

RESEARCH ARTICLE

Differences in the Level of Knowledge on Cervical Cancer among Health Care Students, Midwives and Patients in Serbia

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Abstract

Background: Level of midwife knowledge is particularly important because of their role in the cervical cancer prevention programme. The aim of this study was to examine differences in the level of knowledge among health care students, midwives and women in the general population of Serbia. **Materials and Methods:** A cross-sectional approach was used with health care students of the medical school, midwives in their practice, and women visiting a chosen general practitioner as respondents. **Results:** In comparison with the students and midwives, women had lower level of knowledge of causative agents of the cervical cancer, genital warts, HPV types, screening for cervical cancer as well as about the target population for vaccine and its role. Differences in the numbers of right answers of respondents were statistically significant ($p < 0.001$). Four or more correct answers were obtained from 22.7% women, 35.3% from midwives and 83.8% from students. **Conclusions:** Midwives should improve their own level of knowledge related to preventive practice for cervical cancer, as well as their personal compliance with recommended practices, in order to be qualified and credible promoters of cervical cancer control among women in Serbia.

Keywords: Cervical cancer - knowledge - Pap test - HPV vaccine - health care students - midwives - women

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Introduction

High incidence of the cervical cancer represents a great health problem (Ferlay et al., 2010), and numerous studies have pointed out an important role of nurses and midwives in the cervical cancer prevention (Duval et al., 2009; Gottvall et al., 2009; Kent et al., 2010). Knowledge levels are of prime concern (Ghotbi and Anai, 2012; Paul et al., 2012; Coscun et al., 2013; Thippeveeranna et al., 2013). Some studies investigated role of the nurses and midwives in the cervical cancer prevention programme (Turkistanlı et al., 2003; Kent et al., 2010) as well as both in HPV (human papillomavirus) infection prevention and prophylactic vaccination (Turkistanlı et al., 2003; Duval et al., 2009). In Serbia, programme of the organized cervical cancer screening started at the end of 2012, and by that time prevention practices were of low priority both for women and gynaecologists (Kesic et al., 2007; Matejic et al., 2008). According to our available literature there is no so far study in our country which either examined differences in the level of knowledge of health care students, midwives and patients pertaining to the cervical cancer, or implementation of the prevention practice. Mandic et al. examined knowledge of the Secondary

Medical School schoolgirls, students of medicine and of other faculties pertaining to the cervical cancer (Mandic et al., 2011) while Dugandzija et al. examined how students of medicine and patients get information on the cervical cancer (Dugandzija et al., 2012). Due to high prevalence of the cervical cancer in Serbia, this study has been designed to examine differences in the level of knowledge of the cervical cancer among female students of health care; midwives and women (patients in primary health care) as well as its application in prevention practice.

The aim of the study was to examine differences in the level of knowledge among the female Higher Medical School students, midwives in their practice and women visiting their chosen general practitioner in primary health care.

Materials and Methods

Examination of the knowledge level of the cervical cancer was carried out by the cross-section study. Three groups of the respondents were formed: the first one of female students of the College of Health Studies in Cuprija, Department for Medical Nurses-Midwives; the second one of midwives with completed Secondary

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Medical School and not older than 49 years. The third group was formed of women who used to visit their chosen general practitioner (GP) in primary health care. Inclusion criteria were age between 19 and 49 for all three groups, and secondary education (at least) for women who visited GP, as well as for women in other two groups. The study was carried out within the period October-December 2012. Instrument for this study was non-standardized questionnaire for 11 questions.

Variables

Analyzed data pertained to respondents' knowledge of the cervical cancer, application of prevention measures and relevant information. On the basis of variables pertaining to cause and cervical cancer prevention method, analyzed were: causative agents of the cervical cancer (Chlamydia trachomatis, HPV, HIV, I don't know); causative agents of the genital warts (Chlamydia trachomatis, HPV, HIV, I don't know); HPV types as causative agents of the cervical cancer (HPV-16, 18, 6, 11, HPV 16, 18, 31, 33, 43, 45, all types of HPV); condom as a protection against HPV (yes, no, I don't know); screening method to the cervical cancer (Pap test, colposcopy, I don't know); role of the HPV vaccine (cervical cancer prevention, protects from some HPV types, for the treatment of cervical cancer); population intended for HPV vaccine (female population 9-26 years old without HPV infection, female population

9-18 years old, male and female population 6-26 years old before sexual activity), and the best method for prevention of cervical cancer (persistent usage of condom, reliable partner and delay of early initiating sexual activity, regular control examinations and Pap tests, HPV vaccine). Application of preventive gynecologic measures (gynecologic examinations and Pap tests) as well as dominant source of information on the cervical cancer (gynecologist, internet, radio/TV, professional literature) were also examined.

Total score of knowledge for each of the three respondents groups (students, midwives and women) was obtained by adding right answers; for each right answer 1 point was allotted and null for the wrong one. For respondents with more than four points (4 right answers) level of their knowledge was estimated as satisfactory.

Statistical data

Chosen data were processed by descriptive and inferential statistical methods. Distribution and frequency of the chosen variables are presented in comparison with the status (students/midwives/women) and significance of differences was tested by using χ^2 test. For minimum level of statistical significance $p < 0.05$ was used and $p < 0.001$ was used as statistically high significance. For assessment of differences pertaining to knowledge of the cervical cancer among students,

Table 1. Knowledge and Attitude Pertaining to the Cervical Cancer and HPV (Human Papillomavirus) Vaccine

Variables	students 68 (%)	midwives 85 (%)	women 75(%)	p value
Years (mean±SD)	20.6±1.8 ^a	30.7±6.3 ^a	26.2±6.9 ^a	<0.001 ^d
Causative cervical cancer				
chlamydia trachomatis	18 (26.5) ^{b,c}	18 (21.2) ^{b,c}	1 (1.3) b,c	<0.001 ^d
Correct answer HPV	47 (69.1)	55 (64.7)	33 (44.0)	
HIV	3 (4.4)	7 (8.2)	5 (6.7)	
I don't know	0 (0.0)	5 (5.9)	36 (48.0)	
Causative genital warts				
chlamydia trachomatis	7 (10.3) ^{b,c}	18 (21.2) ^{b,c}	1 (1.3) b,c	<0.001 ^d
Correct answer HPV	51 (75.0)	55 (64.7)	33 (44.0)	
HIV	10 (14.7)	7 (8.2)	5 (6.7)	
I don't know	0 (0.0)	5 (5.9)	36 (48.0)	
HPV types causative of the cervical cancer				
HPV-16,18,6, 11	16 (23.5) ^{b,c}	54 (63.5) ^{b,c}	12 (16.0) b,c	<0.001 ^d
Correct answer HPV16,18,31,33,43,45	47 (69.1)	13 (15.3)	3 (4.0)	
All types	5 (7.4)	18 (21.2)	60 (80.0)	
Condom as a protection against HPV				
Yes	19 (27.9) ^{b,c}	18 (21.2) ^{b,c}	33 (44.0) ^{b,c}	<0.001 ^d
Correct answer No	46 (67.6)	45 (52.9)	42 (56.0)	
I don't know	3 (4.4)	22 (25.9)	0 (0.0)	
Screening to the cervical cancer				
Correct answer Pap test	68(100.0) ^{b,c}	67 (78.8) ^{b,c}	15 (20.0) ^{b,c}	<0.001 ^d
Colposcopy	0 (0.0)	15 (17.6)	25 (33.3)	
I don't know	0 (0.0)	3 (3.5)	35 (46.7)	
Role of the HPV vaccine				
Cervical cancer prevention	13 (19.1) ^{b,c}	37 (43.5) ^{b,c}	37 (49.3) ^{b,c}	0.001 ^d
Correct answer protects from some HPV types	45 (66.2)	45 (52.9)	32 (42.7)	
For the treatment of cervical cancer	10 (14.7)	3 (3.5)	6 (8.0)	
Population intended for HPV vaccine				
Correct answer Female population 9-26 years old	42 (61.8) ^{b,c}	25 (29.4) ^{b,c}	15 (20.0) ^{b,c}	<0.000 ^d
Female population 9-18 years old	14 (20.6)	49 (57.6)	36 (48.0)	
Male and female population 6-26 years old	12 (17.6)	11 (12.9)	24 (32.0)	
The best method of prevention cervical cancer				
Condom	7 (10.3) ^{b,c}	10 (11.8) ^{b,c}	2 (2.7) ^{b,c}	0.154
Reliable partner	11 (16.2)	16 (18.8)	22 (29.3)	
Correct answer regular examinations and Pap tests	45 (66.2)	55 (64.7)	49 (65.3)	
HPV vaccine	5 (7.4)	4 (4.7)	2 (2.7)	

^at-test; ^b χ^2 -test; ^cANOVA; ^ddifference significant at $p < 0.01$

midwives and women, X² test was used. Difference between students and midwives, midwives and women as well as between students and women was evaluated by variance analysis (ANOVA). For the minimum level of statistical significance $p < 0.05$ was used and $p < 0.001$ was used as statistically high significance. For the knowledge level evaluation 1 point was allotted to each right answer and null point to the wrong one. Four answers were determined as a cut off point (borderline value) and the knowledge score was divided into two levels: examinees with >4 points have satisfactory level of knowledge, and those with ≤ 4 points unsatisfactory. Analyses were carried out by using SPSS software package (version 16).

Results

This study included 228 respondents aged 19-49 years, 28.28 ± 7.9 on average. Table 1 presents knowledge of our respondents about the cervical cancer and their attitude pertaining to the HPV vaccine. With regard to knowledge, differences among three groups of respondents are significant, except those concerning recommendations for the cervical cancer prevention ($p = 0.154$). Patients, in comparison with students and midwives have lower level of knowledge of the causative agents of the cervical cancer, genital warts, oncogenic HPV types, about screening to the cervical cancer as well as about the target population

Table 2. Total Number of Right Answers

	students n (%)	midwives n (%)	women n (%)	Total n (%)	p value
0	0 (0.0) ^{b,c}	0 (0.0) ^{b,c}	1 (1.3) ^{b,c}	1 (0.4)	$<0.001^d$
1	0 (0.0)	0 (0.0)	5 (6.7)	5 (2.2)	
2	1 (1.5)	3 (3.5)	21(28.0)	25(28.0)	
3	1 (1.5)	14(16.5)	14(18.7)	29(12.7)	
4	9(13.2)	38(44.7)	17(22.7)	64(28.1)	
5	16(23.5)	22(25.9)	13(17.3)	51(22.4)	
6	19(27.9)	4 (4.7)	4 (5.3)	27(11.8)	
7	19(27.9)	4 (4.7)	0 (0.0)	23(10.1)	
8	3 (4.4)	0 (0.0)	0 (0.0)	3 (1.3)	
	68(100.0)	85(1000.0)	75(100.0)	228(100.0)	

^at-test; ^bX²-test; ^cANOVA; ^ddifference significant at $p < 0.01$

Table 3. Measures for the Cervical Cancer Prevention

Variables	students 68 (%)	midwives 85 (%)	women 75 (%)	p value
Gynecologic examinations				
Once a year	24(38.1) ^{b,c}	35(41.2) ^{b,c}	48 (64.0) ^{b,c}	0.003 ^d
Once a two year	6 (9.5)	22(25.9)	12 (16.0)	
Rarely	33(52.4)	28(32.9)	15 (20.0)	
Pap test				
Once a year	20(31.7) ^{b,c}	33(38.8) ^{b,c}	24 (32.0) ^{b,c}	0.005 ^d
Once a two year	9(14.3)	21(24.7)	32 (42.7)	
Rarely	34(54.0)	31(36.5)	19 (25.3)	

^at-test; ^bX²-test; ^cANOVA; ^ddifference significant at $p < 0.01$

Table 4. Sources of Information

Sources of information	students 68 (%)	midwives 85 (%)	women 75 (%)	p value
Gynecologist	40 (58.8) ^{b,c}	36 (42.4) ^{b,c}	43 (57.3) ^{b,c}	0.001 ^d
Internet	14 (20.6)	16 (18.8)	19 (25.3)	
Radio/TV	5 (7.4)	24 (28.2)	13 (17.3)	
Professional literature	9 (13.2)	9 (10.6)	0 (0.0)	

^at-test; ^bX²-test; ^cANOVA; ^ddifference significant at $p < 0.01$

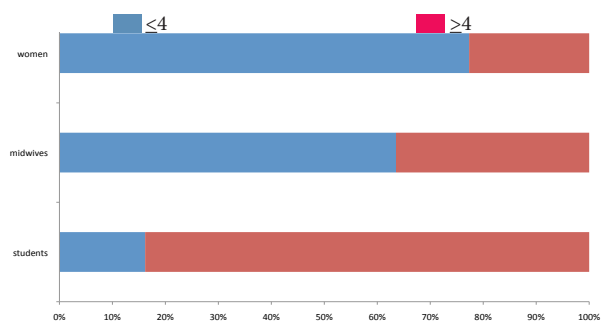


Figure 1. Right Answers-Intervals

for vaccine and its role. As for knowledge pertaining to cause of the cervical cancer, HPV types as its causative agents, screening, role of the condom in protection against HPV as well as to population HPV vaccine is intended to, difference among respondents of all three groups is statistically significant ($p < 0.001$).

In Table 2 presented is the total number of right answers for each group of respondents; difference in number of their right answers is statistically significant ($p < 0.001$). Women had the smallest number of right answers and the students the largest one. Only three students had 8 right answers and it was the maximum (4.4%).

Right answers-intervals are presented in the Figure 1. Five and more right answers were obtained from 83.8% students, 35.3% from midwives and 22.7% from women and this is considered the satisfactory level of knowledge.

Concerning application of the gynecologic prevention measures (Table 3), two thirds of women have a gynecologic examination once a year, while students and midwives have it less frequently. As for the PAPA testing, two thirds of patients have it once a year or the PAPA test once in the course of two years compared with students (1/2) and midwives (2/3).

Table 4 presents sources of information with regard to the cervical cancer. Dominant sources for women are health professionals (nurses-midwives and gynecologists). Students and midwives also use professional literature ($p < 0.001$).

Discussion

This study was designed to examine differences in the knowledge level pertaining to the cervical cancer and HPV vaccine among students of the health care, midwives and women as patients in primary health care. According to the obtained results students showed the highest level of knowledge (more than 4 right answers had 83.8% of the students) and women showed the lowest level about the cervical cancer (less than one in four women showed satisfactory level, 22.7%). Midwives working in their professional practice showed unsatisfactory knowledge, as slightly more than one third of them has more than 4 right answers (35.3%). Regarding the prevention measures, they are most often applied by women, less often by midwives and the least frequently by students. This could be explained by the students' age (they are the youngest; 20.6 ± 1.8 years). Numerous studies examined knowledge and attitude toward the cervical cancer, among women (Tran et al., 2011; Donati et al., 2012) or

medical professionals (midwives, physicians or students), (Mandic et al., 2011; Dugandzija et al., 2012) but looked at them separately. In some studies satisfactory level of women's knowledge of the cervical cancer prevention was confirmed (Nganwai et al., 2008; Ertem, 2009), but according to other studies that level was very low (Mutuyaba et al., 2006; Savas and Taskin, 2011) and it was in correlation with the educational level (Mutuyaba et al., 2006). We did not examine influence of the women's educational level because inclusion criteria for the study was the secondary level of education (as well as in other two groups of respondents).

Some studies have confirmed that nurses-midwives have satisfactory level of knowledge of the cervical cancer and its prevention (Nganwai et al., 2008; Ertem, 2009), while some other studies showed the opposite, where half of midwives have never done the Pap test low (Mutuyaba et al., 2006; Savas and Taskin 2011). However, our results are not satisfying as well, since more than one third of midwives (36.5%) did Pap test less than once a two year.

Studies of students' knowledge of the HPV have shown that the students know about HPV, but their knowledge of possible consequences of the HPV infection is insufficient (Yacobi et al., 1999; Baer et al., 2000). Some studies investigated role of the nurses-midwives in health promotion programmes and confirmed importance of education both of patients and their families (Duval et al., 2009; Kent et al., 2010), as well as necessity of the teaching programmes innovation and implementation of the new educational methods offering apparent results when the cervical cancer is concerned (Gu et al., 2013).

As for recommendations for the cervical cancer prevention, there are no significant differences among our respondents. Women have shown the highest knowledge of the cervical cancer prevention and this is an important precondition for prevention measures application. In comparison with the students and midwives, women have more often gynecologic examinations and Pap test. Negative patients' experiences in the primary health care as well as lack of knowledge of the cervical cancer are also cause of the negative attitude or hesitation regarding prevention measures application (Kestic et al., 2007; Matejic et al., 2008). Some studies have shown that even female medical professionals who are responsible for the opportune screening of the cervical cancer are not ready to do it for themselves (Mutuyaba et al., 2006).

Our results indicated that the main source of reliable information related to screening and Pap test for women were gynecologists (57.3%), which corresponds with results from other studies (Gichangi et al., 2003; Donati et al., 2012). However, the role of media and information received through them is very important for the prevention, as they can reach majority of women in the population, independently of their visit to health care services. Another study conducted in the same country, but in the other town, showed that both students of medicine and patients most often obtained information on the cervical cancer through media. (Dugandzija et al., 2012)

In conclusion, upcoming generation of midwives (currently students of Higher Medical School) have a highest level of knowledge related to preventive

practices to the cervical cancer. Role of the midwives in programming the cervical cancer prevention is exceptionally important as being active promoters of preventive practices for women. Therefore, current midwives should improve their own level of knowledge related to preventive practice, as well as their personal compliance to the recommended practices.

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