

CERVICAL CANCER AND ITS SCREENING: KNOWLEDGE, PRACTICES OF SCREENING AND VACCINATION AMONG SELECTED WOMEN HEALTHCARE PROFESSIONALS IN HOSPITALS OF KOLKATA, INDIA

Saha Madhulima^{1*}, Singh Suneeta², Vatz Vandana³, Afifa Ahmed⁴

¹ Department of Obstetrics & Gynecology, Command Hospital, Kolkata, India

² Department of Obstetrics & Gynecology, Armed Forces Medical College, Pune, India

³ Department of Preventive & Social Medicine, Station Health Organization, Command Hospital, Kolkata, India

⁴ Department of Preventive & Social Medicine, IPGMER and SSKM Hospital Kolkata

*Corresponding author: madhulima.saha@gmail.com

ABSTRACT

Introduction: Cervical cancer is a major killer among women in less developed countries. It is a preventable disease if screened regularly and women are vaccinated. But late detection leads to poor outcomes and morbidity. The objective was to assess knowledge about Cervical cancer and its practices of screening and vaccination among women health care professionals. **Methods:** It was a descriptive, cross-sectional survey carried out through an online questionnaire among women healthcare professionals of 21-65 years in various hospitals in Kolkata city, India. **Results:** 72% (203) Participants had good knowledge, 19%(54) have moderate and 9%(25) had poor knowledge about Cervical cancer, its screening tests, and high-risk factors. Only 34(12.4%) had been completely vaccinated against Human papillomavirus (HPV). Also, 189(67%) women in this group never had a Papanicolaou (PAP) test. **Conclusion:** Most of the women had good knowledge about Cervical cancer, practices of screening and vaccination, but had not undergone screening or vaccination. A positive uptake towards Cervical cancer screening and vaccination protocols for themselves shall help them in better health promotion towards their clientele. More emphasis needs to be paid to disseminating health information and the importance of screening and vaccination. We need to recognize the need to include the HPV vaccine in the National Immunization Schedule. HPV vaccination and HPV-based PAP screening have the potential to reduce Cervical cancer incidence in the coming decades if implemented on a global basis.

Keywords: Cervical cancer, Human papillomavirus (HPV), Screening, Papanicolaou (PAP) test, Knowledge

Introduction:

High-risk Human papillomaviruses (HPV) (spread through sexual contact), are implicated in almost all occurrences of cervical dysplasia and carcinogenesis (99%). Although the bulk of HPV infections are asymptomatic and heal on their own, persistent infections (lasting more than two years) can lead to Cervical cancer in females. Subtypes 16 and 18 of the 15 High-risk HPV subtypes are thought to be responsible for over 70% of all instances of Cervical cancer (Shah et al., 2012 & Khanna et al., 2019). The interaction of viral E6 and E7 proteins with tumor suppressor genes P53 & Rb is the mechanism by which HPV causes cervical dysplasia or carcinogenesis. Cervical epithelial cells undergo a malignant transformation when these genes are inhibited at various stages. After breast, colorectal, and lung cancer, Cervical cancer is the fourth most frequent malignancy among women. Worldwide, an estimated 311,000 women died from the condition in 2018, while an estimated 570,000 women were diagnosed with it (WHO, 2018). The age-standardized incidence of cervical cancer per 100,000 women (2020) in India is 18 and 13.1 globally. In 2018, China and India had more than a third of the world's cervical cancer burden. In 2018, there were 45,300 fatalities from cervical cancer in just India (WHO). According to a study by (Arbyn et al., 2018), the average age for cervical cancer diagnosis was 53 years, with a range of 44 to 68 years. Throughout the world, 59 years was the average age of death from cervical cancer.

HPV vaccine recommendations for 9-14 years old children are 2 doses 6-12 months apart. For ages 15-26 years, it's three doses at 0, 1-2 months & 6 months. 27-45-year-old women may get vaccinated after consulting their doctor about their risk of new HPV infections and the possible benefits of vaccination (CDC).

A cohort's medical knowledge also plays an important factor in determining their attitude toward disease prevention and self-care. This knowledge helps in avoiding high-risk behaviors pertaining to the said disease. Cervical cancer disease load can be reduced by using primary (HPV vaccine) and secondary preventative strategies (screening and treatment of precancerous lesions). Vaccinated women must maintain screening procedures in accordance with published recommendations because vaccines do not offer protection against all subtypes of HPV. In India, less than 1 in 10 women have received a cervical cancer screening in the previous five years (WHO). As long as it is identified early and carefully handled, cervical cancer is one of the most successfully treatable types of cancer. Health promotion and disease prevention are very important in preventable cancers like Cervical cancer (Shah et al., 2012 & Obol et al., 2021). Seminars, handouts, social media outreach, dissemination of info by health professionals, and a national vaccination protocol for the HPV vaccine shall play a giant role in disease control. Therefore the aim of the study was to see if women healthcare professionals have knowledge and self-screening practices. It may help in disseminating awareness about cervical cancer and scaling up preventive health services. Women health professionals in India play crucial role in cervical cancer prevention as they can reach a wider community. Khanna et al., (2019) in Varanasi, India, and Obol et al., (2021) in Uganda did similar studies with similar results.

Methods:

Study area, design, and period

A descriptive, cross-sectional study was carried out in Kolkata, a metropolitan city of India from Sep 2022 to Feb 2023.

Study participants

The study was conducted amongst women health care professionals including doctors, dentists, nurses, lab workers, physiotherapists, psychologists, and geneticists of the age group 21-65 years.

Inclusion criteria

Women health care professionals of age group 21-65 years

Informed e-consent from the women participating in the study

Exclusion criteria

Women below the age of 21 years

Women above the age of 65 years

Women who did not consent to be part of the study

Sample size

The sample size (n) was computed by single population proportion formula:

$[n = [(z\alpha/2)^2 \times P(1-P)]/d^2]$ by assuming 95% confidence level of $z\alpha/2 = 1.96$, margin of error 10% and $P = 50\%$ proportion. It comes to 346. By adding a non-response rate of 10%, the final sample size was 381.

Sampling technique

Administrative authorities of six purposively selected hospitals/institutes in and around Kolkata city (Command Hospital, College of Nursing, Base Hospital Barrackpore, Military Hospital Panagarh, Command Military Dental Centre, and IPGMER and SSKM Hospital) were contacted with study proposals for permission to conduct the said study. It was requested to share the nominal roll with mobile numbers and e-mail addresses of women health care professionals of respective institutes. After receiving the lists from all hospitals, a complete enumeration with mobile numbers and e-mail addresses of 381 study participants was prepared and it came out to be 352.

Study tool, data collection procedure, and study variables

A self-administered, semi-structured, predesigned, pretested validated questionnaire was used. The questionnaire was prepared in the English language after reviewing different literature (All participants were affluent in the English language). It was pretested on 10% (38) of the total sampled population who were not included in the study and necessary modification was done in the questionnaire. Cronbach's alpha was calculated to be 0.7. The questionnaire was sent to 352 enlisted participants, however only 282 completed responses were received.

The questionnaire had sixteen(16) questions; the first three were related to the socio-demographic profile (age, educational qualification, and marital status), Ten(10) questions were pertaining to knowledge (risk factors, signs-symptoms, screening protocols, and preventive measures) and remaining three(03) were for assessing the practice of cervical cancer screening. Knowledge about the topic was assessed using a 10-point scale. There were 10 knowledge-related questions that carried 10 correct responses. Each correct response was given 1 point and the wrong answer was given 0.

The maximum points expected were 10 and the minimum was 0. Bloom's cut-off points were used to categorize knowledge levels, where 80%–100% correct responses comprise a score of 8–10 and meant good knowledge, 60%–79% correct responses comprise a score of 6–7 and meant moderate knowledge, and <60% correct responses comprise score of ≤6 and meant poor knowledge.

Before sharing the questionnaire prior e-consent from the participants and a promise of anonymity was made for participating in the study. Each participant was sent an IEC pamphlet on Cancer Cervix screening and prevention after completing the questionnaire (Figure 1).

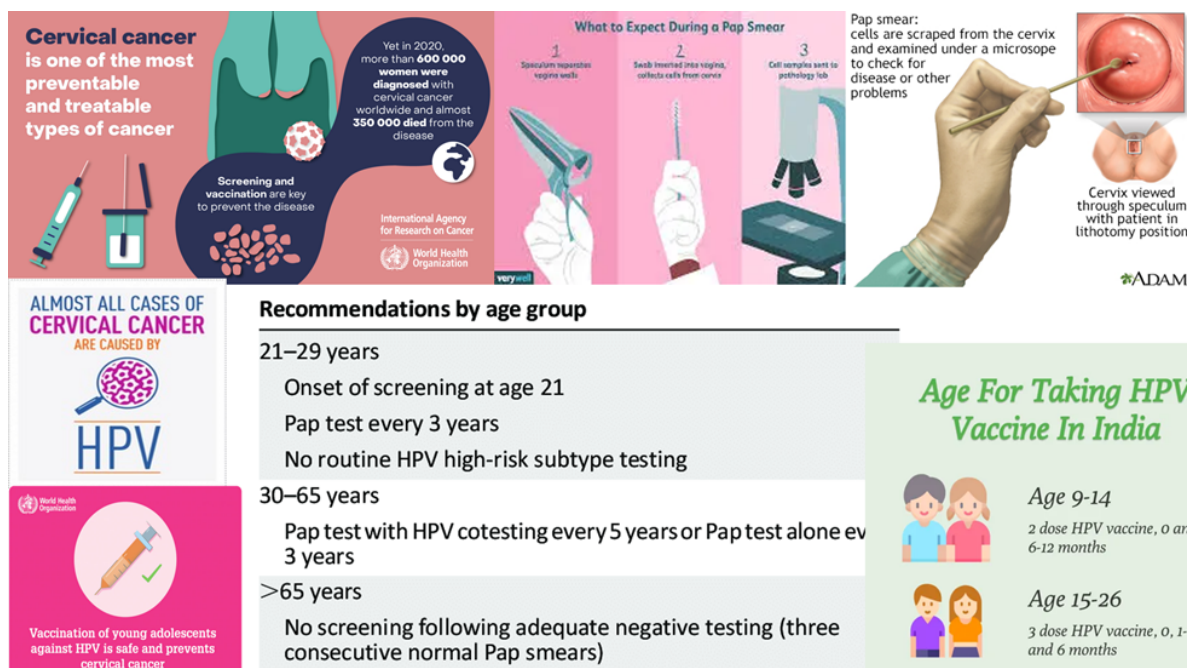


Figure 1: Cervical Cancer information pamphlet

Operational definition

Knowledge: The knowledge of Cervical cancer screening was assessed using ten (10) questions with a maximum score of 10 and a minimum of 0. The overall knowledge was found, using Bloom’s cut-off point.

Practice: The practice of Cervical cancer screening was assessed on two(02) questions whether participants had taken HPV vaccines and done PAP Smear or not.

Statistical analysis:

After the collection of data and analysis on google forms, descriptive analysis using frequency, mean, median, SD, pie charts, and bar graphs was carried out with the help of MS Excel.

Results:

282 participants responded completely to the questionnaire. The basic demographic parameters were collected. Most of the candidates were between the ages of 21-45 years (84.8%). Most of them were educated at the graduate level or above. Only 8 (3%) had not had their sexual debut and weren't at risk of HPV infection. 72 % (203) Participants had good knowledge, 19% (54) had moderate while 9%(25) had poor knowledge about Cervical cancer, its screening tests, and high-risk factors (Figure 2).

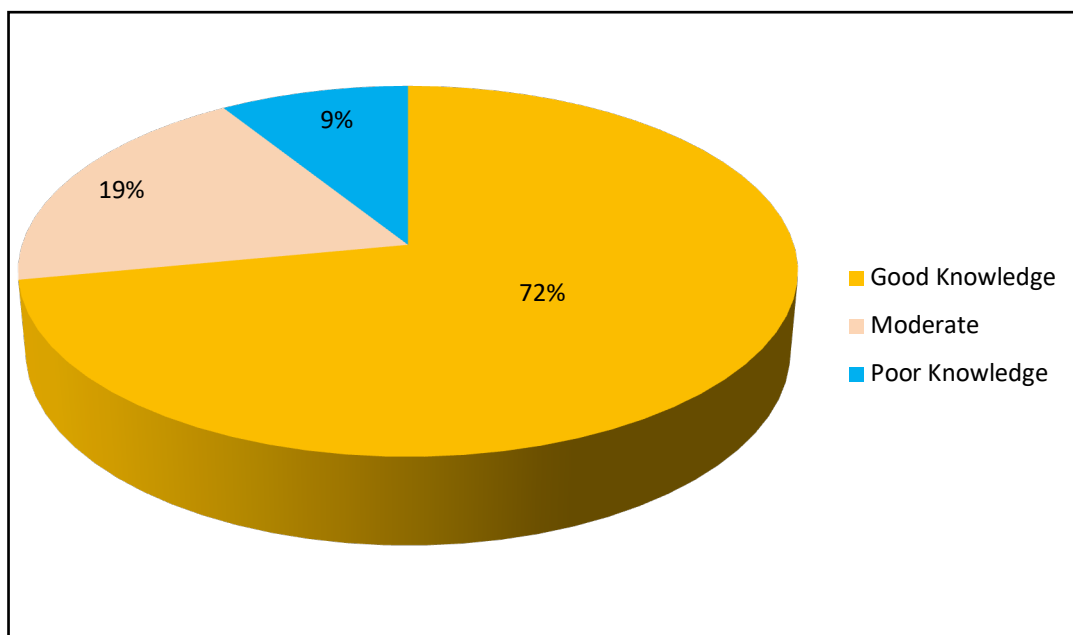


Figure 2: Knowledge level of participants about Cervical cancer and its screening

Following were the correct choices answered about the risk factors: HPV infection (80.8%), Family History (48.8%), Early marriages (44.8%), Sexual promiscuity (73.8%), Smoking (36.5%), Poor hygiene (4.2%) (Figure 3).

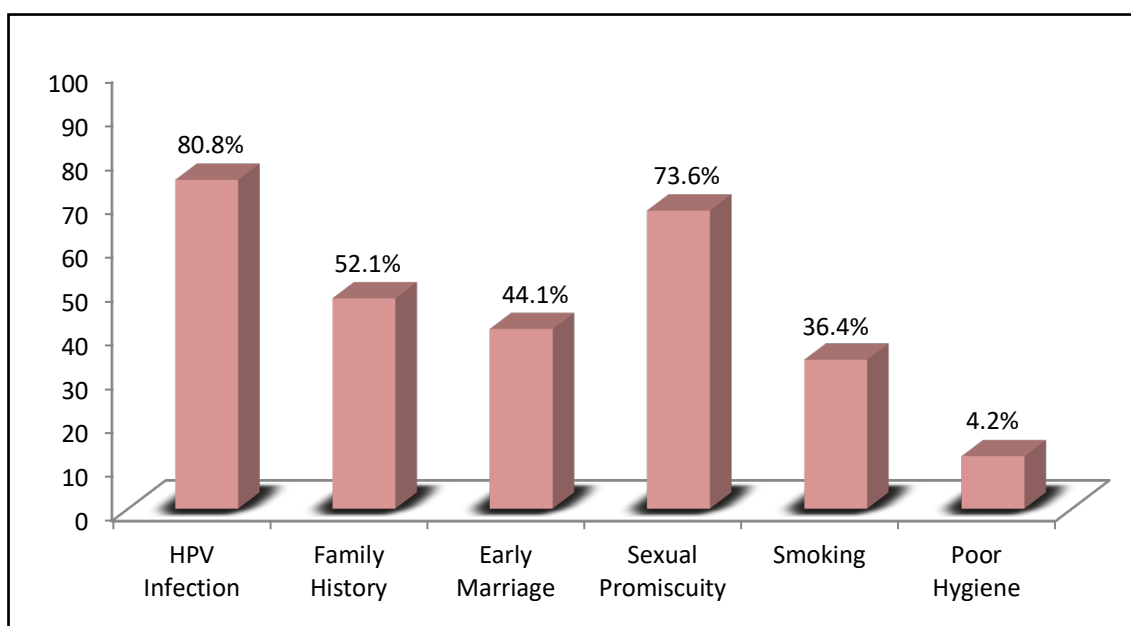


Figure 3: Knowledge about High-Risk Factors for Cancer cervix

Most of the reasons (for not getting screened) were shyness (35%) or procrastinating for lack of time (60%). Some had religious beliefs too (Figure 4).

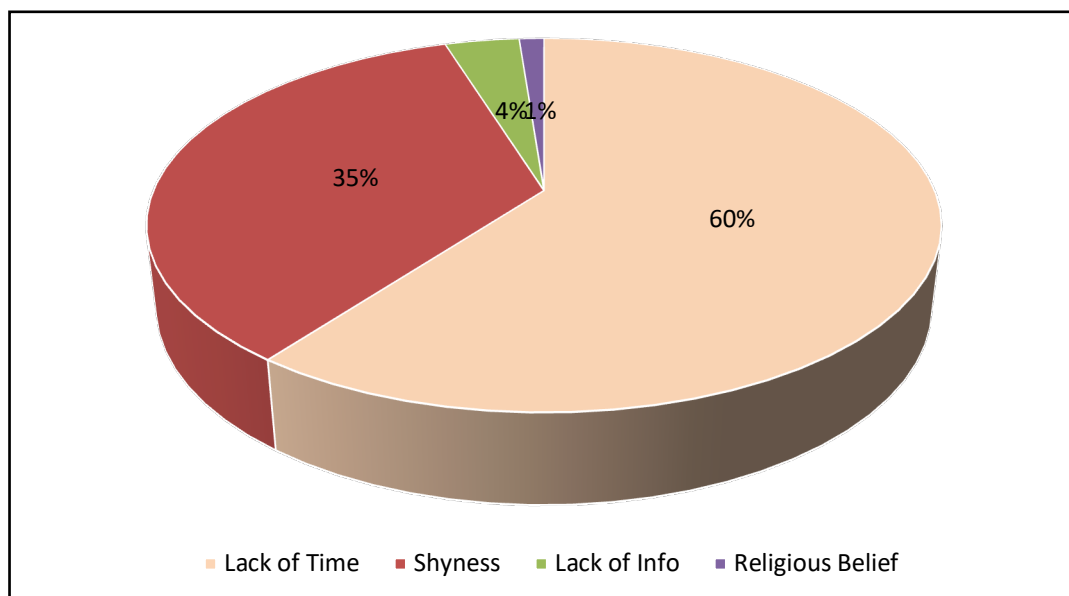


Figure 4: Reasons for No Screening of Cancer cervix

Most of them confirmed that screening facilities were very easily accessible to them. They had good knowledge about the signs and symptoms of the disease too (Figure 5). 225 (80.4%) participants knew that Cancer Cervix is a preventable disease and almost all (97%) knew about the PAP test as a screening tool for Cancer Cervix. Even though the majority of them were so knowledgeable of the condition, it was a reality check that out of 282 participants (234 were in the eligible age group for receiving the HPV vaccine) only 34 (12.4%) had been fully vaccinated against HPV (Figure 7) and 189(67%) had never undergone a single PAP test (Figure 6). 260 (97.4%) agreed that Cancer cervix can be prevented by the HPV vaccine alone. They had heard about it through seminars, posters, and social media. 178 (63.6%) ladies knew that the said vaccine was available in the city. At the end of the questionnaire, 210 (75.3%) were fully convinced about getting screened and vaccinated. There was a good motivation among them to educate and vaccinate friends and families. Many of them later visited the Gynecology OPD for a PAP test / HPV vaccination. The above data in this study depicts that the knowledge among the study participants about the cancer cervix and its screening and preventive measures was good. But the participants hadn't screened themselves and most of them hadn't been vaccinated yet.

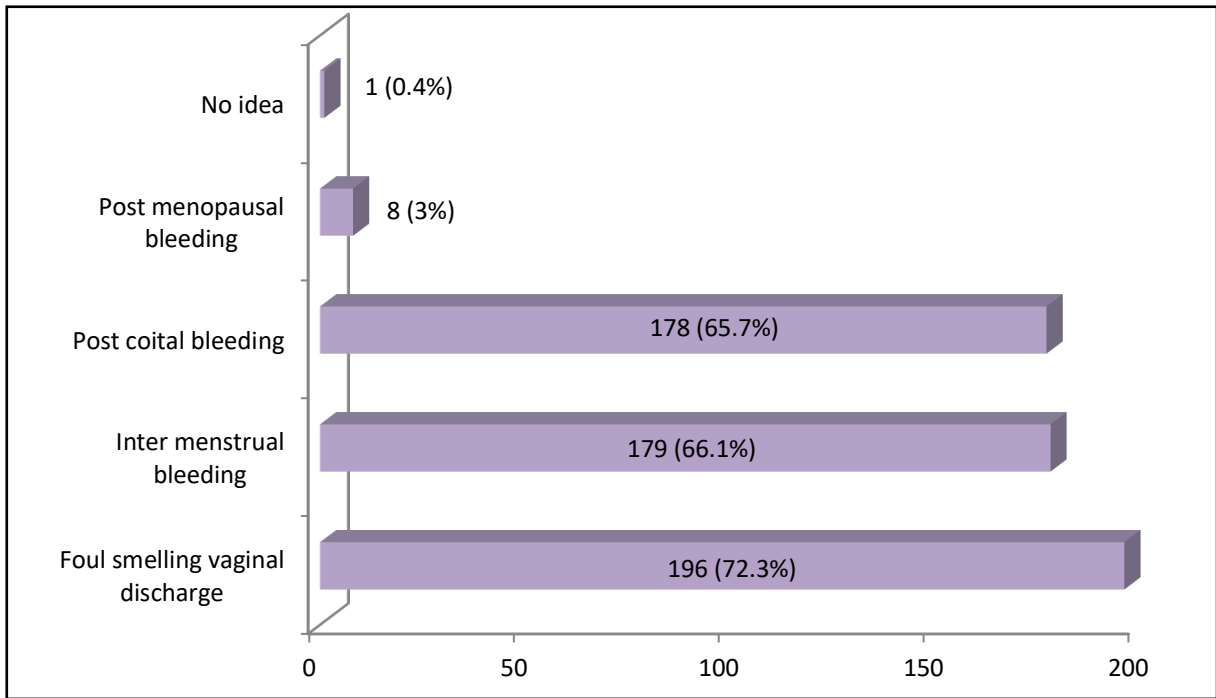


Figure 5: Knowledge about Symptoms-signs of Cervical Cancer

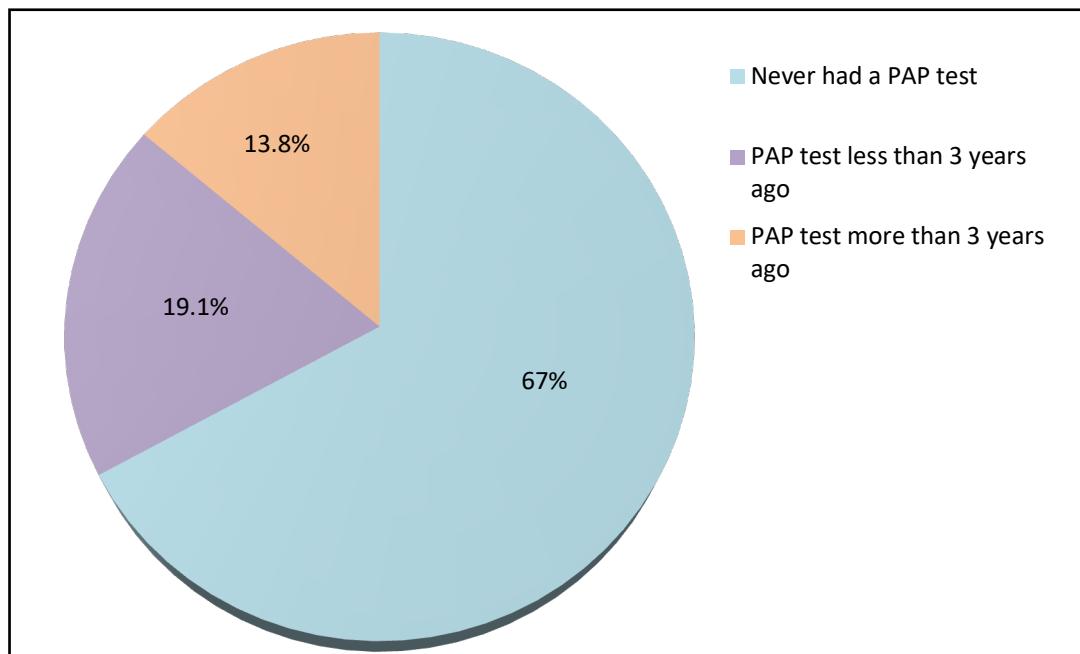


Figure 6: Cancer cervix screening among participants

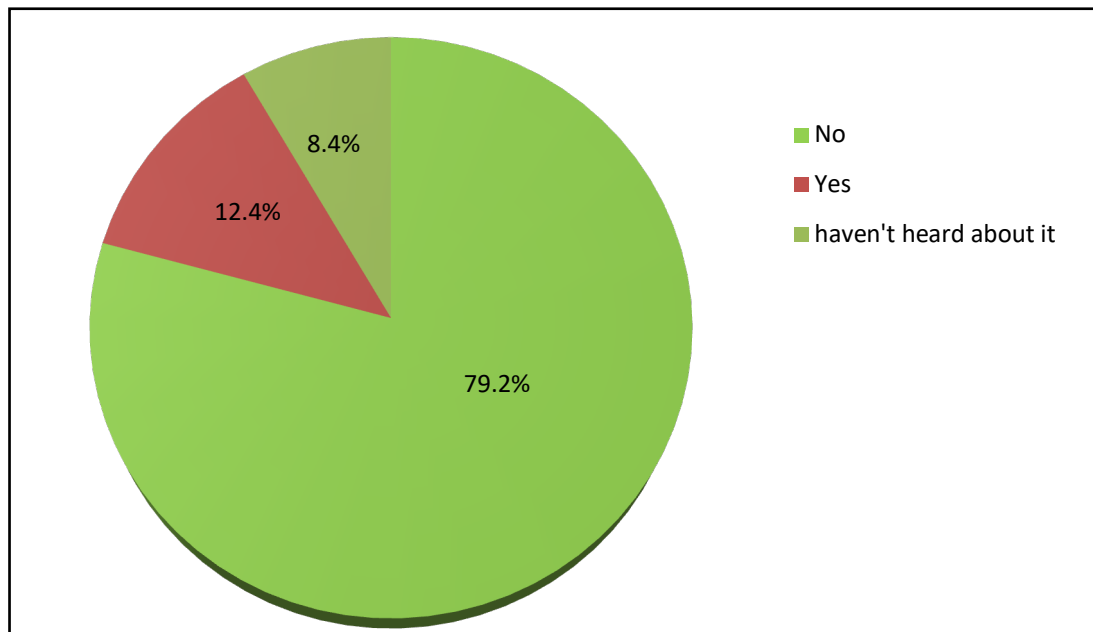


Figure 7: HPV vaccine coverage among participants

Discussion:

Cervical cancer is a preventable disease. Any woman can reduce the risks of getting Cervical cancer by regular screening, HPV vaccination, and avoiding high-risk factors like smoking, promiscuous behavior, early sexual debut & multiple pregnancies.

HPV vaccines are recommended for primary prevention. Secondary prevention methods are screening by PAP tests and HPV tests. In our study conducted on women healthcare professionals in Kolkata city, India, the majority of individuals were knowledgeable about cervical cancer, its signs & symptoms, high-risk factors, and primary and secondary prevention protocols. (This study group comprised of educated professionals) A similar study in the same city done many years back (Roy & Tang, 2008) had shown poor knowledge. Similar studies on nursing staff from Rural India (Singh et al., 2012), Alzahra maternity hospital, Iran (Esmailpour et al., 2011), and Ethiopia (Getaneh et al., 2021) had shown moderate to good knowledge. In an Iranian study (Asgarlou et al., 2016) and an Indian study (Manisha et al., 2013) the knowledge among medical students and staff was not found to be up to the mark as compared to ours. In spite of good knowledge about the disease both studies showed that the majority had never had a PAP test. In our study, 66.9% had never undergone a PAP test vis-a-vis only 47% in the above studies.

There is a lack of information about Cervical cancer being a preventable disease. Therefore most of the detections are late. In a similar survey among nursing staff in Gujrat India (Shah et al., 2012) only 8% had undergone a PAP test ever vis-a-vis our study whereas 33.5% had undergone a PAP test at least once. Although 97% of study participants knew that the HPV vaccine is the elixir for Cervical cancer prevention only 12.4% of eligible women had yet been vaccinated by their own interest and resources. HPV infection prevention is crucial for preventing cervical cancer. The development of the HPV vaccine has been a huge benefit. Over the past years, numerous studies on the acceptance, knowledge, attitudes, and behaviors around the HPV vaccine have been conducted worldwide (Sankaranarayanan

& Ferlay, 2006 & Małgorzata, 2021). According to the studies (Aswathy et al., 2012 & Ali et al., 2010 & Nganwai et al., 2008 & Alnafisah et al., 2019 & Tiro et al., 2007) high-income countries had a good understanding of cervical cancer, the PAP test, and the HPV vaccine, but low-income nations including Thailand, Turkey, Pakistan, and Taiwan had little to no knowledge of these topics.

The Indian government has not yet provided funding for primary prevention through immunization of the appropriate population of women (9-26 years old). The National Vaccination Schedule for our Country does not yet include it. India launched its locally manufactured HPV vaccine (CERVAVAC) in January 2023 and is getting ready for vaccination campaigns for females between the ages of 9 and 14.

Limitations of the study:

1. The sample population doesn't necessarily reflect the results of the general population .
2. The questionnaire was an online self-administered one and hence there can be a risk of recall bias or contamination by participants.

Strength of Study:

It has inspired most of the participants to get themselves screened and vaccinated after taking the survey.

Conclusion:

The researcher conclude from the above results that these women health care professionals had average to good information about Cervical cancer and its prevention protocols. But they were ignorant about their own health and had voluntarily procrastinated their doctor visits and vaccination schedules. Once healthcare professionals are motivated themselves they are more likely to correctly advise it to their clientele. We need better patient engagement tools and basic info propagation with empathetic conversation around screening and vaccination protocols. It is important we decrease the existing wide gap between the perception and practice of cervical cancer screening. We should materialize it by propagating more educational and motivational programs for healthcare professionals. Let our motto be: 'Get Informed, Get Screened, Get Vaccinated'.

Ethics approval and consent to participate

The Command Hospital's ethics committee in Kolkata, India gave its approval to this study. All participants gave their informed consent. Procedures were followed in compliance with the applicable committee policies and rules.

Conflicts of Interest

The author declares no conflicts of interest.

References

- Ali SF., Ayub S., Manzoor NF., Azim S., Afif M., Akhtar N., Jafery WA., Tahir I., Farid-Ul-Hasnian S., Uddin N. (2010). Knowledge and awareness about cervical cancer and its prevention amongst interns and nursing staff in Tertiary Care Hospitals in Karachi, Pakistan. *PLoS One*. Jun 10, 5(6). e11059. doi: 10.1371/journal.pone.0011059. PMID: 20548787; PMCID: PMC2883573.
- Alnafisah RA., Alsuhaibani R., Alharbi MA., Alsohaibani AA., Ismail AA. (2019). Saudi Women's Knowledge and Attitude toward Cervical Cancer Screening, Treatment, and Prevention: A Cross-Sectional Study in Qassim Region (2018-2019). *Asian Pac J Cancer Prev*. Oct 1;20(10):2965-2969. doi: 10.31557/APJCP.2019.20.10.2965. PMID: 31653142; PMCID: PMC6982676.
- Arbyn M., Weiderpass E., Bruni L., de Sanjosé, S., Saraiya, M., Ferlay, J., & Bray, F. (2018). Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. *The Lancet. Global health*, 8(2), e191–e203. [https://doi.org/10.1016/S2214-109X\(19\)30482-6](https://doi.org/10.1016/S2214-109X(19)30482-6)
- Asgarlou, Z., Tehrani, S., Asghari, E., Arzanlou, M., Naghavi-Behzad, M., Piri, R., Gareh Sheyklo, S., & Moosavi, A. (2016). Cervical Cancer Prevention Knowledge and Attitudes among Female University Students and Hospital Staff in Iran. *Asian Pacific journal of cancer prevention : APJCP*, 17(11), 4921–4927. <https://doi.org/10.22034/APJCP.2016.17.11.4921>
- Aswathy S, Quereshi MA, Kurian B, Leelamoni K. (2012). Cervical cancer screening: Current knowledge & practice among women in a rural population of Kerala, India. *Indian J Med Res*. Aug;136(2):205-10. PMID: 22960886; PMCID: PMC3461731.
- Esmailpour N, Mirblouk F, Shodjaei Tehrani H, Poorseyad Reza A, Dalil Heirati S.F (2011). Survey the Knowledge, Attitude and Practice on Popsmeear in Nurses and Midwives, *J Guil Uni Med Sci*, 20(77): 81-88.
- Getaneh, A., Tegene, B. & Belachew, T. Knowledge, attitude and practices on cervical cancer screening among undergraduate female students in University of Gondar, Northwest Ethiopia: an institution based cross sectional study. *BMC Public Health* 21, 775 (2021). <https://doi.org/10.1186/s12889-021-10853-2>
- Khanna D, Khargekar N, Budukh A. Knowledge, attitude, and practice about cervical cancer and its screening among community healthcare workers of Varanasi district, Uttar Pradesh, India. *J Family Med Prim Care*. 2019 May;8(5):1715-1719. doi: 10.4103/jfmpc.jfmpc_143_19. PMID: 31198742; PMCID: PMC6559093.
- Małgorzata Lesińska-Sawicka. (2021). A cross-sectional study to assess knowledge of women about cervical cancer: an urban and rural comparison. *Environmental Health and Preventive Medicine*. 26:64 <https://doi.org/10.1186/s12199-021-00986-6>
- Manisha Gupta, Megha Yadav, Neelima Agarwal, Raksha Arora. Awareness of Cervical Cancer Screening among Paramedical Staff and Students in An Institution of Northern India. *Natl J Community med* 2013; 4(2): 333-336
- Nganwai P, Truadpon P, Inpa C, Sangpetngam B, Mekjarasnapa M, Apirakarn M, Chumworathayi B. (2008). Knowledge, attitudes and practices vis-a-vis cervical cancer among registered nurses at the Faculty of Medicine, Khon Kaen University, Thailand. *Asian Pac J Cancer Prev*. Jan-Mar;9(1):15-8. PMID: 18439065.
- Obol, J.H., Lin, S., Obwolo, M.J. et al. Knowledge, attitudes, and practice of cervical cancer prevention among health workers in rural health centres of Northern Uganda. *BMC Cancer* 21, 110 (2021). <https://doi.org/10.1186/s12885-021-07847-z>
- Roy B, Tang TS. (2008). Cervical cancer screening in Kolkata, India: beliefs and predictors of cervical cancer screening among women attending a women's health clinic in Kolkata, India. *J Cancer Educ*. 23(4):253-9. doi: 10.1080/08858190802189105. PMID: 19058076.
- Sankaranarayanan R, Ferlay J. (2006). Worldwide burden of gynecological cancer: the size of the problem. *Best Pract Res Clin Obstet Gynaecol*. Apr;20(2):207-25. doi: 10.1016/j.bpobgyn.2005.10.007. Epub 2005 Dec 13. PMID: 16359925.
- Shah V, Vyas S, Singh A, Shrivastava M (2012) Awareness and knowledge of cervical cancer and its prevention among the nursing staff of a tertiary health institute in Ahmedabad, Gujarat, India *ecancer* 6 270.
- Singh E, Seth S, Rani V, Srivastava DK. (2012). Awareness of cervical cancer screening among nursing staff in a tertiary institution of rural India. *J Gynecol Oncol*. Jul;23(3):141-6. doi: 10.3802/jgo.2012.23.3.141. Epub 2012 Jul 2. PMID: 22808355; PMCID: PMC3395008.

- Tiro JA, Meissner HI, Kobrin S, Chollette V. (2007). What do women in the U.S. know about human papillomavirus and cervical cancer? *Cancer Epidemiol Biomarkers Prev.* Feb;16(2):288-94. doi: 10.1158/1055-9965.EPI-06-0756. Epub 2007 Jan 30. PMID: 17267388.