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Original Article

Knowledge, Attitudes, and Practices among Health Care Workers in Misurata towards Pap smear Screening Test for Cervical Cancer "A Public Women's Health Concern."

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ABSTRACT

Background: Cervical cancer is the fourth most common cancer in women globally, which is caused by persistent infection with the human papillomavirus. Pap smear is still the easiest way and primary screening tool to detect early precursors to cervical cancer. **Aim**: The current study aims to assess the level of knowledge, attitudes, and practices (KAP) regarding Pap smear screening among healthcare workers in Misurata. **Material and Method:** A quantitative cross-sectional study was conducted involving 221 healthcare workers in Misurata public hospitals using a self-administered KAP online questionnaire. **Results**: out of the 221 participants, only 11% demonstrated good knowledge of Pap smear screening, while 70.9% had moderate knowledge. 58.8% of them exhibited a negative attitude toward the test. However, only 12.2% reported practicing Pap smear screening. Knowledge levels were significantly associated with economic status, education level, age, and profession (p = 0.001, 0.002, 0.036, and 0.029), respectively. The attitude was not significantly affected by socio-demographic, pregnancy, or contraceptive use. Practice of the Pap smear test was significantly associated with contraceptive use and profession (p=0.026 and 0.014), respectively. Higher education, professional level, use of contraceptives, and higher knowledge scores were positively associated with Pap smear testing. (P-value 0.025 OR= 0.074, p-value 0.011, OR = 0.241, p-value= 0.043, OR= 0.367, and p-value 0.037, OR- 0.133 respectively). **Conclusion:** The majority of healthcare workers in Misurata demonstrated poor knowledge and low practice levels regarding Pap smear screening.

Keywords: Pap smear, Knowledge, Attitude, Practice, Healthcare workers, Misurata

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INTRODUCTION:

Early detection and prevention of cervical cancer are simple. However, it continues to be one of the most prevalent types of cancer globally[1]. Globally, cervical cancer ranks fourth among cancers that affect women [2]. In 2013, this disease was considered a developing world illness, as developing nations accounted for about 85% of new cases. In contrast, only 15% of new cases were occurring in developed countries, and it is one of the top ten common cancers among women [3]. In 2022, around 350,000 women worldwide died from cervical cancer, and over 660,000 women received a diagnosis; this number is predicted to rise as the population ages [2]. By 2030, it is predicted that over 500,000 women will lose their lives to cervical cancer annually, with 95% of the deaths taking place in low- and middle-income countries [4]. Because of preventive measures, the prevalence of cervical cancer in the United States has considerably decreased by 70% since 1955, such as secondary prevention applying Papanicolaou tests, commonly referred to as Pap smears, and HPV screening [5.6] .Cervical cancer is one of the top three cancers in most countries that affect women under 45, mostly those who are of reproductive age [7]. 2.40 million Women in Libya who are 15 years of age or older are at risk of developing cervical cancer. According to recent data, 141 women die from cervical cancer every year, and 240 are diagnosed with cervical cancer. In Libya, cervical cancer is the third most common type of cancer among women and the seventh most common among those aged 15 to 44 [8]. Cervical cancer screening does offer protective benefits and is associated with a reduction in the incidence of invasive cervical cancer and cervical cancer mortality[9]. Cervical cancer mortality has significantly decreased since the developed countries adopted the conventional Papanicolaou (Pap smear test [10]. A 51–92% decrease in cervical cancer mortality was noted in many European countries following the introduction of a systematic cervical cancer screening program [11]. For cervical cancer screening programs to be effective, they require high levels of acceptance among women, high-quality test performance, and diligent follow-up of abnormal results. However, in many developing countries, women's awareness and understanding of cervical cancer and its screening methods remain limited. A study by Siddig in Sudan revealed that while 81% of women had heard of cervical cancer, only 32% were aware of the Pap test [12] .Similarly, a study by Eljamay and Elqatani conducted in eastern Libya emphasized the low detection rates of basal cell carcinomas and highlighted that implementing routine screening measures such as Pap smears could significantly improve early diagnosis and prevention [13]. Comparable findings were reported in a study from Oman, where many respondents demonstrated limited awareness of the Pap test, further underscoring the need for enhanced education and awareness campaigns in the region [14]. A study conducted in Iran found that while 87.3% of women had a positive attitude toward the Pap smear test, 59.4% exhibited weak knowledge, and only 37.6% had ever undergone the test[15]. Similarly, in Egypt, a study by Mariam Lotfy Mohamed showed that 45% of participants had poor-to-fair knowledge, 57% had negative-to-fair positive attitudes toward cervical cancer screening and HPV vaccination, and only 44% had ever performed a Pap test[16]. Despite some studies reporting good knowledge and attitudes among women, such as toward Pap smear screening, this awareness does not necessarily translate into improved screening practices, indicating a gap between knowledge, attitude, and behavior that must be addressed[17]. Similar to other developing nations, Libya continues to have inadequate availability of screening programs due to a lack of infrastructure, a shortage of qualified medical personnel, limited access to healthcare, and a lack of awareness. Therefore, the aim of this study was to assess the barriers to cervical cancer screening in Libya and to look into the knowledge, attitudes, and practices of healthcare worker women in Misurata regarding Pap smears. It is urgent to prioritize cervical cancer as a public health concern because of the potentially high incidence in sub-Saharan Africa. The burden of cervical cancer is potentially high in incidence in sub-Saharan Africa, and there is an urgency to make it a public health priority.

MATERIAL AND METHODS

Study design, setting, and period

A quantitative cross-sectional study was conducted from September 2024 to December 2024 among 220 married health care workers working in public hospitals in Misurata city in Libya to determine the prevalence of Pap smear screening and association with KAP among health care worker women in Misurata.

Data Collection tool

Data were collected using a self-administered online questionnaire. In this study, the questions in the questionnaire were designed based on the

literature review. The questionnaire was divided into four sections: the first section contained sociodemographic characteristics of respondents, the second section consisted of knowledge, the third section comprised attitudes, and the fourth section included practice towards Pap smear screening. The knowledge domain consists of 14 questions with 3-item responses (correct, incorrect, don't know), such that correct answers received a score of 2, whereas incorrect and don't know received a score of 0. The attitude of subjects toward Pap smear tests was evaluated using 11 questions with responses scored via a 3-point Likert scale, with 0, 1, and 2 indicating disagree, not sure, and agree, respectively. The internal consistency of the questionnaires was accomplished by estimating the Cronbach's α value based on the recommendation of > 0.70. The Cronbach's α value calculated was α = 0.77

Study participants Sample Size

The study participants were married female healthcare workers in various categories (doctors, nurses, pharmacists and lab technicians) employed at public hospitals in Misurata City. The sample size was calculated based on 13% of the prevalence of adequate knowledge (Nepal) using the Cochrane formula (n=z2 pq/d2) (18). The sample size of 250 was attained after calculation with 5% allowable error at a 95% confidence interval (CI).

Statistical analysis

Data was analyzed using IBM SPSS Statistics software version 22.0. Variables were reported as frequency and percentage. Descriptive statistical analysis was applied in the study, with $p < 0.05$ considered significant. The scores for all 14 knowledge items and the 11 attitude items were summed up to obtain overall scores. Total knowledge scores ranged from 0 to 28, with higher scores indicating higher knowledge, whereas total attitude scores ranged from 0 to 22, with higher scores indicating better attitudes. The association between adequacy of knowledge, attitude, and practice of the examination and socio-demographic characteristics, such as age, education, and occupation, was analyzed statistically by computing proportions and percentages. Factors associated with the practice of Pap smear tests were determined through binary logistic regression analysis. Independent variables tested included age group, number of pregnancies, education level, professional level, and economic status, use of contraceptives, knowledge score, and attitude score.

Ethical Approval

Research approval was obtained from Misurata University Ethics Committee for Involving Human Subjects before conducting the study. Permission from health units was obtained before interviewing the participants. The consent forms were collected from the participants by unit contacts, and the researcher provided each potential participant a clear verbal explanation of the study's purpose and procedures.

RESULTS:

Out of 250 distributed questionnaires, 221were returned, with a response rate of 88.4%. The socio-demographic characteristics of the study sample are presented in Table 1. A total of 221 health care workers were included in this study. Health-care workers aged between 30 and 60 years constituted the majority (48%). The maximum number of participants was from the medium socioeconomic status (77.7%). The majority of them had graduated (83.7%), and doctors (44.3%) did not use contraceptive tools (73.3%).

Table 1: Sociodemographic Characteristics of Study Population (n=221)

Variable	Parameter	Frequency (%)
Age	> 20 yr	3 (1.4%)
	21 – 30 yr	112(50.7%)
	< 30 yr	106(48%)
Age of marriage	> 20 yr	25 (11.3%)
	21 – 30 yr	170 (76.9%)
	< 30 yr	26 (11.8%)
Education level	Not educated	1 (0.5%)
	Primary & secondary level	35 (15.8%)
	Graduate & postgraduate	185(83.7%)
Pregnancy	Null para	58(26.2%)
	1-3	97(43.9%)
	< 3	66 (29.9%)
Occupation	Doctor	98(44.3%)
	Pharmacy	13(5.9%)
	Technician	54(25.4%)
	Nurse	58(26.3%)
Economic status	Limited	14(6.3%)
	Medium	172(77.8%)
	High	33 (14.9%)

Contraceptive uses	Yes	162(73.3%)
	No	59(26.7%)
Type of contraceptive	Natural	24 (10.6)
	Pills	14 (6.3%)
	Inj	6 (2.7%)
	Iucd	1 (0.5%)
	Slid	0 (0%)

As shown in Table 2, only 11% exhibited good knowledge about pap smear screening, 70.9% displayed medium knowledge, and 24.9% of participants presented low knowledge. About 39.4% of participants revealed a negative attitude, while more than half (58.8%) expressed a positive attitude. Only 12.2% of participants are healthcare workers who practice the Pap smear, whereas 87.7% have never applied the Pap smear.

Table 2: Respondents' Level of Knowledge, attitude, and practice regarding pap smear test (n=221)

Variable	Parameter	Frequency (%)
Knowledge level	Low	24.9%
	Medium	70.9%
	Good	11%
Attitude	Positive	39.4%
	Negative	58.8%
practice	Yes	12.2%
	No	87.7%

According to the given data presented in Table 3, a significant association was found between knowledge score and economic state, education level, age, and profession of participant (p = 0.001, 0.002, 0.036, 0.029, respectively). The practice of the pap smear test has a significant association with participants who use contraceptives and the profession of participants (p = 0.026- 0.014, respectively). The analysis of the data showed no significant association between the respondents' attitude and socio-demographic factors.

Table 3: Association between socio-demographic characteristics and KAP about cervical cancer screening (n=221)

Variable	Parameter	Knowledge			attitude		practice	
		Low	medium	High	negative	positive	no	yes
Age	> 20 yr	2	0	1	0	3	3	0
	21 – 30 yr	24	83	5	41	70	101	11
	< 30 yr	29	72	5	46	57	90	16
	Df	4			2		2	
	p- value	0.036*			0.186		0.339	
Age of marriage	> 20 yr	10	13	2	12	13	22	3
	21 – 30 yr	41	121	8	65	102	151	19
	< 30 yr	4	21	1	10	15	21	5
	Df	4			2		2	
	p- value	0.244			0.689		0.505	
Education level	Not educated	1	0	0	0	1	1	0
	Primary & secondary level	15	18	2	15	19	34	1
	Graduate & postgraduate	39	137	9	72	110	159	26
	Df	4			2		2	
	p- value	0.029*			0.631		0.167	
Pregnancy	Null para	16	40	3	21	37	53	5
	1-3	21	71	5	34	59	84	13
	< 3	18	44	4	32	34	57	9
	Df	4			2		2	
	p- value	0.841			0.249		0.622	

Occupation	Doctor	11	82	5	46	49	86	12
	Pharmacy	2	10	1	6	7	8	5
	Technician	20	32	2	14	39	51	3
	Nurse	22	31	3	21	35	49	7
	Df	6			3		3	
	p- value	0.002*			0.065		0.014*	
Economic status	Limited	5	6	3	4	10	13	1
	Medium	46	122	4	75	94	153	19
	High	3	26	4	8	25	26	7
	Df	4			2		2	
	p- value	0.001*			0.064		0.221	
Contraceptive uses	Yes	38	117	7	64	94	147	15
	No	17	38	4	23	36	47	12
	Df	2			1		1	
	p- value	0.496			0.839		0.026*	

Table 4 shows the factors predictive of pap smear testing practice based on binary logistic regression analysis. Participants with a bachelor's degree or postgraduate degree were significantly more likely to undergo Pap smear testing compared to uneducated (p-value 0.025, OR= 1.074, 95% CI: 0.008-0.719). Moreover, occupation was a strong predictor: doctors were significantly more likely to perform pap smears (p- value = 0.011, OR = 1.639), while nurses significantly less (p-value = 0.030, OR = 0.124, 95%CI: 0.024-0.827), participants who used contraceptive were significantly less likely to undergo pap smear testing compared to who did not use contraceptive (p-value= 0.043, OR= 0.367) and participants with medium knowledge were significantly less likely to undergo pap smear testing compared to high knowledge (p-value = 0.037, OR= 0.133). Other factors, including age and a positive attitude towards pap smear testing, were associated with higher screening practice, although these associations did not reach statistical significance.

Table 4: Predictive Factors Associated with the Practice of Pap Smear Testing among Health Workers (n=221)

Variable	Parameter	Wald	Sig. *(p-value)*	Exp, B	95% CI
Age	> 20 yr	0.121	0.728	1.249	0.357 – 4.366
Education level	Not educated	5.036	0.081		
	Primary & secondary level	0.000	1.00	0.000	0.000
	Graduate & postgraduate	5.036	0.025*	1.074	0.008 – 0.719
Occupation	Doctor	11.213	0.011*		
	Pharmacy	3.674	0.055	0.241	0.056 – 1.033
	Technician	0.313	0.576	1.639	0.290 – 9.249
	Nurse	4.716	0.030*	0.142	0.024 – 0.827
Contraceptive uses	Yes	4.081	0.043*	0.367	0.138 – 0.970
	No				
Knowledge level	Low	4.686	0.096		
	medium	4.356	0.037*	0.133	0.020 – 0.884
	Good	3.611	0.057	0.213	0.043 – 1.050
Attitude	positive	0.228	0.633	1.277	0.467 – 3.491
	Negative				

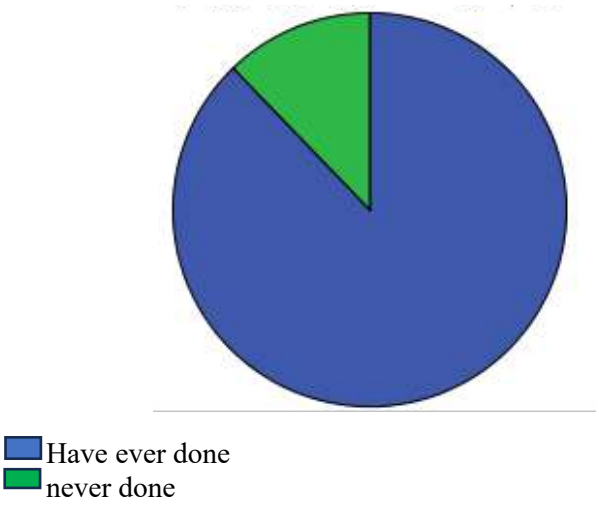

Figure 1: Prevalence of the practice of the Pap smear test among healthcare workers in Misurata

DISCUSSION:

Cervical cancer can be prevented, and a key aspect of prevention is raising public awareness and ensuring that healthcare providers are well-informed about the various methods of prevention and screening. Many studies conducted in developing countries have highlighted the population's level of understanding and knowledge, providing valuable insights for healthcare systems to design appropriate educational strategies [19.20].The healthcare providers who participated in this study generally demonstrated accurate knowledge; however, only 11% showed good knowledge of Pap smear screening. Despite this, our survey found that although healthcare providers generally possessed accurate baseline knowledge, only 11% demonstrated a high level of understanding concerning Pap smear screening. This indicates a significant gap between general awareness and comprehensive knowledge of crucial screening practices. A cohort study conducted among healthcare professionals in Saudi Arabia similarly revealed alarmingly low knowledge scores. This is concerning, as a basic understanding of common diseases is expected from healthcare staff [21]. These findings suggest a lack of ongoing medical education initiatives related to cervical cancer screening and prevention for healthcare professionals in the region. Educational status was significantly associated with both the knowledge score of the Pap smear test and the utilization of cervical cancer screening. Participants with higher levels of education were more likely to undergo cervical cancer screening practices compared to their less-educated counterparts. This finding is in line with a study from Hong Kong, where women with a higher educational level (post-secondary) were more likely to have had a Pap smear test than those with primary education or below [22]. Moreover, the findings from the current study are also comparable with those of studies conducted in Ethiopia and India, where a rise in educational status was not only significantly associated with increased knowledge of the Pap smear test but also identified as a significant predictor of cervical cancer screening [23, 24]. Another study further supports this association, indicating that individuals with a bachelor's degree or higher were 2.58 times more likely to undergo a Pap smear test compared to those with only a high school education or less [25].The probable explanation might be that women with higher education had higher levels of knowledge about cervical cancer and were much more willing to go for cervical cancer screening practice than those who had less education. Supporting this, Almobarak reported that education was the most important predictor of knowledge about the pap smear test, even once in their lifetime[26].In addition to educational status, occupational role was also found to be significantly influenced by knowledge levels regarding Pap smear screening. In this study, physicians exhibited the highest knowledge scores, with the association reaching statistical significance ($p = 0.039$). This indicates that women in professional healthcare roles are more likely to possess comprehensive knowledge about cervical cancer prevention and screening. Similar findings have been documented in other studies involving healthcare professionals, where knowledge levels were significantly associated with job designation or professional rank. These results suggest that not only formal education but also professional exposure and clinical experience contribute meaningfully to knowledge and awareness about cervical cancer screening [27.28].These findings contrast with others who reported that healthcare workers at a tertiary hospital in Saudi Arabia exhibited insufficient knowledge regarding the importance of Pap smear screening [21], which negatively impacted screening uptake in that setting. However, the discrepancy between our findings and theirs may be attributed to differences in study populations and institutional settings. While our study included a broader range of healthcare professionals from various levels of care, another work focused specifically on workers within a single tertiary hospital, where the demands of specialized roles and a lack of targeted continuing education programs may have limited awareness of preventive services such as Pap smear screening.

This contrast highlights the importance of consistent and comprehensive training across all healthcare levels, regardless of professional specialization, to ensure adequate knowledge and promotion of cervical cancer screening practices. However, the findings indicating a significant relationship between the knowledge of Pap smear tests and age align with other studies that reported a positive relationship between demographic variables, particularly age, and knowledge of Pap smear tests. These studies suggest that as women grow older, they are more likely to become informed about cervical cancer prevention and are therefore more likely to undergo Pap smear testing [14.29]. Conversely, this finding contradicts another Saudi study that found no significant association between knowledge of the Pap smear test and the age of women [30]. In our study, the participants were a healthcare worker, which likely explains a significant relationship between knowledge of Pap smear tests and age. This discrepancy could be attributed to other factors, such as cultural, social, healthcare system differences, education levels, marital status, and socioeconomic status might interact with age to influence knowledge and uptake, further contributing to the observed differences between studies. In our study, the majority of participants (81.9%) had medium and high knowledge. Almost an equal number of women (87.7%) had never done cervical cancer screening, but interestingly, 58.1 % of the women had a positive attitude towards cervical cancer screening. The positive attitude in this study was higher, but the knowledge and practice findings are consistent with those of other study [18] .In which out of 100 women in an urban area of Nepal, 53% lacked appropriate awareness about Pap smear tests, while only 38% had a suitable attitude, and 13% had enough practice [18] . The low practice is in line with a study done in Sudan, which found that only 15.8% of participants had ever done cervical cancer screening [26]. Conversely, a study conducted in Malaysia reported a significantly higher screening prevalence, with 46.6% of participants having received a Pap smear test [17] This relatively high rate was attributed to consistent efforts by the Malaysian Ministry of Health (MOH), which has prioritized early detection by regularly organizing public awareness campaigns and collaborating with private healthcare providers to promote Pap smear screening. These comparisons suggest that targeted national health strategies and awareness initiatives can play a critical role in improving screening uptake, even when knowledge levels are comparable across populations.The practice of the pap smear test was only 12% that less than other studies conducted in Iran and Malaysia, which had a prevalence of pap smear tests of 50.4%, 48% respectively [17.19]. Differences in healthcare infrastructure and accessibility could play a role. Countries with well-established screening programs and regular awareness campaigns are more likely to achieve higher screening rates. In addition, the low prevalence in our study is surprising given that the participants were healthcare workers, who are expected to have better awareness and understanding of the importance of cervical cancer screening. This finding suggests that even among healthcare professionals, gaps may exist in translating knowledge into practice. Barriers such as lack of time, fear of discomfort, or perceived low risk could explain this discrepancy. It has also been observed that there is a significant association between Pap smear practice and contraceptive use. This finding aligns with previous research examining the link between pelvic examinations and contraceptive methods among adolescents, which reported that the odds of effective contraceptive use were significantly higher among those who had received a Pap smear or pelvic examination (Odds Ratio = 3.05; 95% CI: 1.53–6.03) [31]. However, contrasting evidence was reported in a cross-sectional study based on the CONSTANCES cohort, which found no significant difference in Pap smear test adherence between women using intrauterine devices (IUDs) and those using other contraceptive methods such as oral pills or implants [32]. These differing results may be attributed to variations in study populations, age groups, healthcare system engagement, and the type of contraceptive counseling provided. While pelvic exams are sometimes integrated into contraceptive consultations in certain settings, this practice is not universal, which may account for the inconsistencies observed across studies.The study highlights a significant association between knowledge scores and the practice of Pap smear screening. This means that individuals with higher knowledge about Pap smears are more likely to undergo the test. The finding is consistent with an Iranian study, which reported that for every unit increase in knowledge score, the likelihood of performing a Pap smear increased by 1.61 times[23]. Healthcare professionals are expected to have higher awareness and understanding of preventive measures, including cervical cancer screening. However, our study highlights that even among them; increased knowledge positively influences their likelihood of undergoing Pap smear

screening. This suggests that while they may be aware of the test, their engagement in preventive care still depends on their level of knowledge. Furthermore, there was no statistically significant association between attitude and the practice of cervical cancer screening. However, participants with a positive attitude were still more likely to undergo screening (OR = 1.277), suggesting a potential trend. This finding is consistent with a meta-analysis study showing that women's attitudes towards cervical cancer screening had been associated with cervical cancer screening uptake. Women who had a favorable attitude towards cervical cancer and screening were 3.42 times (OR = 3.4, 95%CI: 2.88, 4.05) more likely to undergo screening than those who had an unfavorable attitude [24]. This discrepancy may be explained by contextual factors specific to our country, where cervical cancer screening services, particularly Pap smear tests, are still not widely available in most public hospitals. As a result, even women who hold positive attitudes toward screening may face significant structural barriers that limit their ability to act on their intentions. To effectively increase screening uptake, this study emphasizes the importance of enhancing accessibility to screening services, in addition to implementing educational and attitudinal interventions. Moreover, the outcomes underscore the importance of integrating educational programs and targeted awareness campaigns to bridge the gap between knowledge and practice. By addressing educational disparities and enhancing healthcare providers' understanding of cervical cancer screening, more substantial progress can be made in increasing screening uptake and ultimately reducing the incidence of cervical cancer. Cervical cancer, despite being the commonest genital cancer of women in Libya, has no properly organized or high-level opportunistic screening programs for cervical cancer in Libya [8]. Future studies should explore the underlying reasons for low Pap smear uptake in this population and compare findings across different regions and professional groups to identify best practices for improving screening rates.

Limitations

1. Cross-Sectional Design: The study's cross-sectional nature limits the ability to establish causality between variables such as knowledge, attitude, and screening behavior.
2. Self-Reported Data: Reliance on self-reported responses may introduce social desirability and recall biases, particularly regarding sensitive practices like cervical cancer screening.
3. Generalizability: As the study was conducted among healthcare professionals, the findings may not be fully generalizable to the broader population of women, especially those outside the healthcare sector.
4. Access to Services: The lack of availability of Pap smear screening in many public hospitals may have confounded the relationship between attitude and screening practice, as positive attitudes could not necessarily translate into action due to structural limitations.
5. Sample Composition: The majority of participants were from a specific professional background, which may have influenced knowledge and awareness levels compared to a more demographically diverse sample.

CONCLUSION:

This study highlights critical insights into the knowledge, attitudes, and practices (KAP) of cervical cancer screening among women, particularly healthcare professionals. While a majority demonstrated moderate to high knowledge and a positive attitude toward Pap smear screening, actual screening practice remained remarkably low. A significant association was observed between knowledge levels and screening uptake, indicating that improved knowledge correlates with a higher likelihood of undergoing a Pap smear test. Additionally, educational status, age, occupational role, and contraceptive use were found to significantly influence knowledge and/or practice. However, despite favorable attitudes, no significant link was observed between attitude and actual screening practice, likely due to structural barriers such as limited availability of services in public healthcare settings. These findings suggest that increasing access to screening services and reinforcing targeted educational interventions are essential to bridge the gap between awareness and practice, even among healthcare workers.

CONFLICT OF INTERESTS

The authors declare that they have no conflicts of interest.

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