

Knowledge and practice for cervical cancer among female primary school teachers in Phnom Penh, Cambodia: A cross-sectional phone-based survey

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Abstract: Cervical cancer is a cancer with evidence-based and cost-effective preventive measures; Human Papilloma Virus (HPV) vaccination for school girls and cancer screening for women. In Cambodia, cervical cancer accounts for an estimated 11.4% and 10.4% of women's cancer and deaths in 2020, respectively. This study aimed to identify the knowledge of cervical cancer, its information sources, and the experiences of cervical cancer screening among female primary school teachers, who are key influencers of HPV vaccination. A cross-sectional study was conducted using telephone interviews with 100 female primary school teachers in Phnom Penh, the capital of Cambodia. All 100 participants had heard of cervical cancer, 94 (94%) had heard of screening, and 49 (49%) had ever undergone a screening. When asked about their knowledge regarding cause(s), symptom(s), detection, and treatment(s) of cervical cancer, 31%, 44%, 35%, and 55% respondents said "Do not know". Those who did not reply "Do not know" were asked open-ended questions. Many of their answers were judged as "incorrect" by gynecologists. Consequently only 1%, 38%, 63% and 28% of respondents replied with at least one correct answer regarding cause(s), symptom(s), detection and treatment(s) respectively. The most common sources of information were family and friends, followed by doctors, television, and the Internet. Among female primary school teachers with an above-average educational level, their knowledge of cervical cancer was generally low. To promote cervical cancer prevention, it is necessary to provide correct knowledge in a broad and accessible manner through involvement of local medical doctors and healthcare providers.

Keywords: cervical cancer, screening, knowledge, attitude and practice, Cambodia

Introduction

Cervical cancer is a common public health problem worldwide, ranking as the fourth most common cancer among women (1). The highest incidence and mortality rates for cervical cancer are consistently observed in low- and middle-income countries (LMICs), where the majority of women are never screened for the disease (1-3). Without an urgent scale-up of services, the cervical cancer burden will increase to almost 460,000 deaths by 2040 in LMICs (2). Fortunately, cervical cancer is a cancer with evidence-based and cost-effective preventive measures. These include human papillomavirus (HPV) vaccination for girls as primary prevention and cervical cancer screening for women linked to treatment in the early stage as secondary prevention. Cervical cancer can be avoided in the future

through implementing these measures (4,5). In many LMIC countries, where these preventive measures are not available, women have little knowledge of cervical cancer and its preventive measures (6-11). To promote screening among women to prevent cervical cancer, their own knowledge and understanding of cervical cancer are essential.

In Cambodia, one of the LMICs in South-east Asia, 5.93 million women aged 15 years and older are at risk for cervical cancer (12). In 2020, the number of cervical cancer incidences and mortality were estimated to be 1,135 and 634, accounting for 11.4% and 10.4% of female cancers, respectively (1). If no progress is made in cervical cancer prevention, the number of incidences and mortality are expected to increase by 1,790 (1.6-fold) and 1,090 (1.7-fold), respectively, 20 years after 2020. (1). The Ministry of Health of Cambodia

considers cervical cancer to be one of the most important health issues and has attempted to establish a screening program since 2007 (13) in addition to preparing for HPV vaccination in 9-year-old school girls (13-16). However, according to the 2016 STEP survey, only 11.3% of Cambodian women aged 18-69 years have ever been screened, indicating that cervical cancer screening is not yet widespread (17). Although the knowledge and understanding of the target women are essential to encourage them to undergo cervical cancer screening, there is limited information regarding knowledge and practice concerning cervical cancer among women in Cambodia (10,18,19). Since HPV vaccination is planned to be introduced as a routine immunization to 9-year-old girls in primary schools in 2023, primary school teachers are considered key influencers to school children and their parents who make a decision for vaccination (20). Promoting the understanding of cervical cancer among primary school teachers is indispensable to increase the acceptance and uptake of the vaccine by children and their parents. When female school teachers properly understand the importance of screening, it would also contribute to increase the administration of cervical cancer screening. Because of the above reasons, female primary school teachers were chosen as a target population.

This study aimed to identify the knowledge of cervical cancer, its information sources, and the experience of cervical cancer screening among female primary school teachers in Phnom Penh, Cambodia.

Methods

Study design

A cross-sectional phone-based survey was conducted in July 2020 among a sample of primary school teachers in Phnom Penh, the capital of Cambodia. The survey was initially designed to be conducted through face-to-face interviews at schools; however, it was changed to a phone-based interview because schools were closed and meetings and travel were restricted due to COVID-19.

Study population, sample size, and sampling

Our study was comprised of female teachers aged over 30 years (*i.e.*, the target age of cervical cancer screening based on the Cambodian national operational standard for cervical cancer screening (16) currently working in primary schools in Phnom Penh. Prior to conducting this study, full approval and cooperation were obtained from the Ministry of Education Youth and Sports, Cambodia, and Phnom Penh Municipality Department of Education Youth and Sports. Based on the agreement, the latest list of public primary schools and in-service teachers with their personal phone numbers was provided. In Phnom Penh, there were 158

public primary schools with 4,116 teachers, including 2,944 women. For the 2,944 study participants, the appropriate sample size was calculated to be 100, with a confidence interval of 95% and a standard error of 10%. In total, 100 study participants were recruited from randomly selected primary schools in four urban and four peri-urban districts of Phnom Penh.

Data collection method and instrument

To conduct the interviews, a structured questionnaire was developed, which consisted of demographic information, knowledge of cervical cancer, sources of information, and experience of cervical cancer screening.

For knowledge, the participants were asked about the cause, symptoms, detection, and treatment of cervical cancer. The participants were asked if they knew (yes or no) and, if yes, what they knew as an open-ended form.

The questionnaire was finalized through a pilot test using eight women to ensure that the questions are easy to understand and have a logical order. All data were collected via telephone interview conducted by trained interviewers. Each interviewer conducted three to four telephone interviews per day for up to 20 min each.

Data analysis

The data collected by telephone interviews were written down on the questionnaire sheet on the site, then simultaneously entered into EpiData (version 3.1) by two interviewers, and exported to Stata (version 16.1). Descriptive statistical analysis was performed to assess the frequencies of all variables.

Regarding the open-ended free responses on knowledge of cervical cancer (cause, symptoms, detection, and treatment), a panel of four gynecology specialists (two Cambodians and two Japanese) independently judged each answer, real expression by respondents, as "correct", "incorrect", or "unclassifiable", based on their clinical experiences and expertise. When three or more gynecologists judged "correct" or "incorrect", that answer was considered "correct" or "incorrect", respectively by the panel. Others were categorized as "unclassifiable".

A chi-square test was used to identify the association between characteristics and cervical cancer screening practices. Statistical significance was set at $p < 0.05$.

Ethical clearance

This study was ethically approved by the Cambodia National Ethics Committee for Health Research, Ministry of Health, Cambodia (No. 161 NECHR) and Institutional Review Board for Clinical Research, National Center for Global Health and Medicine, Japan

(NCGM-G-003434-00).

Informed consent was obtained from all participants before participation. The purpose of the study and assurance to withdraw at any step of the study without any disadvantages were fully explained and telephone interviews were conducted privately.

Results

Characteristics of study participants

Table 1 presents the characteristics of the study participants. A total of 100 women, 51 (51%) from four schools in urban districts and 49 (49%) from four schools in peri-urban districts, participated in this study. Their mean age was 47.9 ± 6.6 years, with 37 participants aged over 50 years. Of the 100 participants, 69 (69%) had graduated from high school or higher. The mean number of years of teaching experience was 26.7 ± 7.3 years. Most women had been married (88%) and had experience(s) of being pregnant (82%).

Knowledge of cervical cancer

All the study participants had heard of "cervical cancer", 94 (94%) had heard of "cervical cancer screening" and 91 (91%) had heard of "vaccination to prevent cervical cancer". When asked if they knew about the cause, symptoms, detection, and treatment of cervical cancer, "Don't know" was answered by 31 (31%) respondents for the causes, 44 (44%) for symptoms, 35 (35%) for detection, and 55 (55%) for treatment.

Among women who did not answer that they "Do not know", open-ended questions were asked regarding causes, symptom(s), detection, and treatment. One respondent could answer at least one or multiple answers to each open question. Each answer was labeled correct, incorrect, and unclassifiable, as shown

Table 1. Characteristics of the study participants (n = 100)

Contents		n	(%)
Location of school	Urban district	51	(51%)
	Peri-urban district	49	(49%)
Age group	31-40	22	(22%)
	41-50	41	(41%)
	51-60	37	(37%)
Educational level	Secondary school	26	(26%)
	High school	43	(43%)
	College or higher	31	(31%)
Teaching experience	≤ 10	4	(4%)
	12-20	19	(19%)
	21-30	38	(38%)
	31-40	39	(39%)
Marital status	Married	79	(79%)
	Divorced/widowed	9	(9%)
	Not married	12	(12%)
Parity	Yes	82	(82%)
	No	18	(18%)

in Supplemental Table S1 (<https://www.ghmopen.com/site/supplementaldata.html?ID=53>). Then, per study subject, some women replied "correct answer(s) only", or "at least one correct and other answer(s)" or "incorrect and/or unclassifiable answer(s) only". "Other answer(s)" here means either incorrect or unclassifiable answer(s).

As shown in Figure 1, of those who did not reply "Do not know", 1.5% (1/67), 68% (38/56), 97% (63/65), 62% (28/45) replied at least one correct answer regarding cause(s), symptom(s), detection, and treatment(s) respectively.

Consequently, among 100 study subjects, only 1, 38, 63, 28 respondents answered at least one correct answer(s) to cause(s), symptom(s), detection, and treatment.

Sources of information on cervical cancer

Figure 2 shows the sources of information on cervical cancer, screening, and vaccination to prevent cervical cancer. Although these items were asked separately, the sources of information were generally similar. The most common sources of information were relatives, friends, and colleagues, followed by doctors, television, and the Internet. Less than 10 answered radios, conferences, and newspapers. A small number of respondents reported that they actively obtained information from books, posters, and distributed leaflets.

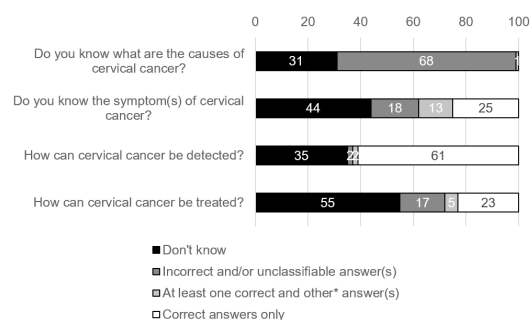


Figure 1. Knowledge of causes, symptoms, detection and treatment of cervical cancer.

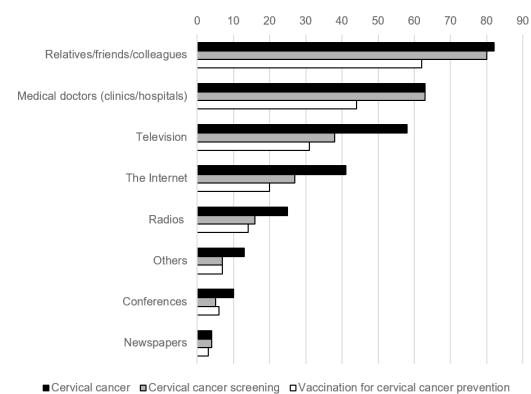


Figure 2. Sources of information about cervical cancer, screening, and vaccination (n = 100, multiple choice).

Table 2. Number and proportion of women who reported ever undergoing cervical cancer screening

Variables	Group	Total	Ever undergo cervical cancer screening		<i>p</i> value (χ^2 test)
		<i>n</i>	<i>n</i>	(%)	
Location of school	Urban	51	25	(50.0)	0.841
	Rural	49	24	(49.0)	
Age	31-40	22	13	(59.1)	0.361
	41-50	41	21	(51.2)	
	51-60	37	15	(40.5)	
Educational level	Secondary school	26	9	(34.6)	0.197
	High school	43	22	(51.2)	
	Collage and higher	31	18	(58.1)	
Marital status	No	12	0	(0)	< 0.001
	Yes	88	49	(55.7)	
Experience of health facility visit due to vaginal problem(s)	Yes	64	45	(70.3)	< 0.001
	No	36	4	(11.1)	
Provided at least one correct answer on cause	Yes	1	0	(0)	0.325
	No	99	49	(49.5)	
Provided at least one correct answer on symptom	Yes	38	20	(52.6)	0.570
	No	62	29	(46.8)	
Provided at least one correct answer on detection	Yes	63	34	(54.0)	0.195
	No	37	15	(40.5)	
Provided at least one correct answer on treatment	Yes	28	17	(60.7)	0.144
	No	72	32	(44.4)	

Experience of cervical cancer screening

Table 2 shows the number and proportion of study participants who underwent cervical cancer screening according to their sociodemographic characteristics. Among the 100 study participants, 49 (49%) had experience undergoing cervical cancer screening. Participants who were married and had experience in health facility visits due to vaginal problems were significantly more likely to have undergone cervical cancer screening ($p < 0.01$). Although not statistically significant, participants with higher educational levels were also more likely to have undergone cervical cancer screening. No particular tendency was observed between experience in cervical cancer screening and knowledge on cause, symptoms, detection, and treatment of cervical cancer.

Discussion

In this study, 100 female primary school teachers in Phnom Penh, Cambodia, were surveyed about their knowledge of cervical cancer, sources of information, and experiences of cervical cancer screening. A study in a rural province in Cambodia involving 440 women showed that 74 and 34% of women had heard about cervical cancer and screening (10). In another study on 443 female factory workers in Phnom Penh, 99% had heard of cervical cancer, but none of them knew about cervical cancer screening as a preventive measure (18). In contrast, in this study conducted among female primary school teachers in the Cambodian capital, over 90% of respondents had heard of both cervical cancer and screening. Open-ended questions were used for those

who did not reply "Do not know" regarding cause(s), symptom(s), detection, and treatment(s) and revealed that many of their answers were judged as "incorrect" by gynecologists. As hesitation to answering "no" or "don't know", is often observed in surveys in Southeast Asia (21), our results also indicate so-called Courtesy bias and need to draw attention for a future similar study. All the study participants in this study had received secondary or higher education, and approximately 70% had received high school or higher education, far more than the average Cambodian woman (22). However, our results showed limited knowledge on the cause, symptoms, detection and treatment of cervical cancer, similar to previous reports of women in general and factory workers (10,18).

Experience of cervical cancer screening shows, unsurprisingly, those who are married and had experience in health facility visits due to vaginal problems were significantly more likely to have undergone screening. Although half of study participants had been screened previously, there was no significant relation between their cervical cancer screening experiences and knowledge of cervical cancer.

The sources of information were family and friends, followed by doctors, television, and the Internet. The main sources of information about cervical cancer were the same for women in general, female factory workers, and female elementary school teachers: family, relatives/friends, doctors, and the Internet (10,18). This suggests that these are the priority sources of information on cervical cancer in Cambodia, and it is important that correct information emanates from all of these sources. Since the second largest source of information was medical doctors, medical doctors and

health care professionals might have a role in providing correct knowledge of cervical cancer to the general population of women. It is important for doctors and medical personnel to be aware of their important role in cervical cancer health education including the provision of correct information on prevention as well as diagnosis and treatment.

In Asian countries including Cambodia, there is a strong hesitation to publically talk about sexual and reproductive health, and education regarding sexual and reproductive health can be difficult (10,23-25). This may relate to the fact that the most common source of information on cervical cancer was family and friends. To disseminate knowledge about cervical cancer to the general female population, it is necessary to consider effective methods that take into account the cultural background, such as broadcasting of culturally tailored video/sound (26-28) and culturally competent health education by local doctors and healthcare providers (28).

On the other hand, it also suggests that correct knowledge does not necessarily lead directly to correct behavior. One of the barriers is that the concept and practice of prevention are not widely recognized in society, and people do not consider it necessary to visit health facilities unless they have serious symptoms (23,25,28). Some people do not want to be identified as having cervical cancer by screening for fear that having cervical cancer will lead to social stigma and interfere with their daily lives due to discrimination and prejudice in the community (23). Moreover, lack of access to treatment has a direct association between cervical cancer and death or giving up and is a factor that keeps people away from seeking health care (11,29,30). Along with the implementation of culturally and socially appropriate health education, an improved understanding of cervical cancer throughout society without discrimination and stigma is also essential, which will result in improved access to health care that allows for cervical cancer screening and subsequent treatment. At the same time, an environment that enables early treatment of cervical cancer; medical facilities and equipment, quality health personnel, and establishment of a medical insurance system are needed.

The limitations of this study are that the sample size was small (100 study participants), and that the target population was a group of women living in the vicinity of the capital city and being educated at the secondary school level or above, which is not representative of the general female population in Cambodia. Although it is difficult to generalize simply, this study provides important basic information on the understanding of cervical cancer among primary school teachers in Phnom Penh.

Conclusion

Cambodia started its way toward the elimination of

cervical cancer, in accordance with the global initiative (5). However, our study revealed that among female primary school teachers with above-average educational level in Cambodia, their knowledge of cervical cancer was generally low. It is important to improve the knowledge of primary school female teachers, who are potential key influencers of HPV vaccination to girls. To disseminate knowledge to promote cervical cancer prevention, it is necessary to provide correct knowledge in a broad and accessible manner through the involvement of local medical doctors and healthcare providers. Appropriate health education by health professionals may be an effective way to achieve this.

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