RESEARCH ARTICLE

Attitudes and Practice of Cervical Cancer Screening among Female University Students from 25 Low, Middle Income and Emerging Economy Countries

Supa Pengpid[1,2], Karl Peltzer[1,3,4]*

Abstract

Cervical cancer, the third commonest cancer in women worldwide, can be prevented through early detection by cervical screening (Pap smear). The aim of this study was to investigate the attitudes and practice of cervical cancer screening among female undergraduate university students from 25 low, middle income and emerging economy countries. Using anonymous questionnaires, data were collected from 9,194 female undergraduate university students aged 18-26 years (mean age 20.9, SD=2.0) from 26 universities in 25 countries across Asia, Africa and the Americas. Overall, 11.6% of the female students indicated that they had conducted one or more times a cervical (Pap) smear test; 8.3% among 18-20 year-olds and 15.6% among 21-26 year-old students. There was considerable country variation on having had a cervical (Pap) smear test among 21-26 year-old female university students, ranging from 59.2% in Colombia and 50.9% in Barbados to 0% in India and 1.0% in Tunesia. Logistic regression showed that cervical cancer screening importance or positive attitude were highly associated with the cervical screening practice. Moreover, risky sexual behaviour and tobacco use, two cervical cancer risk factors, were associated with screening. Cervical cancer screening practices were found to be inadequate and efforts should be made to develop programmes that can increase the uptake of cervical cancer screening.

Keywords: Cervical cancer screening - attitude - practice - risk factors - university students - multi-country study

Introduction

Cervical cancer is the third most common cancer in women, accounting for 9% of all female cancers. It is the seventh most common cancer in the world, and is more common in less developed countries-where it accounts for more than 85% of the global burden of cancer (Globocan, 2012). Cervical screening offers protective benefits and is associated with a reduction in the incidence of invasive cervical cancer and cervical cancer mortality (Peirson et al., 2013). The United States Preventive Services Task Force (USPSTF, 2012) and the American Cancer Society (ACS) recommend that all women should begin cervical cancer screening at age 21, every three years for women ages 21-65. Several other countries such as Barbados (Pan American Health Organization, 2013) and South Africa (Botha et al., 2010) also recommend to begin cervical cancer screen at the age of 21, while other countries such as Singapore, Jamaica, Colombia and Venezuela follow the recommendations of the World Health Organization (2013), namely to begin cervical cancer screening with the age of 25 years (Pan American Health Organization, 2013.

Various studies among female university students

in low and middle income countries have reported a low participation rate in screening for cervical cancer, e.g., 6% in Bhutan (Dhendup and Tshering, 2014), 12% in Ghana (aged 20 to 35 years) (Abotchie and Shokar, 2009), 6% in Malaysia (Al-Naggar et al., 2010), 0% to 8.3% in Nigeria, 0% (Ayinde et al., 2004; Akujobi et al., 2008; Oladepo et al., 2008; 2009; Aniebue and Aniebue, 2010), and 10.7% among sexually active female students in South Africa (Hoque, 2013). While studies among female university students in high income countries found a higher participation rate in screening for cervical cancer, e.g. 44.8% in Greece (Bakogianni et al., 2012) and 41% in USA (Durvasula et al., 2006).

A number of studies have investigated possible reasons for a low participation in cervical cancer screening among female university students, including ignorance of the existence of such a test, ignorance of the importance of screening or lack of risk awareness and the risk factors to the development of cervical cancer, absence of symptoms and lack of awareness of centers where such services are obtainable, and lack of motivation to get screened (Akujobi et al., 2008; Oladepo et al., 2008; 2009; Abotchie and Shokar, 2009; Aniebue and Aniebue, 2010; Ghotbi and

*[1]Asean Institute for Health Development, Mahidol University, Salaya, Phutthamonthon, Nakhonpathom, Thailand, [2]Department of Research Development and Innovation, [3]Department of Psychology, University of Limpopo, Turfloop Campus, Sovenga, [4]HIV/AIDS/STIs/and TB (HAST) Research Programme, Human Sciences Research Council, Private Bag, Pretoria, South Africa *For correspondence: karl.pel@mahidol.ac.th*

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Anai, 2012; Oshima and Maezawa, 2013). Risk factors for cervical cancer include genital, syphilis/gonorrhoea history, multiple sexual partners and intercourse at an early age, chemical, dietary and life factors, cigarette smoking, barrier and oral contraceptives and poor personal hygiene (Chou 1991; Murthy and Mathew, 2000).

The aim of this study was to investigate the attitude and practice of cervical cancer screening among female university students from low, middle income and emerging economy countries.

Materials and Methods

Sample and procedure

This cross-sectional study was carried out with a network of collaborators in participating countries (see Acknowledgments). The anonymous, self-administered questionnaire used for data collection was developed in English, then translated and back-translated into languages (Arabic, Bahasa, Chinese, French, Lao, Russian, Spanish, Thai, Turkish) of the participating countries. The study was initiated through personal, academic contacts of the principal investigators. These collaborators arranged for data to be collected from 400 male and 400 female undergraduate university students aged 16-30 years by trained research assistants in 2013 in 1 or 2 universities in their respective countries. The universities involved were located in the capital cities or other major cities in the participating countries. Research assistants working in the participating universities asked classes of undergraduate students to complete the questionnaire at the end of a teaching class. Classes were recruited according to timetable scheduling in a quasi-random pattern. We included no incentive for participation, and there were no penalties for refusing to complete the survey. The students who completed the survey varied in the number of years for which they had attended the university. A variety of majors were involved, including education, humanities and arts, social sciences, business and law, science, engineering, manufacturing and construction, agriculture, health and welfare and services. Informed consent was obtained from participating students, and the study was conducted in 2013. Participation rates were in most countries over 90%. Ethics approvals were obtained from all participating institutions.

Measures

Cervical cancer screening practice and attitude: Women were asked, "How long has it been since you had a cervical (Pap) smear test? Response options ranged from 1=never to 4=more than 3 years. Further, they were asked about how important it is "For women to have a regular cervical smear test." Response options ranged from 1=of very low importance to 10=of very high importance (Wardle and Steptoe, 1991).

Sexual variables: the 'number of sexual partners in the past 12 months' was determined by the response to the question: 'How many sexual partners have you had in the past 12 months?' The variable was dichotomised into 0 or 1 and 2 or more partners. Further, participants were asked, "During the past 3 months did you use a condom with your

primary partner?" Response options ranged from 1=never to 5=Every time; "every time" was defined as "consistent" condom use. Finally, female students responded to the question, "Have you ever been diagnosed with a sexually transmitted infection?"

Tobacco use was assessed with the question: Do you currently use one or more of the following tobacco products (cigarettes, snuff, chewing tobacco, cigars, etc.)? Response options were "yes" or "no" (World Health Organization, 2008).

Socio-demographic questions included age, gender, marital status, and socioeconomic background was assessed by asking survey participants to rate their family background as wealthy (within the highest 25% in their "country", in terms of wealth), quite well off (within the 50% to 75% range for their country), not very well off (within the 25% to 50% range from "country"), or quite poor (within the lowest 25% in their country, in terms of wealth) (Wardle and Steptoe, 1991).

Data analysis

The data were analysed using IBM SPSS (version 20.0). The proportion of BSE knowledge, practice and attitude were calculated as a percentage and means and standard deviations, respectively. Logistic regression analysis was done with STATA to calculate the crude odds ratio (OR) with 95% confidence interval (CI) to determine the associations between BSE attitude and BSE practice (any practice coded as 1, and no practice coded as 0) and age was adjusted for. The country was entered as the primary sampling unit for survey analysis in order to achieve accurate CIs, given the clustered nature of the data.

Results

Cervical cancer screening practice and attitude

The final sample included 9194 female undergraduate university students aged 18-26 years (mean age 20.9, SD=2.0). Overall, 11.6% of the female students indicated that they had conducted one or more times a cervical (Pap) smear test; this was 8.3% among 18-20 year-olds and 15.6% among 21-26 year-old students. There was considerable country variation on having had a cervical (Pap) smear test, among 21-26 year-old female university students, ranging from 59.2% in Colombia and 50.9% in Barbados to 0% in India and 1.0% in Tunisia. Female students, aged 21-26 years, from a large group of participating countries (Southeast Asian countries, India, Pakistan, China, Tunisia, Turkey, Cameroon, Ivory Coast, Madagascar, Mauritius) reported having had less than 10% a cervical (Pap) smear test, while a number of participating countries reported rates above 20% including countries in the Caribbean and South America, Namibia, Nigeria and South Africa, and Russia.

On a scale from 1-10 (10 being the most important), female students rated the importance of having a regular cervical (Pap) smear test as an average of 7.2. There was also a considerable variation in the ratings of the importance of having a regular cervical (Pap) smear test ranging from below a mean of 6.0 in Madagascar, Nigeria, Turkey and India to a mean of above 8 in Colombia, Ivory

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Table 1. Cervical Cancer Screening Practice and Attitude by Country

| Country | | Sample | Had cervical (Pap) smear test (years) | | | Cervical (Pap) smear test Importance (range 1-10) | Attitude-Practice Statistic |
| | | | 18-26 | 18-20 | 21-26 | | |
		No.	%	%	%	M (SD)	
All		9194	11.6	8.3	15.6	7.2 (3.1)	<0.001
Caribbean and South America	Barbados	221	31.7	11.2	50.9	7.6 (2.7)	<0.001
	Grenada	216	28.2	8.9	39.4	7.8 (2.6)	<0.001
	Jamaica	514	11.3	6.4	24.6	7.2 (3.0)	<0.001
	Colombia	451	38.1	22	59.2	8.2 (2.7)	<0.001
	Venezuela	275	22.9	12.1	34.1	6.3 (3.3)	<0.001
Sub-Saharan Africa	Cameroon	351	2.8	2.2	3.3	7.5 (2.7)	0.389
	Ivory Coast	338	4.3	3.9	4.9	8.1 (3.7)	0.443
	Madagascar	323	2.8	2.4	4.3	5.1 (3.3)	0.143
	Mauritius	314	3.2	4.8	1.8	7.4 (2.7)	0.121
	Namibia	257	24.1	10.3	34	7.7 (2.8)	<0.001
	Nigeria	244	31.1	33	30	5.1 (3.9)	<0.001
	South Africa	345	19.1	15.4	21.9	7.5 (3.1)	0.214
North Africa and Central Asia	Tunesia	347	1.7	2.6	1	6.7 (3.5)	0.712
	Turkey	377	4.2	4	4.7	5.3 (3.8)	0.075
	Russia	368	34.2	33.8	35.3	7.1 (2.8)	0.108
	Kyrgyzstan	475	14.3	11	15.6	8.0 (2.7)	0.483
South Asia and China	Bangladesh	256	11.7	11.4	12.1	6.4 (3.1)	0.037
	India	259	7.1	7.1	0.0*	5.7 (3.9)	0.101
	Pakistan	457	2.4	2.2	3.3	9.1 (1.2)	0.54
	China	636	4.7	3.7	7.1	6.9 (2.1)	0.04
Southeast Asia	Indonesia	305	2.3	1.5	3.7	8.5 (2.8)	0.164
	Laos	528	4.2	8.7	3.5	7.7 (3.2)	0.002
	Philippines	385	3.6	3.6	4	6.9 (2.6)	0.541
	Singapore	414	5.8	6.7	4.9	6.4 (2.4)	0.08
	Thailand	599	4.2	2.2	7.1	7.6 (2.6)	0.242

*Only 14 cases in this age group in India

Table 2. Relationship between Sociodemographics, Cancer Risk Behaviour and Cervical Cancer Screening Practice

Variables		Practice No. (%)	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
Marital status	Single (n=8338)	978 (11.0)	1	1
	Married (n=361)	159 (38.5)	4.13 (3.27-5.22)***	3.20 (2.50-4.09)***
Economic family background	Wealthy (n=360)	57 (14.6)	1	1
	Quite well off (n=4574)	540 (12.1)	0.73 (0.54-0.99)*	0.88 (0.60-1.31)
	Not well off (n=3611)	414 (11.3)	0.63 (0.46-0.86)**	0.93 (0.62-1.37)
	Poor (n=642)	102 (16.0)	1.00 (0.701.44)	1.19 (0.76-1.87)
Sexual activity in the past 12 months	Not sexually active (n=5808)	414 (6.6)	1	1
	Sexually active (n=3173)	718 (23.9)	4.06 (3.55-4.64)***	3.62 (2.98-4.39)***
Number of sexual partners in the past 12 months	0-1 (n=7821)	902 (10.9)	1	1
	2 or more (n=1140)	188 (26.7)	3.15 (2.61-3.80)***	1.60 (1.30-1.99)***
Condom use in the past 3 months	Consistent (n=765)	198 (23.7)	1	1
	Inconsistent (n=2485)	512 (15.6)	0.67 (0.56-0.80)***	0.79 (0.65-0.96)*
Sexually transmitted infection	Never (n=8502)	1073 (12.2)	1	1
	Ever (n=415)	107 (19.7)	2.49 (1.95-3.17)***	1.16 (0.89-1.49)
Current tobacco use	No (n=8377)	987 (11.5)	1	1
	Yes (n=612)	102 (17.0)	1.66 (1.32-2.08)***	1.34 (1.03-1.75)*
Benefits of cervical cancer screening rating	1-7 (n=3842)	342 (9.5)	1	1
	8-10 (n=5341)	801 (14.8)	1.56 (1.36-1.79)***	1.83 (1.53-2.20)***

Coast, Pakistan and Indonesia. The predictive value of attitudes towards cervical cancer screening was evaluated by logistic regression with age as a control variable for each country. For this analysis, cervical cancer screening was coded as never (0) or ever (1), and only p-values are reported. Overall, and in nine countries a positive relationship between cervical cancer screening attitude and practice was found (Table 1).

Cervical cancer risk behaviour and cervical cancer screening practice

Logistic regression analyses found that the cancer risk behaviours of being sexually active, having multiple sexual partners, consistent condom use, current tobacco use and high importance of cervical cancer screening were found to be associated with the prevalence cervical cancer screening practice (Table 2).

Discussion

The study found, among a large sample of female university students across 25 low and middle and emerging economy countries, an overall low participation rate in cervical cancer screening, which is comparable to previous studies in low and middle income countries (Ayinde et al., 2004; Akujobi et al., 2008; Oladepo et al., 2008; 2009; Abotchie and Shokar, 2009; Al-Naggar et al., 2010; Aniebue and Aniebue, 2010; Hoque, 2013;

Dhendup and Tshering, 2014). In particular because of the high burden cervical cancer in low and middle income countries, more should be done to promote cervical cancer screening in this population. This is especially important in those countries participating in this study with a very low participation rate (0-7.1%) among 21-26 year-old students from Southeast Asian countries, India, Pakistan, China, Tunesia, Turkey, Cameroon, Ivory Coast, Madagascar, and Mauritius. Country variations in the prevalence of cervical cancer screening may be due to various country specific factors, including cervical cancer screening policy, publicity on cervical cancer, systematic and active promotion of screening, accessibility of cancer screening services, and social-and cultural factors specific to the Asian population (Lu et al., 2012; Dhendup and Tshering, 2014).

Further, the study found that women who rated cervical cancer screening as more important carried it out more often. This finding is in agreement with previous studies (Akujobi et al., 2008; Abotchie and Shokar, 2009; Aniebue and Aniebue, 2010; Oshima and Maezawa, 2013). However, in particular in female university students from Ivory Coast, Indonesia and Pakistan, who gave a high rating of cervical cancer screening importance (mean score above 8), fewer than 5% reported cervical cancer screening practice. It appears factors other than the importance evaluations are relevant in establishing a cervical cancer screening practice. For example, women in this younger age group may believe that cervical cancer screening is important in general but only at an older age. In a number of participating study countries the recommended beginning of cervical cancer screening was 25 years. An interesting finding was that sexual risk behaviour and tobacco use, being cervical cancer risk factors, were associated with cervical cancer screening. This finding may have implications for cervical cancer screening programmes.

Study limitations: This study had several limitations. The study was cross-sectional, so causal conclusions cannot be drawn. The investigation was carried out with students from one or two universities in each country, and inclusion of other centres could have resulted in different results. University students are not representative of young adults in general, and the cervical cancer screening attitude and practice may be different in other sectors of the population. Future studies of this nature should include knowledge, attitude and practice of Human Papillomavirus (HPV), the main cause of cervical cancer, vaccination (Ghojazadeh et al., 2012; Rashwan et al., 2012; Hoque and Ghuman, 2013).

In conclusion, results show that cervical cancer screening practices among this large sample of female undergraduate university students was inadequate. Efforts should be made to develop educational programmes that can increase the importance related to cervical cancer as well as the practice of cervical cancer screening.

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