 15\%$ scored an item as 1 (lowest possible score), and ceiling effects were considered to be present if $\geq 15\%$ scored an item as 5 (highest possible score) on the SA-SH-D (Terwee et al., 2007).

Test of Reliability

Test of reliability was performed with internal consistency reliability with Cronbach's alpha, with a Cronbach's alpha of 0.70–0.95 considered as good (Terwee et al., 2007).

Statistics

Descriptive statistics are presented in percent, median, mean, standard deviation, and response values frequencies. Item-scale correlations were analyzed with Pearson's method. All these analyses were performed in SPSS version 22 (IBM Corp., Armonk, NY, USA). Statistical tests of differences between correlation coefficients were conducted in STATISTICA 13 (Dell Inc. Tulsa, OK, USA). The significance level was set at $p < 0.05$.

Ethics

Ethical issues have been considered, and the project received ethical approval from the Danish Data Protection Agency (Datatilsynet). The participants gave their informed consent to participate in the research project. Informed consent to participate in the study was obtained by having the students mark this on a specific question regarding informed consent on the questionnaire. All the collected data were anonymous to the analyzing researcher.

Results

Translation and Adaptation of the SA-SH-D

The first two steps of the translation process showed only minor semantic disagreements between the two translators translating from Swedish to Danish. The citation from the WHO was not translated by the translator, since it was used in its original Danish version from the WHO. In the third step, the back-translation revealed few differences between the three back-translators and those differences were determined to be a result of cultural differences between the two countries. Consensus was reached among the translators and the researchers, with approval of the back-translated version by the researchers who created the original SA-SH. This final version of the questionnaire was tested for face validity in the fourth step.

Psychometric Testing of the SA-SH-D

Validity. The face validity groups had agreed that all items in the questionnaire were easy to understand, and the questionnaire was easy to complete. However, the students wanted the questionnaire to be inclusive towards more health care professions, such as psychotherapists and midwives. Therefore, the questionnaire was changed to

accommodate this request. There were also minor changes in phrasing added in this fourth step of the translation process.

In the fifth step of the translation process, relevance of the SA-SH-D was tested with CVI by 38 participants (36 women, 2 men, aged 22–43 years (average age 25 years), 21 occupational therapists, 8 nurses, 8 physiotherapists, and 1 other). The relevance of the included questions in the questionnaire was assessed with item-level CVI (I-CVI), where all questions had an I-CVI of 0.82 to 1.0. The scale-level CVI average (S-CVI/Ave) was 0.95. The results of the I-CVI and the S-CVI/Ave show that the SA-SH-D is highly relevant.

The patterns of the response choices are presented in Table 1. All items (except two) in the factors showed standard deviation values lower than 1.0 (0.75–0.98), which indicates that the precision is acceptable. Mean values in each factor were for items in factor 1 (present feelings of comfortableness) between 2.43 and 2.90 (diff = 0.47), for items in factor 2 (future working environment) between 2.43 and 2.68 (diff = 0.25), and for items in factor 3 (fear of negative influence of future patient relations) between 1.93 and 3.45 (diff = 1.52). Floor and ceiling effects of the SA-SH-D were evaluated, and there was a tendency for floor effects and ceiling effects, but only items 20 (I think that I as a student need to get basic knowledge about sexual health in my education) and 22 (I think that I need to be trained to talk about sexual health in my education) had a median of 5 (strongly agree) (Table 2).

Table 2 about here

Each item in factor 1 correlates strongly significantly with factor 1, with correlation coefficients between 0.73 and 0.90, but also significantly with factor 3, where the correlation coefficients vary between 0.33 and 0.56. There are also three items in factor 1

that correlate significantly in factor 2 between -0.38 and -0.45. All the items in factor 2 correlate significantly with factor 2, with coefficients between 0.69 and 0.92. One item in factor 2 correlates (-0.33) significantly with factor 1. The items in factor 3 correlate significantly with factor 3, with coefficients between 0.37–0.71. One item in factor 3 correlates (0.52) significantly with factor 1, and the item correlates (-0.35) significantly against factor 2. Of the three items that are not included in any factor, one correlates (0.42) significantly with factor 1, one correlates (0.61) against factor 2 and one correlates (0.41) to factor 3 (table 3).

Table 3 about here

The multitrait/multi-item correlation matrix compares the correlation for one item with its hypothesized factor to the correlation of the other factors in the questionnaire, showing that the items in factor 1 discriminate basically significantly to factors 2 and 3, and items in factor 2 discriminate significantly to factors 1 and factor 3. In factor 3, three items also discriminate against factor 1 and 2, but not as clearly and with lower correlation for one item (Table 4).

Table 4 about here

Reliability of the SA-SH-D. The internal consistency reliability of the first test gave a Cronbach's alpha of 0.674 with variance of 0.614–0.714 if the tested item was deleted. The Cronbach's alpha values for the factors from the SH-AS in the SH-AS-D are presented in Table 4.

With the objective of evaluating how distinctly one factor differs from the other factors, correlation coefficients have been computed and compared with the reliability coefficients from Cronbach's alpha. Table 5 shows that factor 1 and factor 2 have larger

reliability coefficients than correlation coefficients. This suggests that these factors measure unique reliable variance. But for factor 3, one correlation coefficient is clearly larger than, and one correlation coefficient is almost as large as the reliability coefficient. This result shows that factor 3 measures probably not a unique variance and thus not a unique field.

Table 5 about here

Discussion

The SA-SH-D showed good face, construct, and content validity, as well as internal consistency reliability.

The response rate from the two invited student groups was high, which could be due to the data collection procedure, since paper-based questionnaires administered face-to-face often increase response rate (Porter & Umbach, 2006; Sax, Gilmartin, & Bryant, 2003). Another reason for the high response rates might be interest in the topic of the survey, since this generates higher response rates (Porter & Umbach, 2006), thus indicating that the students considered the field of sexual health important, regardless of whether they had chosen the course on sexology or the course on project leadership. There is also a risk that the students felt obliged to answer the questionnaire, since it was handed out in the classroom. The oral and written information stated, however, that participation was non-compulsory, and some students chose not to participate. Additionally, some students did give their contact information to be contacted for follow-up, thus implying that the students recognized the research project as important and were willing to participate.

The sample size for validity testing could be considered too small, but a sample size of ≥ 40 participants is considered to give robust results in 75% of the prior research examples (Hobart et al., 2012).

It is recommended that the item standard deviation be around 1.0 and roughly equivalent for the items, which the results of the SA-SH-D adhere to (Ware & Gandek, 1998). The participants used all possible choices in the Likert scale, which indicates that the translated response choices and the associated items are presented in a correct way (Ware & Gandek, 1998). The correlation with items in each factor to the factor itself shows very good correlation, thus indicating that the factor analyses of the original SH-AS are useful in the validity analysis of the SH-AS-D.

All items show a small dispersion with standard deviations around 1 or less, and thus a high precision of the various issues, although the mean is quite similar between items with small differences, particularly for factor 1 (present feelings of comfortableness) and factor 2 (future working environment).

Item-scale correlations can be considered satisfactory for the factors, even when the correlation scores vary (Ware & Gandek, 1998). The correlation scores were more stable in factors 1 and 2 than in factor 3, but the correlation scores are satisfactory enough to suggest that all items included in the factors should be kept in the questionnaire.

Floor and ceiling effects of the SA-SH-D were evaluated and, considering the content of the items, floor and ceiling effects could be expected in this population. However, the floor and ceiling effects should be recalculated in future translated versions of the SA-SH, since cultural differences might influence the results.

Although, the item-discriminant validity shows that item 10 (I believe that I might feel embarrassed if future patients talk about sexual issues) is problematic. According to Ware et al. (Ware & Gandek, 1998), the translation should be re-examined and rephrasing of the item should be considered to ensure the efficiency of the questionnaire. To ensure the efficiency of the SA-SH-D further, item-discriminant validity tests with larger sample sizes would bring more knowledge to this issue.

The internal consistency reliability results for the complete questionnaire, measured with Cronbach's alpha, are similar to the tests performed on the original version. The Cronbach's alpha level for the SA-SH-D has sufficient reliability to be used for group evaluation (recommended level is 0.70), and the included items in factor 1 could also be used for person-level comparisons (recommended level >0.90) (Ware & Gandek, 1998).

The first test of internal consistency reliability of factor 3 with Cronbach's alpha is much lower in the Danish material compared to the original Swedish version. Factor 3 also shows results that implicate that there is reason to believe that it doesn't measure a unique field. This suggests that additional research with factor analysis in a larger test group would be of interest to perform for SH-AS-D. However, there could also be difficulties in factor 3, due to diversity of the included items and difficulties experienced by students in considering what their future working situations will be like. Factor analysis of this material would not be correct, due to too small a sample size (Terwee et al., 2007; Williams, Brown, & Onsmann, 2010).

Test-retest is not commonly used to evaluate intra-rater reliability in sexuality-related questionnaires. The reason for not using test-retest was the assumption that by answering a questionnaire concerning sexual health, the participant might start to reflect over the content in the questionnaire, and the start of this cognitive process could thus work as a

confounding factor in itself. Therefore, reliability test with Cronbach's alpha was used (Fisher, Davis, Yarber, & Davis, 2013). The original SA-SH used test-retest and the intra-rater reliability did not show systematic disagreement in the Swedish version (Areskoug Josefsson et al., 2016).

Conclusion

The SA-SH-D is a valid and reliable questionnaire, which can be used to measure health care professional students' attitudes towards working with sexual health in their future profession.

Acknowledgments

The project was funded by the Health Sciences Research Center, University College, Lillebaelt, Denmark.

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Table 1. Demographic data of participants

Course	Age (years)	Gender	Profession
Project leadership	22–33 (mean 26.8)	1 man, 18 women	18 occupational therapists, 1 nurse
Sexology	22–30 (mean 24.9)	1 man, 22 women	15 occupational therapists, 7 physiotherapists, 1 nurse

Table 2. Item descriptive statistics

Item		Response values frequency								
Name	Label	Missing (%)	Median	Mean	SD	1	2	3	4	5
Factor 1. Present feelings of comfortableness										
Q1F1	I feel comfortable about informing future patients about sexual health	0	3.00	2.78	0.83	2	12	20	5	1
Q2F1	I feel comfortable about initiating a conversation regarding sexual health with future patients	0	2.00	2.43	0.78	3	20	15	1	1
Q3F1	I feel comfortable about discussing sexual health with future patients	0	3.00	2.83	0.75	1	11	23	4	1
Q4F1	I feel comfortable about discussing sexual health issues with future patients regardless of their sex	0	3.00	2.80	0.76	0	15	19	5	1
Q5F1	I feel comfortable about discussing sexual health issues with future patients regardless of their age	0	3.00	2.73	0.85	2	14	18	5	1
Q6F1	I feel comfortable about discussing sexual health issues with future patients regardless of their cultural background	0	2.00	2.10	0.84	10	18	10	2	0
Q7F1	I feel comfortable about discussing sexual health issues with future patients regardless of their sexual orientation	0	3.00	2.90	0.98	3	10	17	8	2
Q8F1	I feel comfortable about discussing specific sexual activities with future patients	0	2.00	2.18	1.01	11	16	9	3	1
Factor 2. Future working environment										
Q14F2	I believe that I will have too much to do in my future profession to have time to handle sexual issues	0	3.00	2.43	0.96	9	8	21	1	1
Q17F2	I am afraid that my future colleagues would feel uncomfortable in dealing with questions regarding patients' sexual health	0	3.00	2.68	1.02	5	12	16	5	2
Q18F2	I believe that my future colleagues will be reluctant to talk about sexual issues	0	3.00	2.63	0.87	5	9	23	2	1

Factor 3. Fear of negative influence on future patient relations

Q9F3 T	I am unprepared to talk about sexual health with future patients	1	2.00	2.46	0.97	6	16	10	7	0
Q10F3 T	I believe that I might feel embarrassed if future patients talk about sexual issues	0	3.00	3.25	0.98	1	8	15	12	4
Q13F3 T	I am afraid that conversations regarding sexual health might create a distance between me and the patients	0	3.00	3.45	0.82	0	4	18	14	4
Q19F3	In my education I have been educated about sexual health	0	2.00	1.93	0.83	13	19	6	2	0

Items not included in the factors

V11	I believe that future patients might feel embarrassed if I bring up sexual issues	0	3.00	3.43	0.75	0	3	20	14	3
V12	I am afraid that future patients might feel uneasy if I talk about sexual issues	0	3.00	3.10	0.78	0	10	16	14	0
V15	I will take time to deal with patients' sexual issues in my future profession	0	3.00	3.28	0.82	0	7	17	14	2
V16	I am afraid that my future colleagues would feel uneasy if I brought up sexual issues with patients	0	2.00	2.13	1.09	15	10	11	3	1
V20	I think that I as a student need to get basic knowledge about sexual health in my education	0	5.00	4.30	1.02	1	2	4	10	23
V21	I have sufficient competence to talk about sexual health with my future patients	0	2.00	2.03	0.67	8	23	9	0	0
V22	I think that I need to be trained to talk about sexual health in my education	0	5.00	4.53	0.72	0	1	2	12	25

Table 3. Pearson item-scale correlations between factors and items

Item		Pearson item-scale correlations		
Name	Label	Factor 1.	Factor 2.	Factor 3
Factor 1. Present feelings of comfortableness				
Q1F1	I feel comfortable about informing future patients about sexual health	0.73***	-0.14	0.47**
Q2F1	I feel comfortable about initiating a conversation regarding sexual health with future patients	0.75***	-0.45**	0.54***
Q3F1	I feel comfortable about discussing sexual health with future patients	0.88***	-0.38*	0.42**
Q4F1	I feel comfortable about discussing sexual health issues with future patients regardless of their sex	0.86***	-0.29	0.44**
Q5F1	I feel comfortable about discussing sexual health issues with future patients regardless of their age	0.85***	-0.12	0.33*
Q6F1	I feel comfortable about discussing sexual health issues with future patients regardless of their cultural background	0.74***	-0.43**	0.43**
Q7F1	I feel comfortable about discussing sexual health issues with future patients regardless of their sexual orientation	0.82***	0.01	0.34*
Q8F1	I feel comfortable about discussing specific sexual activities with future patients	0.90***	-0.42**	0.56***
Factor 2. Future working environment				
Q14F2	I believe that I will have too much to do in my future profession to have time to handle sexual issues	-0.19	0.77***	-0.13
Q17F2	I am afraid that my future colleagues would feel uncomfortable in dealing with questions regarding patients' sexual health	-0.27	0.92***	-0.25
Q18F2	I believe that my future colleagues will be reluctant to talk about sexual issues	-0.33*	0.69***	-0.21
Factor 3. Fear of negative influence on future patient relations				
Q9F3T	I am unprepared to talk about sexual health with future patients	0.28	-0.35*	0.71***
Q10F3T	I believe that I might feel embarrassed if future patients talk about sexual issues	0.52**	0.04	0.50**

Q13F3T	I am afraid that conversations regarding sexual health might create a distance between me and the patients	0.11	0.03	0.37*
Q19F3	In my education I have been educated about sexual health	0.24	-0.26	0.63***
Items not included in the factors				
V11	I believe that future patients might feel embarrassed if I bring up sexual issues	-0.09	0.06	-0.17
V12	I am afraid that future patients might feel uneasy if I talk about sexual issues	-0.05	0.05	-0.10
V15	I will take time to deal with patients' sexual issues in my future profession	0.29	-0.24	0.25
V16	I am afraid that my future colleagues would feel uneasy if I brought up sexual issues with patients	-0.14	0.61***	-0.07
V20	I think that I as a student need to get basic knowledge about sexual health in my education	-0.24	-0.09	-0.05
V21	I have sufficient competence to talk about sexual health with my future patients	0.42**	-0.24	0.41**
V22	I think that I need to be trained to talk about sexual health in my education	-0.19	0.43	-0.02

*p < 0.05, **p < 0.01, ***p < 0.001.

Table 4. Item-level discriminant validity tests

Item		Pearson item-scale correlations		
Name	Label	Factor 1.	Factor 2.	Factor 3
Factor 1. Present feelings of comfortableness				
Q1F1	I feel comfortable about informing future patients about sexual health	x	2***	I
Q2F1	I feel comfortable about initiating a conversation regarding sexual health with future patients	x	2***	I
Q3F1	I feel comfortable about discussing sexual health with future patients	x	2***	2**
Q4F1	I feel comfortable about discussing sexual health issues with future patients regardless of their sex	x	2***	2**
Q5F1	I feel comfortable about discussing sexual health issues with future patients regardless of their age	x	2***	2**
Q6F1	I feel comfortable about discussing sexual health issues with future patients regardless of their cultural background	x	2***	2*
Q7F1	I feel comfortable about discussing sexual health issues with future patients regardless of their sexual orientation	x	2***	2**
Q8F1	I feel comfortable about discussing specific sexual activities with future patients	x	2***	2**
Factor 2. Future working environment				
Q14F2	I believe that I will have too much to do in my future profession to have time to handle sexual issues	2***	x	2***
Q17F2	I am afraid that my future colleagues would feel uncomfortable in dealing with questions regarding patients' sexual health	2***	x	2***
Q18F2	I believe that my future colleagues will be reluctant to talk about sexual issues	2***	x	2***
Factor 3. Fear of negative influence on future patient relations				
Q9F3T	I am unprepared to talk about sexual health with future patients	2*	2***	x
Q10F3T	I believe that I might feel embarrassed if future patients talk about sexual issues	-I	2*	x
Q13F3T	I am afraid that conversations regarding sexual health might create a distance between me and the patients	I	I	x
Q19F3	In my education I have been educated about sexual health	2*	2***	x

X = discriminant validity test not conducted. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

2 = item-scale correlation is significantly higher for hypothesized scale than for competing scale.

1 = item-scale correlation is higher than for hypothesized scale, but not significantly higher for hypothesized scale than for competing scale.

-1 = item-scale correlation is lower than for hypothesized scale, but not significantly lower for hypothesized scale than for competing scale.

Table 5. Internal consistency reliability and correlation coefficients (r)

n = 39			
	Factor 1	Factor 2	Factor 3
	Present feeling of comfortableness	Future working environment	Fear of negative influence on future patient relations
	Cronbach's alpha = 0.93	Cronbach's alpha = 0.68	Cronbach's alpha = 0.25
Factor 1	X	r = -0.34*	r = 0.50**
Factor 2	X	X	r = -0.21
Factor 3	X	X	x

*p < 0.05, **p < 0.01