Original Article

Public Awareness and Perceptions of Breast and Cervical Cancer

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Abstract

Objective: A serious public health issue is the general population's lack of understanding, ignorance, and ubiquity of myths and misconceptions about breast and cervical cancers (CCs). The purpose of this study was to assess people's knowledge and attitudes on cancer, specifically with regard to breast and cervical malignancies.

Methodology In Lahore, Pakistan, a cross-sectional survey with a descriptive focus was administered to 345 individuals. Data on demographics, exposure to chemical and biological carcinogens, lifestyle choices, and individual behaviors were gathered using a pretested, standardized questionnaire. The study population was examined in relation to important factors using frequency distribution and proportions.

Results: Cancer awareness and early detection play crucial roles in reducing morbidity and mortality. This descriptive cross-sectional study assessed public awareness and perceptions regarding cancer, particularly breast and cervical cancers, in Lahore. A total of 298 participants were surveyed, with an average age of 25.19 years. Males comprised 52.0% and females 48.0% of the respondents. Mass media (34.6%), schools (28.5%), and health professionals (6.7%) were the primary sources of cancer-related information. While 72.8% of participants reported fear upon first hearing about cancer, 66.7% believed it is preventable. Only 4.7% had undergone cervical cancer screening, indicating low participation in preventive measures. Additionally, 98.1% of respondents had never smoked, though awareness of smoking-related cancer risks was limited to 66.7%. These findings highlight the need for increased public education, awareness campaigns, and access to screening programs to improve early detection and treatment outcomes in Lahore.

Conclusion: In Lahore, Pakistan, there is still a lack of awareness and education regarding cancer, especially breast and cervical cancers. The following prioritized risk factors must be addressed in the public health education campaigns' sexual and reproductive health component: early onset of sexual intercourse, low level of disease knowledge, and unhealthy lifestyles.

Keywords: Cancer, Awareness, Cervical, Breast, Sexual Health, Reproductive Health

Introduction:

Cancer continues to be a priority public health concern in high- as well as low-income nations. In 2018, low- and middle-income nations (LMICs) responsible for over half of all cancer incidence and mortality [1,2]. Although HICs have seen an extraordinary fall in the rates of cancer deaths, this has not been the case in LMICs. Based on World Health Organization (WHO) estimates, almost 75% of the estimated 12 million new cancer cases and 7.6 million cancer deaths by 2030 will be in LMICs, which usually do not have the resources to manage the growing cancer burden [2,3].

Moreover, around one-fourth of cancer deaths in these regions are caused by infectious agents. The incidence of pathogen-associated cancers is of great concern for LMICs since these nations still grapple with endemic infectious diseases [3,4].

Lifestyle components such as smoking, obesity, physical inactivity, and inappropriate diet are also strongly associated with cancer development. National and regional action plans to reduce its burden are still not adequate, even in the face of the increasing burden of cancer in LMICs. Cancer research infrastructure is usually lacking in these countries, as well as standardized diagnostic and treatment facilities [5,6].

Cancer is a condition that can strike anyone, irrespective of background or demographic status. Misconceptions and myths regarding cancer are common, particularly in less-developed countries [6-10]. Such misconceptions are significant barriers to successful cancer prevention and treatment initiatives. Raising awareness is crucial to dispelling these myths and educating communities that cancer is not infectious or a supernatural affliction [9-11]. In contrast to infectious diseases like HIV/AIDS, tuberculosis, malaria, and sexually transmitted diseases (STDs), cancer arises as a result of genetic, environmental, and lifestyle elements, which have been comprehensively tackled through public health interventions, cancer awareness still falls short in most LMICs. In Asian nations, for example, few organizations and individuals are proactively involved in cancer awareness and prevention activities [12]. Most individuals in these areas wrongly regard cancer as an infectious disease and are poorly informed regarding its causes and risk factors [10,11,13].

Cancer itself is not communicable, yet it can be prevented by knowledge and early discovery. Research reveals that over 40% of cancer can be avoided by awareness generation and decrease in exposure to risk factors [14-16]. In LMICs, cancer is frequently diagnosed at the advanced stage when treatment is not as effective [13-16]. The major public health challenges in cancer prevention within these regions include a lack of awareness, deeply ingrained misconceptions, negative societal attitudes toward cancer patients, and the limited availability and quality of cancer treatment services [17-20].

Research conducted in Asian countries has highlighted the severe lack of awareness and inadequate cancer care services in these regions [19,20]. Early detection of breast and cervical cancers, in particular, requires knowledge of their risk factors, symptoms, and available screening techniques. Cancer remains one of the leading causes of morbidity and mortality in these regions, posing an increasing public health concern [10,14]. Although many Asian countries do not have national cancer registries, hospital records estimate thousands of new cancer cases per year, with breast and cervical cancers being the most prevalent [13,14]. Indus Hospital, one of the

leading cancer treatment facilities in Pakistan, receives a large number of cancer patients annually. However, due to inadequate treatment facilities, high costs, and limited accessibility to essential medications, only a small percentage of referred cancer patients receive complete treatment [12,17]. As a result, more than 80% of patients are diagnosed at advanced, incurable stages of the disease [12,15].

These statistics underscore the critical need for prevention and early detection as the most cost-effective and practical solutions to reducing cancer-related deaths. To our knowledge, there has been limited investigation into the awareness and beliefs about cancer among the population of Lahore, Pakistan. Therefore, this study aims to assess the level of awareness and beliefs about cancer in general, with a particular focus on breast and cervical cancers, among the people of Lahore.

Methods:

This study was conducted in Lahore, Pakistan, one of the largest metropolitan cities and the capital of Punjab province. Lahore is known for its diverse population and is a major healthcare hub in the region, housing multiple public and private hospitals, including Indus Hospital, which provides cancer care services. The study focused on different localities within Lahore to ensure diverse representation of the population. A cross-sectional study approach based in the community was used. Several regions of Lahore were chosen for the study using a multistage cluster sampling technique. Simple random sampling was also used to choose particular neighborhoods using a non-proportional allocation mechanism. A sampling frame sourced from local administrative units was used to randomly choose study participants from each neighborhood.

The study population included sexually active youth and adults aged 18 and above from the general population. Individuals with communication barriers, those who were absent during the survey, and critically ill patients were excluded from the study. The total sample size was allocated proportionally among the selected neighborhoods in Lahore. Data collection was conducted from March 08 to April 19, 2022, using a structured questionnaire adapted from the American Cancer Society's cancer prevention questionnaire. The questionnaire was translated into the local language and back-translated into English for accuracy. A team of 12 trained nurses (six male and six female) conducted interviews with participants, covering demographics, health information, socioeconomic factors, and exposure to carcinogenic agents. The questionnaire also assessed lifestyle factors, including smoking, sexual behavior, contraceptive use, history of sexually transmitted infections (STIs), and occupation. A pretest was conducted on 5% of the sample size in a different but socioeconomically similar population. The data collection process was supervised by a principal investigator and four public health officers to ensure accuracy and consistency. Data was entered into Excel and analyzed using SPSS version 24.0, applying frequency distributions, proportions, and summary statistics. A p-value of <0.05 was considered statistically significant. Data quality was maintained through daily supervision, spot-checking for completeness, and regular review by trained professionals, ensuring the reliability and validity of the findings.

The study was approved by the Institutional Review Board**,** ensuring verbal informed consent from all participants. Confidentiality and anonymity were strictly maintained, and formal permission was obtained from local authorities before conducting the research.

Results:

The study participants were within the economically productive age group, with an average age of 25.19 years. Males accounted for slightly more than half (52.0%) of the respondents, while females comprised 48.0%. The proportion of healthcare professionals and office workers among respondents was nearly equal, making up 11.4% and 10.7% of the total, respectively. A significant proportion (87.2%) of participants had prior knowledge about cancer, with mass media (34.6%), schools (28.5%), and health professionals (6.7%) being the primary sources of information.

When first hearing about cancer, 72.8% of respondents reported feeling fear. While 62.1% believed that cancer could affect anyone, 14.8% mistakenly thought it was a communicable disease. Furthermore, 65.4% of respondents understood that cancer is treatable if detected early, yet half feared cancer due to the belief that it was incurable, while 24.2% associated their fear with a lack of awareness. Approximately two-thirds (66.7%) of respondents believed cancer is preventable, and 44.1% were aware of the existence of cancer treatment drugs. About half of the participants knew where cancer treatment centers were located, while 22.5% were unaware of treatment locations.

Mass media was the most common source of information regarding treatment centers. Nearly 47% of respondents believed cancer prevalence was rising in Asian countries, while 43.6% had no knowledge of its prevalence. Only 7% attributed the increasing cases to a lack of awareness. Less than half (38.6%) associated cancer risk with diet, while a slightly higher proportion recognized smoking as a risk factor. Notably, 64.8% of participants were unaware of organizations working to combat cancer, yet 89.9% expressed willingness to collaborate with such associations. More than half (59.7%) of respondents reported knowing someone who had died from cancer, with 38.6% specifically citing breast cancer as the cause.

Regarding specific cancers, 48% and 24.2% of respondents had heard of breast and cervical cancer, respectively. Additionally, 43.3% believed breast cancer to be the most common cancer in Asian countries. Notably, 38.8% incorrectly thought breast cancer was caused by infectious agents, and only 49% believed survival was possible after diagnosis, while 41.3% thought survival was unlikely. More than a third (36.6%) knew someone with breast cancer, whereas 12.3% and 10.3% had acquaintances diagnosed with lung and cervical cancers, respectively. Only 36.2% correctly identified viruses as the cause of cervical cancer, while 28.9% and 14.1% mistakenly attributed it to bacteria and fungi, respectively. Additionally, 47.3% of respondents incorrectly believed cervical cancer was transmissible, with 18.8% specifically thinking it was sexually transmitted.

Encouragingly, 76.5% believed cervical cancer is curable if detected early, and 66.8% recognized its preventability. Around 56.7% identified early screening as a preventive measure, while 12.1% believed avoiding unsafe sex could help. However, only 4.7% had undergone cervical cancer screening. Furthermore, 39.6% had never experienced any illness related to the cervix, and only 6.7% had been informed about cervical cancer by a physician. Awareness regarding signs and symptoms was particularly low, with just 4.7% of participants having any knowledge.

Among the study participants, 49% reported being sexually active, with 37.7% having their first sexual experience between ages 25 and 30, followed by 29.5% between 20 and 25 years. Regarding current sexual status, 59.9% reported having one sexual partner, while 37.4% were abstinent. Only 11.9% reported multiple sexual partners, and 62.4% had no children. Among those with children, 10.8% gave birth before the age of 18. Contraceptive use was also explored, revealing that 40% of respondents had never used any birth control method. The most commonly used contraceptives were injections (18.1%) and condoms (15.1%). Given the link between cervical cancer and sexually

transmitted diseases (STDs), awareness of STDs was assessed. While 65.1% of participants had some knowledge about STDs, 34.6% lacked awareness.

A significant proportion of participants (more than 50%) reported never engaging in physical exercise, citing a lack of time and appropriate facilities as primary reasons. Moreover, 66.1% were unaware of the link between physical activity and cancer prevention. A notable 98.1% had never smoked, and 98.3% stated that their spouses were also non-smokers. However, only 66.7% were aware of smoking-related health risks, and 46.8% specifically linked smoking to lung cancer.

Discussion:

If people avoid risk factors and infections linked to cancer, a large percentage of cancer morbidity and death can be avoided (13–15). In low-income countries (LICs), almost one-third of cancer-related deaths are thought to be avoidable (28). Intervention is difficult because the majority of cancer patients in LICs, including those in Lahore, present at an advanced stage. Lack of awareness, knowledge gaps, and prevalent beliefs and misconceptions regarding cancer are some of the factors contributing to the late presentation of cancer cases (18,19,20). Public education can help eliminate myths like the idea that cancer is a curse, a death sentence, or a communicable disease. The purpose of this study was to evaluate Lahore residents' awareness and understanding of cancer, namely breast and cervical malignancies.

Findings from this study indicated a modest level of cancer awareness among participants. A similar descriptive, cross-sectional study in Nigeria found that 55.4% of participants were aware of cervical cancer (09). In our study, more than a third (34.6%) of participants learned about cancer from mass media (MM), followed by schools (28.5%) and healthcare professionals (6.7%). A study in Kenya among 120 schoolgirls also found that MM and schools were primary sources of information on cervical cancer (20). MM plays a crucial role in public health awareness, including cancer risks, but accessibility to MM remains limited in LICs. Educational institutions are also scarce in these regions, further constraining awareness efforts. The study population primarily consisted of individuals in the working-age group, with a mean age of 25.19, which may have contributed to their relatively higher awareness due to better educational backgrounds and access to MM (1–4). A review by Schliemann et al. also highlighted that education and media exposure directly influence cancer awareness (5).

Notably, the role of frontline healthcare workers in cancer prevention was minimal. Primary care providers face multiple challenges, including competing demands and inadequate support systems for preventive care, yet they remain the most trusted sources of health information (9). Additionally, 70% of participants reported feeling fear upon first hearing about cancer, a common reaction even in high-income countries (17). Cancer elicits strong emotional responses such as fear, uncertainty, and hopelessness (17,18). Societal perceptions significantly influence patient psychology, treatment adherence, and healthcare-seeking behavior (17,19). About 50% of participants feared cancer due to the belief that it is incurable, while 27.2% attributed their fear to a lack of awareness, emphasizing the necessity of public education. Studies have shown that early diagnosis and adherence to treatment are linked to awareness levels (17,20). Furthermore, 14.8% of participants mistakenly believed that cancer is a communicable disease, which can contribute to stigma and negatively impact cancer control efforts. While cancer itself is not contagious, certain viruses and bacteria can increase cancer risk (13,14).

Lahore, a major city with a growing population, has limited healthcare facilities specializing in cancer treatment. Public awareness of available cancer treatment centers is crucial. This study found that 67.4% of participants were aware that cancer treatment is available in Lahore, and a similar proportion believed that early detection improves the chances of cure. This contrasts with other studies where cancer misconceptions were more prevalent (10,11). Some African studies reported that people often prefer traditional or religious healers over conventional medical treatment (12). Previous research also indicated that many cancer patients initially sought help from traditional healers before visiting hospitals (20). Additionally, 22.5% of participants were unaware

of where cancer treatment was available in their city. The limited referral system, cultural barriers, and lack of knowledge about treatment facilities contribute to delayed care-seeking behavior.

The awareness of modifiable cancer risk factors was also examined. A significant proportion of participants were unaware of the link between smoking and cancer. In this study, 38.6% of participants recognized smoking as a cancer risk factor. Tobacco use is a major contributor to global cancer burden, associated with at least 14 different cancers (15). Over a quarter of all cancer-related deaths and 87% of lung cancer cases are linked to smoking. Similarly, a national household survey in Nigeria found low awareness of smoking-related cancer risks, with variations across regions (12). Given that tobacco consumption remains a prevalent habit, awareness campaigns targeting smoking cessation are necessary.

Similar to other low-income countries, most breast and cervical cancer cases in Lahore are diagnosed at advanced stages when treatment options are limited. While inadequate diagnostic and treatment facilities contribute to high morbidity rates, lack of awareness remains a key factor (19,20). In this study, only 48% of participants had heard of breast cancer, and just 24.2% were aware of cervical cancer. Although 36.6% of respondents knew someone diagnosed with breast cancer, only 10.3% were familiar with a cervical cancer case. Awareness regarding the risk factors and consequences of these cancers was notably low among participants.

More than 95% of cervical cancer is attributed to high-risk human papillomaviruses (HRHPV), which have available vaccines and preventive strategies (13,15). In high-income nations, incidence and mortality due to cervical cancer have been lowered by vaccination, screening, and public education (1,2). In low-income nations, such as Lahore, cervical cancer is a major cause of cancer-related mortality. This research revealed that only 36.2% of the participants identified HRHPV as the main cause of cervical cancer, highlighting the necessity for public health interventions. Prevention is based on vaccination and screening coverage, which, in turn, are based on sufficient awareness (17,18). Interestingly, 69.4% of the participants had poor knowledge regarding HRHPV transmission, and only 18.8% identified it as a sexually transmitted infection. This gap in knowledge points toward the need for specific educational interventions.

Screening activities are crucial for early cancer detection and mortality reduction (48). The significant reduction in breast and cervical cancer morbidity in high-income nations is largely due to well-established screening programs (19,20). Screening and vaccination programs are still in their infancy in most LICs, such as Lahore (11,12). This research found that 4.7% of the participants had ever undergone cervical cancer screening, primarily because of a lack of awareness regarding its significance. Also, doctors' contribution to public awareness of breast and cervical cancers was low, given that 4.7% of respondents were informed about symptoms of cervical cancer. Results were found to be similar in southwest regions, where awareness levels were extremely low (7).

Therefore, an integrated approach to prevention incorporating mass awareness programs, better health infrastructure, effective screening programs, and improved healthcare professional participation is the need of the hour in order to manage cancer morbidity and mortality in Lahore.

Conclusion:

This research identifies a moderate degree of knowledge regarding cancer among the study group in Lahore. Mass media and educational institutions are the main sources of information on cancer, and the intervention of health professionals in cancer awareness is minimal. A greater percentage of the respondents were found to have fear and myths regarding cancer and assumed it to be incurable and communicable. Moreover, awareness regarding cancer risk factors, such as smoking, was also insufficient. In spite of the presence of cancer treatment facilities in the nation, a significant number of participants were not aware of treatment facilities. Awareness about breast and cervical cancers was especially low, with very few taking part in screening

programs. These results reaffirm the imperative necessity of widespread public health efforts in the form of targeted education campaigns, increased access to screening services, and augmented healthcare professional participation in education programs. Strengthening these measures is essential to improving early detection and treatment outcomes in Lahore.

Table 1: Study Participants' Socio-Demographic and General Features

Characteristics	Frequency (N=298)	Percentage (%)
Age		
18–30	217	72.8
31–45	65	21.8
46 and above	16	5.4
Sex		
Female	143	48.0
Male	155	52.0
Educational Status		
Illiterate	5	1.7
Can Read and Write	22	7.4
Primary Education	29	9.7
Secondary Education	65	21.8
College Preparatory Level	67	22.5
College and Above	110	36.9
Religion		
Muslim	267	89.6
Christian	10	3.4
Others	21	7.0
Marital Status		
Single	176	59.1
Married	105	35.2
Divorced	12	4.0
Widowed	5	1.7
Occupational Status		
Student	154	51.7
Government Worker	116	38.9
Private Worker	21	7.0
Others	7	2.4
Profession		
Teacher	45	15.1
Health Professional	33	11.1
Office Worker	33	11.1
Others	187	62.8
Monthly Income (PKR)		
<10,000	16	5.3
10,000–20,000	27	9.1
20,001–40,000	39	13.1
40,001–60,000	45	15.1
>60,000	46	15.4
Others	125	41.9

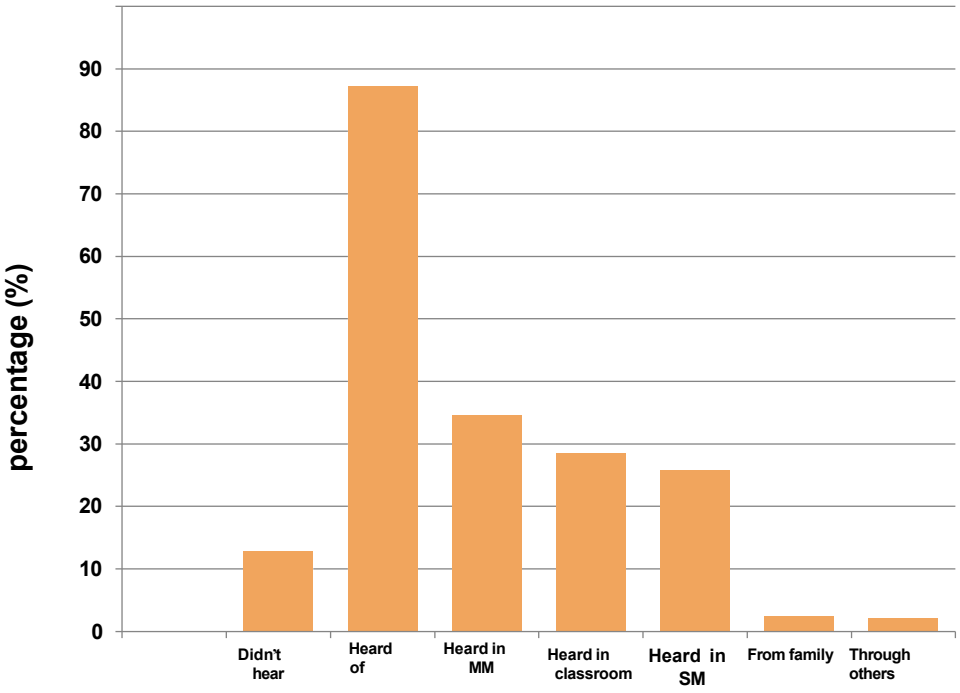

Figure 1 Participants in the study who have heard about cancer and where to find information in Lahore.

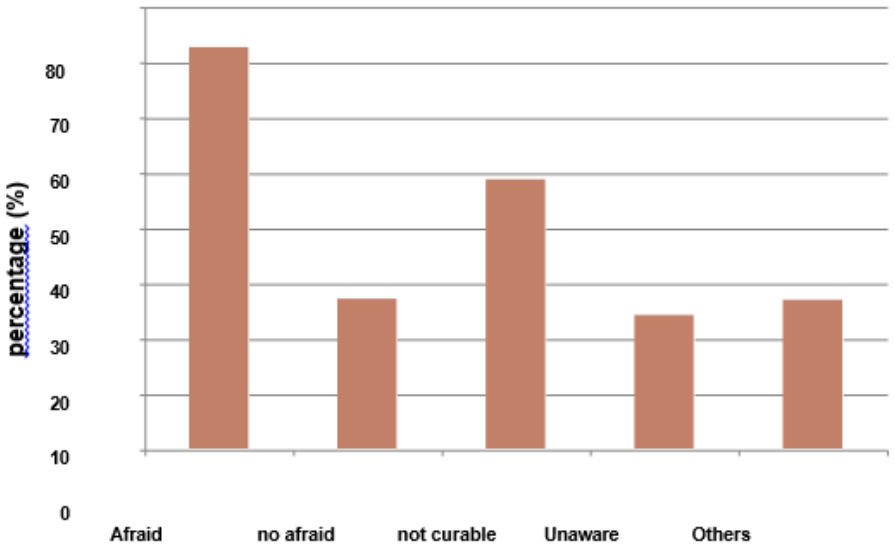

Figure 2 shows the percentage of research participants who were afraid upon learning about cancer and the causes of their anxiety.

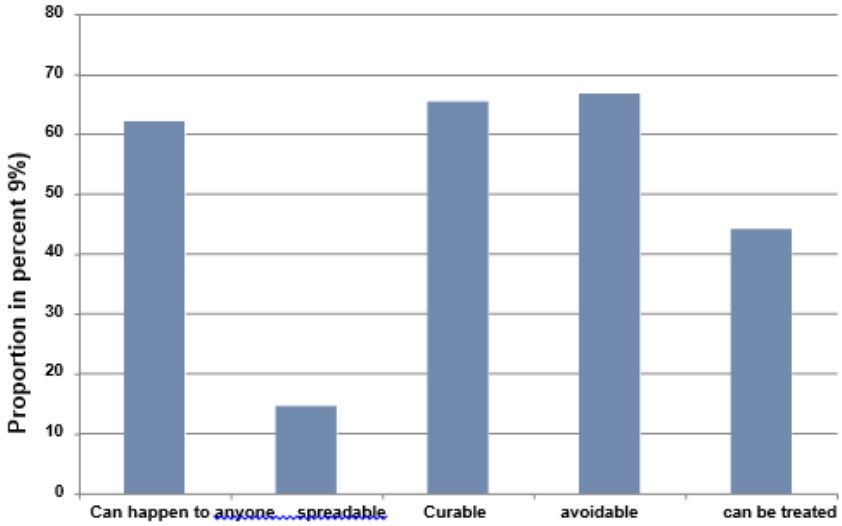

Figure 3 Belief of study participants about cancer

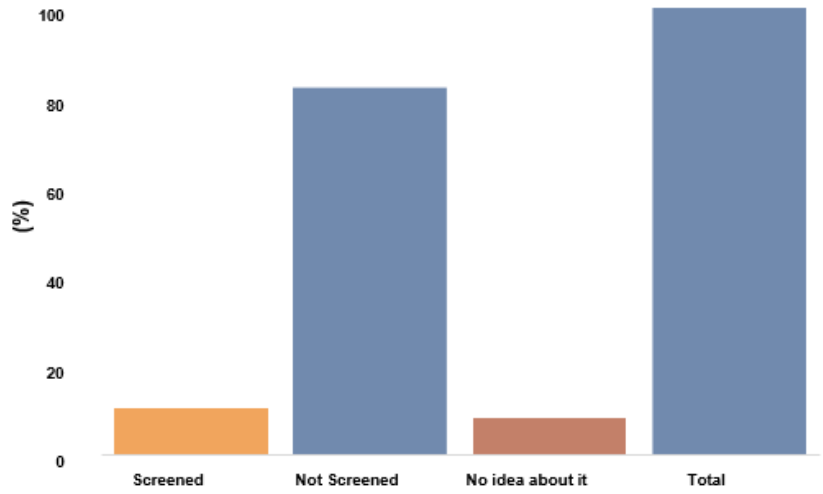

Figure 4 Study participants' experiences and knowledge regarding cervical cancer screening

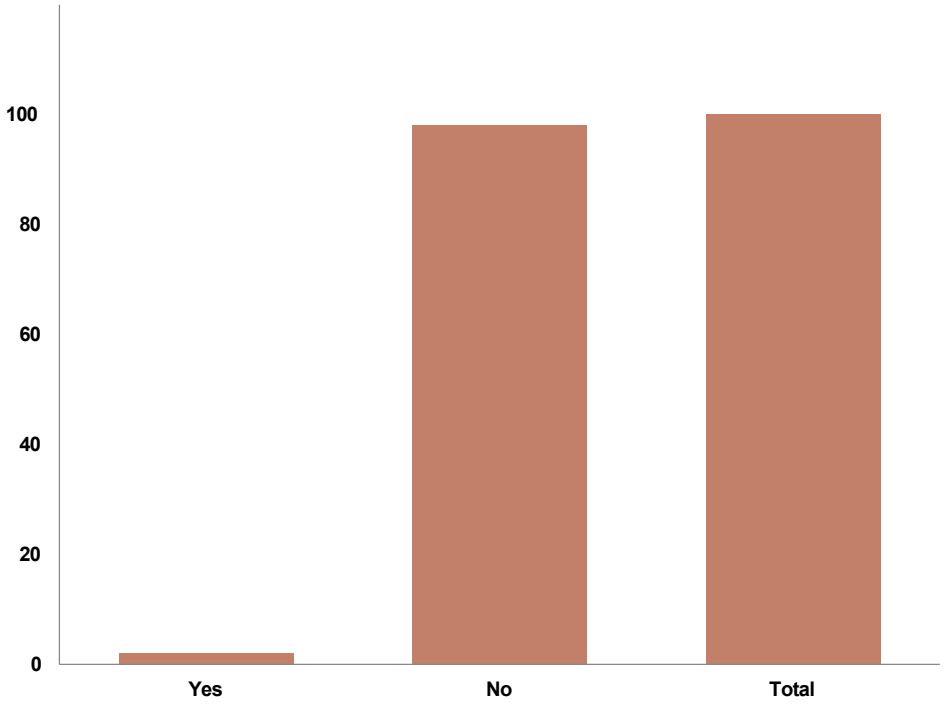

Figure 5 Proportion of study participants with smoking practice

Authors' Contribution:

N.N. contributed to the study conception and design, conducted data analysis, and drafted the manuscript. N.N. also reviewed and approved the final version of the article.

Conflict of Interest:

Author declare no conflict of interest regarding the publication of this article.

Funding and Ethics:

This research was self-funded by the author.

The study was conducted in accordance with ethical guidelines.

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