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Cervical cancer vaccination awareness and acceptance among the females of Punjab, Pakistan

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Abstract

Background: In developing countries like Pakistan, it is essential for health care professionals to have comprehensive knowledge regarding cervical cancer. **Methods**: A cross-sectional self-administered paper-based questionnaire was administered to patients from 2016 to 2018. This study included 200 females who attended the gynecological OPD of Lady Willingdon Hospital Lahore, Punjab. We evaluated cervical cancer knowledge, screening, prevention, and acceptance towards the vaccination. Data entry and analysis were performed using SPSS version 20. **Results**: The perception and knowledge related to cervical cancer (28%), screening (3%), prevention (3%), and vaccination (1%) among the females were poor, but a positive attitude was observed towards cervical cancer screening, vaccination, and awareness programs. An extreme lack of knowledge was observed regarding the risk factors associated with cervical cancer and the availability of the cervical cancer vaccine (99%). A significant association ($p > 0.005$) was noted among the level of education and awareness of cervical cancer, its mode of transmission, and screening tests. **Conclusion**: The knowledge and perception of cervical cancer and its vaccine among the females of Punjab, Pakistan were inadequate. Efforts should be made to prevent and control cervical cancer in Pakistan by establishing proper strategies, such as health education programs through health care providers and media support.

Keywords: cervical cancer, HPV, pap smear, screening, vaccination

Introduction

Cervical cancer is a significant global health burden. In 2018, approximately 570,000 newly diagnosed cases of cervical cancer were identified, which represented 6.6% of all female cancers. After breast cancer, it is the second most common malignancy and cause of cancer-related deaths in females.[1] During the early stages, cervical cancer is asymptomatic, but more severe symptoms, including abnormal vaginal bleeding, pelvic pain, and pain during sex, appear during later stages.[2] Even though cervical cancer is widespread, young females have a poor understanding of its cause (human papilloma virus, HPV), the risk factors involved, Pap (Papanicolaou) tests, and its prevention.[3,4] HPV remains the sole cause of cervical cancer.[5] Risk factors for cervical cancer include having multiple sexual partners, early onset of sexual activity, a high-risk sexual partner, smoking, history of sexually transmitted diseases (e.g., herpes simplex virus and *Chlamydia trachomatis*), continuous use of oral contraceptives, immunesuppression, low socioeconomic status, and a previous history of vulvar or vaginal squamous dysplasia.[6]

Developed countries with good socioeconomic status have regular cervical screening programs that have been proven to be effective in detecting and treating precancerous cervical lesions before they transform into cancer. In contrast, very few screening programs are available for women in developing countries. Around 90% of deaths are reportedly due to cervical cancer in developing countries. Also, HPV screening is just limited to the cervical area, and most programs do not include the screening of other anatomical areas of infection in either gender. Another drawback is the lack of screening programs for men.[7]

Different approaches have been used for the prevention and control of HPV worldwide. However, their implementation varies in different settings, based on the availability of resources. These consist of primary (vaccination program), secondary (screening), and tertiary (treatment) approaches.[8,9] Education is the most important factor for effective cervical cancer prevention and control programs.[10] Awareness regarding HPV and its vaccine is quite inadequate among young adults. This lack of information and knowledge results in significant psychosocial distress, fear, and anxiety when women are diagnosed with HPV.[11-13] Education can play a vital role in the awareness of young adults by helping them to adopt preventive measures to reduce the psychological stress of having a disease and decrease the proportion of HPV-positive patients who develop cervical cancer.[14]

Since the first licensure of the HPV vaccine in 2006, bivalent, quadrivalent, and 9-valent vaccines have been administered to patients and have proven to be safe and immunogenic. Also, they are capable of providing effective direct and indirect protection against HPV infections.[15] They can provide a high degree of protection against HPV type 16/18 infections and associated cervical lesions.[16,17] According to the recommendation of World Health Organization (WHO), the HPV vaccine should be given to girls aged 9–14, as the vaccine is highly effective prior to sexual debut.[18]

South Asia bears almost one fourth of the burden of cervical cancers. In India, there are an estimated 132,000 new cases each year, and about 74,000 deaths per year are reported due to cervical cancer.[19] The actual situation regarding the prevalence and severity of cervical cancer in Pakistan is unknown because it is an overlooked disease in this country. According to the WHO, the prevalence of cervical cancer has increased in Pakistani women from 0.009% in 2002 to 0.019% in 2008.[20] Due to the lack of data regarding its epidemiology and inadequate records at regional cancer registries and other institutions, there is no clear picture of the actual disease burden in Pakistan.[21] Most women are diagnosed at advanced stages of cervical cancer because of several factors, including a lack of knowledge and inadequate screening facilities. The cure rate is relatively low compared with developed countries in which the availability and accessibility to early detection reduce the rate of mortalities.[22] The reduced access to screening tests and vaccines for cervical cancer, along with barriers in knowledge, are some of the major challenges being faced in Pakistan. These factors also contribute to a high disease burden and late-stage disease diagnosis.[23]

For the successful establishment and implementation of preventive approaches or treatment strategies, it is important to understand the level of awareness of key populations regarding these issues. The aim of the present study was to evaluate the current level of knowledge regarding cervical cancer, its etiology, and its associated risk factors and to determine the acceptance of the cervical cancer vaccination among females at the Lady Willingdon Hospital, Lahore, Pakistan.

Methods

Study design. A cross-sectional self-administered paper-based questionnaire was conducted in Lady Willingdon Hospital in Lahore Pakistan. Two hundred females reported in the Gynecological OPD were interviewed after providing their informed consent. Females who were 14 years of age and older attending Gynecological OPD were recruited. The study was conducted from December 2016 to December 2018. Females who were mentally unwell and had cervical cancer were omitted from the current study.

Sample size. No significant regional study was conducted on this subject, so the sample size was calculated by calculating the prevalence to be 20%. The sample size was calculated by keeping the confidence level equal to 95%, the power of the study equal to 90%, and the level of significance equal to 5%. The margin of error was 0.05. The calculated size of the sample was 200.

Data collection tools and analysis. The questionnaire was created to address the objectives of this study by consulting earlier studies and literature accessible on the topic. The questionnaire had three main sections. The first section was focused on the sociodemographic profile and reproductive characteristics of the participants, including age, socioeconomic status, education level, marital status, addictive habits, history of contraceptive pill use, age at first intercourse, and the number of previous pregnancies. The second section consisted of questions related to the awareness and knowledge of cervical cancer, and the third section included questions related to cervical cancer prevention and the attitude of females towards cervical cancer awareness programs and vaccinations. To understand the habits and attitudes of the female population, the questionnaire focused on 5 theories that were revised from the Health Belief Model system. These included perceived barriers, perceived susceptibility, perceived severity, perceived benefits, and cues to action.[24] For data collection, the precise questionnaire was created, and the majority of the questions were close-ended (i.e., the answers were restricted to "Yes," "No," and "I do not know"). In addition, some questions had multiple options to get further views, and open-ended questions were also asked that were related to the characteristics of cervical cancer and its associated risk factors. Replies to the open-ended questions were classified into the most appropriate and already existing options. Cervical cancer awareness was evaluated using yes or no

questions before starting the survey. For example, "have you ever heard about cervical cancer?" If the subject replied yes, then the questionnaire about cervical cancer knowledge progressed further. If the answer was "no", the participants were asked questions directly from the next section. Data entry and analysis were performed using SPSS version 20 (IBM corporation, Lahore, Pakistan). For all variables, proportions and percentages were evaluated. Tables and graphs of relevant variables were computed. Bivariate relationships between nominal variables were assessed using the Chi-square test and Fisher exact test, and $p > 0.005$ was considered significant.

Ethical consideration. Ethical approval was obtained from the ethical review committee of the University of Lahore. Respondents were ensured about confidentiality and were briefed that their participation was voluntary, and they could withdrawal at any point in the study.

Results

The age range of patients was from 15 to 65, and the majority (45%) of females were between the age of 25 to 34. Out of 200 female patients, 68% were of low socioeconomic status, only 72 (36%) females were educated, and 88% of the respondents had husbands whose employment status was related to labor. About 174 (87%) females were above the age of 14 at the time of their first intercourse, and 140 (70%) females had 1 to 5 children at the time of answering the questionnaire. When inquired about their addictive habits, such as smoking or pan, naswar, and chalia (types of chewable tobaccos), 190 (95%) females did not have these addictive habits. Furthermore, when asked about the use of oral contraceptive pills, 11% of females answered yes. The demographic variables are shown in Table 1.

When the females were asked about if they had ever heard of cervical cancer before, 28% answered yes. When asked about their source of information regarding cervical cancer from those who replied yes, 18% of females answered that they had heard from their family, whereas 10% of females heard about cervical cancer through social media. In addition, only 5% of females mentioned that cervical cancer is common in Pakistan. All females were unaware of the cause of cervical cancer.

When females were asked about the mode of transmission and cervical cancer signs and symptoms, 72% of females replied that they did not know about its transmission or its sign and symptoms.

When asked about the risk factors associated with cervical cancer, 100% of females did not consider smoking, multiple pregnancies, the use of oral contraceptives, and early onset of sexual activity risk factors for cervical cancer. The cervical awareness variables are shown in Table 2.

Table 1. Sociodemographic characteristics of female patients reported Gynae OPD at Lady Willingdon Hospital, Lahore Pakistan (N = 200)

Sociodemographic Variables	N	%
Age		
15–24 years	8	4
25–34 years	90	45
35–44 years	76	38
45–54 years	20	10
55–64 years	4	2
More than 65 years	2	1
Socioeconomic Status		
Low	136	68
Middle	64	32
High	0	0
Education Level		
Matriculation	26	13
Middle level	18	9
Intermediate	26	13
Bachelor	2	1
Master	0	0
Uneducated	128	64
Employment Status of Respondents		
Business	14	7
Teaching	2	1
Labor	176	88
Doctor	0	0
Engineer	0	0
Bureaucrat	0	0
Government Employ	2	1
Others	6	3
Addictive Habits		
Smoking	8	4
Pan	0	0
Naswar	0	0
Chalia	2	1
Alcohol	0	0
No Addictive Habits	190	95
Age at 1st Sexual Intercourse		
Less than 14 years	26	13
14 years to 29 years	174	87
More than 30 years	0	0
Number of Pregnancies		
None	8	4
1-5	140	70
More than 5	52	26
Oral Contraceptive Use		
Yes	22	11
No	178	89

Table 2. Awareness and knowledge regarding cervical cancer among the female patients reported Gynae OPD at Lady Willingdon Hospital, Lahore Pakistan (n = 200)

Knowledge & Awareness About Cervical Cancer	N	%
Ever heard about cervical cancer?		
Yes	56	28
No	144	72
If yes, then what is the source?		
Radio	0	0
Television	0	0
Newspaper	0	0
Family	36	18
Social Media	20	10
Are cervical cancer being rare in Pakistan?		
Yes	190	95
No	10	5
Causative agent of cervical cancer?		
Bacteria	0	0
Virus	0	0
Fungi	0	0
Don't Know	200	100
Mode of transmission of cervical cancer?		
Cough/sneezing	22	11
Genital Skin to skin Contact	14	7
Contact with body fluids (blood)	20	10
Don't know	144	72
Can cervical cancer occur with symptoms?		
Yes	56	28
No	144	72
If yes, which of the following symptoms is associated with cervical cancer?		
Vaginal bleeding despite of menstruation	16	8
Vaginal discharge with foul smell	2	1
Pain during sexual intercourse	4	2
Post coital bleeding	0	0
Weight loss	32	16
Lower abdominal pain	2	1
Don't know	144	72
Risk factors of cervical cancer smoking		
Yes	0	0
No	200	100
Early onset of sexual activity		
Yes	0	0
No	200	100
Multiple sexual partners		
Yes	16	8
No	184	92
Family history		
Yes	46	23
No	154	77
Use of oral contraceptives		
Yes	0	0
No	200	100
Multiple pregnancies		
Yes	0	0
No	200	100

Table 3. Cervical cancer prevention and attitude towards vaccination among the females reported Gynae OPD at Lady Willingdon Hospital, Lahore Pakistan (n = 200)

Cervical Cancer Prevention and Attitude of Females Towards Vaccination	N	%
Knowledge about screening test		
Yes	6	3
No	194	97
If yes, which technique?		
Blood test	4	2
Pap Smear	2	1
PCR	0	0
Biopsy	0	0
Prevention of cervical cancer methods		
Practicing abstinence	0	0
Vaccination	0	0
Using condoms	34	17
Antibiotics	32	16
Don't know	134	67
Availability of cervical cancer vaccine		
Yes	2	1
No	198	99
One vaccinated the female should no longer need to be screened for cervical cancer		
Yes	0	0
No	200	100
Is the cervical cancer vaccine only for sexually active people?		
Yes	0	0
No	200	100
If the patient's doctor knew about the cervical cancer vaccine, would he/she suggest that she be vaccinated?		
Strongly approve	64	32
Approve	78	39
Neutral	58	29
Would you like to receive the cervical cancer vaccination?		
Yes	168	84
No	32	16
Would you like to be educated about cervical cancer and its vaccine by medical experts?		
Yes	172	86
No	28	40
Willingness to attend the cervical cancer awareness programs		
Yes	178	89
No	22	11

Table 4. Positive correlation among the level of education and awareness of cervical cancer ($p = 0.000$)

Current Level of Education	Awareness About Cervical Cancer			Total
	Yes, Through Family	Yes, Through Social Media	No Where	
Matriculation				
Count	10	4	12	26
% Within current level of education	38.5%	15.4%	46.2%	100%
% Within awareness about cervical cancer	28.6%	20.0%	8.3%	13%
Middle				
Count	3	2	13	18
% Within current level of education	16.7%	11.1%	72.2%	100%
% Within awareness about cervical cancer	8.6%	10%	9%	9%
Intermediate				
Count	10	12	4	26
% Within current level of education	38.5%	46.2%	15.4%	100%
% Within awareness about cervical cancer	28.6%	60%	2.8%	13%
Bachelor				
Count	0	2	0	2
% Within current level of education	0%	100%	0%	100%
% Within awareness about cervical cancer	0%	10%	0%	1%
Uneducated				
Count	12	0	116	128
% Within current level of education	9.4%	0%	90.6%	100%
% Within awareness about cervical cancer	34.3%	0%	80%	64%
Total				
Count	35	20	145	200
% Within current level of education	17.5%	10%	72.5%	100%
% Within awareness about cervical cancer	100%	100%	100%	100%

When the females were asked about the screening test for the diagnosis of cervical cancer, 97% of females responded that no screening test is available for early cervical cancer diagnosis. A significant portion of females (134, 67%) stated that they did not have any knowledge about cervical cancer prevention, including the use of condoms, vaccinations, antibiotics, and sexual abstinence. In terms of the knowledge of females regarding the availability of vaccines for the prevention of cervical cancer, it was observed that a significant proportion of the population (99%) stated that there is no vaccine available for cervical cancer, and only 1% replied yes. The entire female population did not have any information regarding the use of vaccines for sexually active people and were unaware that women no longer need to be screened for cervical cancer once they get vaccinated.

When females were asked that if their medical practitioner knew about the cervical cancer vaccine and if he/she recommended the vaccine to their patients, 39% of females said yes. When asked about the cervical cancer vaccination, 164 (84%) wanted to get vaccinated, and about 86% of the participants wanted to learn more about cervical cancer and its vaccine from medical experts (Table 3).

A significant and positive association ($p > 0.05$) was observed between the level of education and awareness ($p = 0.000$) about cervical cancer, the screening test for cervical cancer ($p = 0.000$), and the transmission of cervical cancer ($p = 0.000$) (Table 4).

Discussion

This present study was performed to evaluate the knowledge and awareness of cervical cancer and the attitude towards the vaccination and awareness programs among the females reported in the Gynecological OPD at Lady Willingdon Hospital in Lahore, Pakistan. To the best of our knowledge, this is the first study of its kind to be conducted in Lahore. Our study revealed that females had limited knowledge and awareness regarding cervical cancer and its vaccination. In addition, about 28% had heard about cervical cancer. A study conducted in Karachi Pakistan and India reported that a large population of women had suboptimal knowledge about cervical cancer,[25,26] which is similar to the present study. In contrast to our study, studies conducted in England at Keele University and in the South Indian region revealed that

only one fourth of the population did not know anything about cervical cancer.[27,28]

In this study, when asked about the source of information regarding cervical cancer, family members were the main source of information (18%) and only 10% obtained their information through social media, whereas no one heard about cervical cancer through media, such as television, radio, and newspaper. This highlights that Pakistani media does not play a major role in promoting cervical cancer awareness, which is in contrast to the studies conducted India and London who reported that the majority of participants heard about cervical cancer through media.[28,29] Another study revealed that only 3.5% of the female population had heard about cervical cancer through their relatives.[30] An extreme lack of knowledge is noted among the females of Punjab, Pakistan regarding the awareness of cervical cancer and its vaccination. Furthermore, the entire female population (100%) were unaware of the cause of cervical cancer, whereas the study performed in 2015 reported that 11.9% of the Odisha population knew about the cause of cervical cancer.[31]

Regarding the mode of transmission of cervical cancer, only 28% of female respondents replied yes, which reflects their very poor knowledge. This is in contrast to the study conducted in Karachi, Pakistan by Ali and his colleagues and by Parmar *et al*. in India that stated the majority of participants correctly reported sexual intercourse as the mode of transmission for cervical cancer.[32,33] In our study, the majority of women (72%) were completely unaware of the symptoms of cervical cancer. These results are supported by the studies conducted in Karachi, as well as in Kerala and Ahmedabad, two states in India.[25,34,35] The findings of the present study are in contrast to a study conducted in India that stated 48.4%, 27.8%, and 20.5% of females reported bleeding between periods, a foul smell, and postcoital bleeding, as a sign or symptom of cervical cancer.[28]

In this study, only 8% mentioned having multiple sexual partners as a risk factor for cervical cancer. This extreme lack of information regarding cervical cancer is very alarming in Pakistan and indicates an essential need for effective measures to increase the rate of awareness about cervical cancer. However, the studies conducted in India reported that the female population answered multiple sexual partners (38.4%), early intercourse (36.2%), and smoking (63%) as risk factors for cervical cancer, which is in contrast to the current study.[28,30]

The present study stated that only 3% of the female population knew about the screening of cervical cancer. This is in agreement with a recent study in Pakistan that stated only 5% of the general population had knowledge of the availability of screening for cervical cancer.[36] This shows an insufficiency in the promotion of cervical cancer prevention methods by health care professionals. These results highlight why most cervical cancer patients in the region present with late and advanced stages of the disease.[37] Whereas other studies carried out in developed and underdeveloped countries revealed a higher prevalence of awareness regarding the screening test.[32] The study carried out in Karnataka and Kolkata, India, reported that about 2.1% and 15% of female participants were well-informed about the Pap smear, which is in accordance with the present study respectively.[30,38]

Moreover, 67% of the population were unaware of the preventive measures for cervical cancer, and 16% even mentioned antibiotics as a preventive measure, demonstrating the extreme lack of awareness regarding cervical cancer prevention. These findings were in contrast to a study conducted in India.[28] The lack of information about cervical cancer vaccination (99%) is another significant finding of the present study. Similar findings were reported in studies conducted in India and European countries, such as Germany.[30,39,40]

The ultimate goal of a vaccination program may be the global eradication of the disease. For the local elimination of the disease, the rate of vaccination should be increased. It is still likely to remove the disease in the local region without the global elimination of the causative agent. It was stated by the WHO in 2008 that immunization of more than 95% of the population with a two-dose vaccination regimen is required to achieve the local elimination of the disease.[41] Even after being vaccinated, it is essential to keep in mind that screening is still required as the vaccination only offers defense against 70%–90% of the changes occurring at the cellular level, produced by HPV genotypes 18 & 16.[42,43]

As described by the females about the reasons for the lack of awareness, one of the reasons was the lack of information given by health care professionals to females about cervical cancer. This might be because health care experts themselves are not aware of the severity of this problem, as stated in studies carried out among health care providers about their knowledge, which was found to be suboptimal in Pakistan as well as in Thailand.[32,44] A phone-based study conducted in Denmark in 2009 by Mortensen reported that a large number of the female population (n = 794) were questioned about getting the HPV vaccine, and they were reluctant and unwilling to get the vaccine.[45] In contrast, this present study found that 84% of women wanted to receive the vaccination against cervical cancer, 89% showed a willingness to attend the cervical cancer awareness program, and about 86%

wanted to be educated about cervical cancer and its vaccine by medical experts.

Moreover, a correlation was observed between the sociodemographic characteristics of females and their awareness about cervical cancer. Women with less education were less likely to have enough information regarding cervical cancer, its mode of transmission, and the availability of screening tests. This demonstrates that the low level of education of the underprivileged and lack of opportunity for pursuing knowledge ultimately leads to poor health-seeking behavior. This is in accordance with the studies conducted in India.[28] An essential step to decrease the mortality and morbidity of cervical cancer is the early diagnosis of premalignant lesions of the cervical region and early treatment. In Pakistan, the main concern of health employees is the screening and early diagnosis because of the decreased awareness among females, along with the lack of screening facilities. Our study highlights the increasing need for public awareness to reduce cervical cancer among women in Punjab, Pakistan.

In the current study, the sample size was inadequate, and females were not open to some of the private and personal questions because of social taboos, which created a communication gap between the interviewer and the respondents. Moreover, findings of current and already reported studies demonstrate that continuing medical education programs at the community level should be initiated as soon as possible, along with seminars that emphasize the significance of knowledge regarding cervical cancer, its prevention, and its vaccination. If females are provided with appropriate information regarding cervical cancer and its prevention, they can educate the rest of the population, and therefore, raise the health-seeking attitude among females in Pakistan. Furthermore, more emphasis should be placed on the role of media and health care professionals. Proper education provided by health care professionals about cervical cancer is essential to decrease the mortality and morbidity rate associated with cervical cancer.

Conclusion

The findings of the present study reveal that the perception and information related to cervical cancer, its vaccination, and screening were not sufficient among females of Punjab, Pakistan. This information should be highlighted in health promotion programs and used for the development and implementation of educational programs related to cervical cancer awareness, prevention, and control in Pakistan. The Punjab female community of Pakistan surveyed shows a positive and favorable attitude towards cervical cancer screening, its vaccination, and educational programs for the prevention of the disease.

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Conflict of Interest Statement

The authors declare that there is no conflict of interest regarding the publication of this article.

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