FACTORS AFFECTING UTILIZATION OF CERVICAL CANCER SCREENING SERVICES AMONG WOMEN ATTENDING PRIMARY HEALTH CARE CENTERS AT AL-KARKH HEALTH DIRECTORATE

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ABSTRACT

Background: Cervical cancer remains one of the leading causes of cancer-related deaths among women in developing countries. Regular screening through Pap smear testing is crucial for early detection and prevention of disease progression. **Aim:** This study aimed to assess the factors influencing the utilization of cervical cancer screening services among Iraqi women. **Method:** A cross-sectional study was carried out between April and December 2024 in Primary Healthcare Centers within the Aladel Sector of the Al-Karkh Health Directorate. A total of 400 women aged 21 to 65 years were recruited using a convenient sampling method. Data were collected through a structured questionnaire covering sociodemographic characteristics, medical history, knowledge about cervical cancer, and perceived barriers to screening. **Results:** Only 46 women (11.5%) had ever undergone a Pap smear test, all of whom did so at the physician's request rather than for routine screening. The most commonly reported barrier was a belief of being healthy in the absence of symptoms (69.2%), followed by lack of physician recommendation (18.1%), limited knowledge (8.5%), and fear (2.8%). Just 24% of participants demonstrated adequate knowledge of cervical cancer screening. Utilization of the Pap smear was significantly associated with age, education level, income, presence of chronic illness or cancer, history of gynecological symptoms, and prior Pap smear experience. **Conclusion:** Pap smear screening is underutilized among Iraqi women, primarily due to a lack of perceived need, insufficient physician engagement, and limited awareness. Enhancing education and proactive physician recommendation are essential to improve screening uptake.

KEYWORDS: Cervical cancer, Pap smear, barriers, knowledge, Iraq.

INTRODUCTION

Cervical cancer remains one of the most prevalent malignancies of the female genital tract, especially in low- and middle-income countries (LMICs), where healthcare systems often face substantial challenges in prevention and early detection. Globally, cervical cancer is the fourth most common cause of cancer-related mortality among women, with approximately 500,000 new cases and over 300,000 deaths reported annually.[1] Alarmingly, around 85% of this disease burden occurs in LMICs, with nearly 90% of cervical cancer deaths arising in these regions.[2] Mortality rates are almost ten times higher in resource-limited settings compared to high-income countries, highlighting global health disparities.[3] However, regions that have adopted structured screening programs and HPV vaccination initiatives have witnessed significant declines in both the incidence and mortality of cervical cancer.[4] Although countries like Iraq and Saudi Arabia experience lower relative rates compared to Africa, the disease remains a public health concern.[5] In Iraq, 392 new cases were reported in 2020, with an incidence rate of 1.22 per 100,000 women.[6] The primary causative factor of cervical cancer is persistent infection with high-risk human papillomavirus (HPV) types, particularly types 16 and 18, which are responsible for the majority of cervical intraepithelial neoplasia (CIN) and cervical malignancies.[7] Other contributing risk factors include early initiation of sexual activity, multiple sexual partners, tobacco use, high parity, low socioeconomic status, and immunosuppression.[8] The pathogenesis of cervical cancer involves a prolonged pre-invasive phase,

during which HPV evades the host immune response, leading to persistent infection and progressive changes in the cervical epithelium, ultimately resulting in CIN and invasive cancer if left untreated.[9] CIN can be detected early and is often curable, making early screening critical for prevention.[10] Despite its preventability, cervical cancer is often diagnosed at advanced stages in LMICs due to the absence of national screening programs, low awareness, and poor access to healthcare services.[11] Preventive strategies such as HPV vaccination and regular screening with Pap smears or HPV DNA testing have proven highly effective. The quadrivalent HPV vaccines—Gardasil, Gardasil 9, and Cervarix—protect against HPV types 16 and 18, which cause approximately 70% of cervical cancers, and in some cases, also protect against types causing genital warts.[12] However, these vaccines offer limited benefit for pre-existing infections, necessitating parallel efforts to improve screening. Screening for cervical cancer aims to detect precancerous lesions and early-stage disease in asymptomatic women, thereby reducing morbidity and mortality.[13] The World Health Organization (WHO) recommends initiating screening at age 30 and continuing at intervals of 5 to 10 years up to age 50, with adjustments based on country-specific capacities.[14] The American College of Obstetricians and Gynecologists recommends starting Pap tests at age 21, with varying intervals and combinations of Pap and HPV tests depending on age and health history.[15] However, in countries like Iraq, organized screening programs and HPV vaccination initiatives are still lacking, contributing to persistently low screening uptake and late diagnoses.[16] Multiple barriers affect screening utilization, including societal, healthcare system-related, social, and individual factors.[17] Cultural beliefs, fear, stigma, lack of physician recommendation, and limited health literacy are commonly reported impediments.[18] This study aims to evaluate the key factors influencing the utilization of cervical cancer screening among a sample of Iraqi women. It seeks to assess the participants' level of knowledge and identify their primary sources of information regarding cervical cancer. Additionally, the study aims to evaluate attitudes toward Pap smear screening and to explore the perceived barriers that hinder participation in cervical cancer screening.

METHOD
A descriptive cross-sectional study was conducted over a nine-month period from April to December 2024. The study was carried out in the Aladel Sector for Primary Healthcare, which operates under the Al-Karkh Health Directorate in Baghdad, Iraq. This sector comprises six Primary Healthcare Centers (PHCs): Aladel PHC, Aljameaa District PHC, Alkhadra PHC, Al-A'amiriya PHC, Dr. Saif Zaki Al-Saad PHC, and Alghazaliya First PHC. A convenient sample of 400 married women aged between 21 and 65 years who attended the selected PHCs during the study period was recruited. Women were excluded if they were unmarried, severely ill, or unable to respond due to physical or mental limitations. Data collection was conducted through weekly visits (1–2 visits per week), each lasting approximately 3–4 hours. A self-administered questionnaire was used to gather information. The questionnaire was reviewed by a panel of experts, including a community medicine specialist and two gynecology and obstetrics consultants, to ensure validity and relevance (Appendices 1A–1C). The finalized tool consisted of four sections: (1) sociodemographic characteristics, (2) medical history including gynecological and chronic illnesses, (3) perceived barriers to undergoing Pap smear screening, and (4) knowledge assessment regarding cervical cancer and screening. Knowledge was measured using 16 validated questions derived from previous studies.[47, 62–65], with responses categorized as "yes," "no," or "don't know." Each correct answer received a score of 1, while incorrect or unknown responses scored 0. A cumulative score above 50% indicated sufficient knowledge, while a score of 50% or below was considered insufficient. A pilot study was conducted on 20 participants to assess clarity and timing; these individuals were excluded from the final analysis. Ethical approval was granted by the Iraqi Board of Medical Specializations and Al-Karkh Health Directorate (Official Letter No. 18273, dated 8/4/2024). Verbal informed consent was obtained, ensuring participants' anonymity and data confidentiality. Data were compiled in Microsoft Excel 2016 and analyzed using SPSS version 26. Descriptive statistics were presented in tables and charts. Chi-square and ANOVA tests were used to assess associations between variables, with statistical significance set at $p < 0.05$.

RESULTS
A total of 400 participants were enrolled in the current study, the highest proportion had an age of 30-39 years (33%). Most of the participants were married (92%). More than half of the participants (52%) had a college or higher education. Half of the participants were unemployed. Most of the participants were not smokers. More than half of the participants had a monthly income of <1 million Iraqi dinars as shown in table 1.

Table 1: The distribution of sample according to sociodemographic characteristics of the participants.

Sociodemographic characteristics		No. (%)
Age group (years)	21-29	90 (22.5)
	30-39	132 (33.0)
	40-49	80 (20.0)
	50-65	98 (24.5)
Marital state	Married	368 (92.0)

	Divorced or widow	32 (8.0)
Educational level	Illiterate	38 (9.5)
	Primary school	68 (17.0)
	Secondary school	86 (21.5)
	college or higher	208 (52.0)
Occupation	Unemployed	200 (50.0)
	Employed	192 (48.0)
	Student	8 (2.0)
Smoking	Current	18 (4.5)
	Ex-smoker	4 (1.0)
	Non smoker	378 (94.5)
Monthly income	<1 million Iraqi dinars	224 (56.0)
	1-2 million Iraqi dinars	144 (36.0)
	>2 million Iraqi dinars	32 (8.0)

About 11.5% of the participants had hypertension, 8% had diabetes mellitus, and 4.8% had thyroid diseases. In addition, 4 (1%) of the participants had history of cancer and 2 (0.5%) had history of sexually transmitted disease, as shown in table 2.

Table 2: The distribution of sample according to history of chronic disease, cancer, and sexually transmitted disease.

| Medical history	No. (%)
Hypertension	46 (11.5)
Diabetes mellitus	32 (8.0)
Thyroid diseases	19 (4.8)
Chronic respiratory diseases	12 (3.0)
Total participants with chronic disease	87 (21.8)
Cancer	4 (1.0)
Sexually transmitted disease	2 (0.5)
Participants without history of chronic disease, cancer, and sexually transmitted disease	307 (76.7)

Some participants had more than one chronic disease.

Regarding the gynaecological presentations, 6% of the participants had a history of vaginal discharge and 3.5% of them had a history of abnormal vaginal bleeding as shown in table 3.

Table 3: The distribution of sample according to gynecological history.

Gynecological history	No. (%)
Discharge	44 (11.0)
Bleeding	35 (8.8)
Total participants with history of discharge and/or bleeding	69 (17.3)
Participants without history of discharge or bleeding	331 (82.7)

The Pap smear test was done for 46 (11.5%) of the participants, all were done according to the physician's request as shown in figure 1.
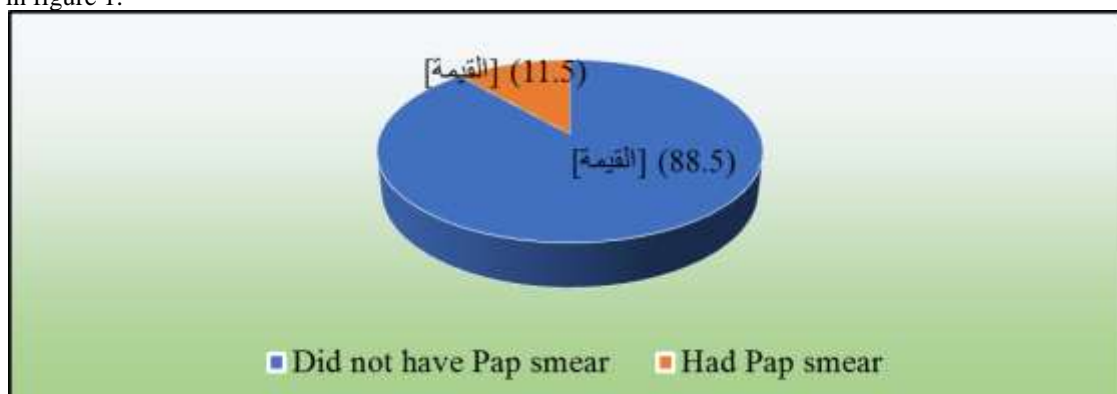
Figure 1: Proportion of the participants who had Pap smear.

The primary obstacle to participate in the Pap smear screening test was feeling healthy with no signs or symptoms, accounting for 69.2%, followed by the absence of a doctor's recommendation (18.1%), lack of knowledge (8.5%) and fear (2.8%), as shown in table 4.

Table 4: Barriers for Pap smear.

Barriers	N (%)
I am healthy (have no symptoms).	245 (69.2)
Never recommended by the physician.	64 (18.1)
Lack of knowledge.	30 (8.5)
I think it is painful (fear).	10 (2.8)
Lack of time.	8 (2.3)
Fear of positive results.	6 (1.7)
It is expensive	6 (1.7)

*Some participants had more than one barrier*
As shown in table 5, question 9 (smoking is a risk factor) had the highest percentage of true answers (38.5%), followed by question 12 (history of STI is a risk factor) with 34.5% true answers, and question 3 (Vaginal bleeding between periods is a symptom of the disease) with 33.5% true answers.

Table 5: Assessment of the knowledge of the participants.

Questions	True No. (%)	False No. (%)	I don't know No. (%)
1. To a high degree, cervical cancer disease is preventable.	112 (28.0)	32 (8.0)	256 (64.0)
2. The main cause is HPV.	2 (0.5)	42 (10.5)	356 (89.0)
3. Vaginal bleeding between periods is a symptom of the disease.	134 (33.5)	20 (5.0)	246 (61.5)
4. Abnormal menstrual bleeding (longer, heavier) is a symptom of the disease.	118 (29.5)	40 (10.0)	242 (60.5)
5. Pain during intercourse is a symptom of the disease.	116 (29.0)	32 (8.0)	252 (63.0)
6. Bleeding after intercourse is a symptom of the disease.	118 (29.5)	20 (5.0)	262 (65.5)
7. Pelvic pain is a symptom of the disease.	114 (28.5)	26 (6.5)	260 (65.0)
8. Early marriage is a risk factor.	70 (17.5)	78 (19.5)	252 (63.0)
9. Smoking is a risk factor.	154 (38.5)	36 (9.0)	210 (52.5)
10. A high number of full-term pregnancies is a risk factor.	76 (19.0)	92 (23.0)	232 (58.0)
11. Prolonged use of contraceptive pills is a risk factor.	118 (29.5)	40 (10.0)	242 (60.5)
12. History of STD is a risk factor.	138 (34.5)	36 (9.0)	226 (56.5)
13. The main aim of cervical cancer screening is to discover precancerous lesions early.	97 (24.2)	27 (6.8)	276 (69.0)
14. Early detection of precancerous lesions can help in the prevention and treatment of cervical cancer.	117 (29.2)	31 (7.8)	252 (63.0)
15. Cervical smear cytological examination is a major method for cervical cancer screening.	74 (18.5)	37 (9.3)	289 (72.3)
16. Screening is done before the development of the signs or symptoms.	73 (18.3)	87 (21.8)	240 (60.0)

Regarding the knowledge score, 96 (24.0%) of the participants had sufficient knowledge as shown in figure 2.

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[القيمة] (24.0)

[القيمة] (76.0)

□ Insufficient knowledge   □ Sufficient knowledge
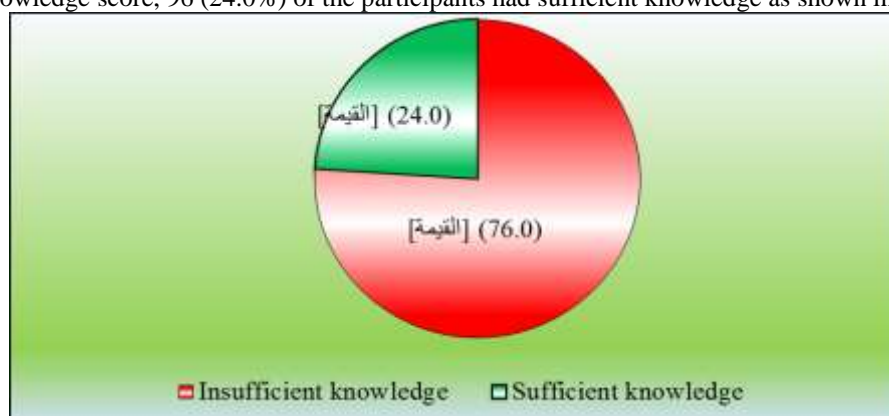
Figure 2: Distribution of the participants according to the number of true answers.

The proportions of participants with sufficient knowledge were significantly higher among those with an age of 30.39 years (P-value=0.003), college or higher education (P-value=0.001), and monthly income >2 million (P-value=0.013). In addition, there was no significant association between the knowledge score and marital state, occupation, and smoking state (P-values were 0.769, 0.501, and 0.242) as shown in table 6.

Table 6: Association between sociodemographic characteristics and knowledge score.

Sociodemographic characteristics		Knowledge score		P-value
		Sufficient No.(%)	Insufficient No. (%)	
Age group (years)	21-29	15 (16.7)	75 (83.3)	0.003
	30-39	46 (34.8)	86 (65.2)	
	40-49	18 (22.5)	62 (77.5)	
	50-65	17 (17.3)	81 (82.7)	
Marital state	Married	89 (24.2)	279 (75.8)	0.769
	Divorced or widow	7 (21.9)	25 (78.1)	
Educational level	Illiterate	3 (7.9)	35 (92.1)	0.001
	Primary school	6 (8.8)	62 (91.2)	
	Secondary school	12 (14.0)	74 (86.0)	
	college or higher	75 (36.1)	133 (63.9)	
Occupation	Unemployed	43 (21.5)	157 (78.5)	0.501
	Employed	51 (26.6)	141 (73.4)	
	Student	2 (25.0)	6 (75.0)	
Smoking	Current	2 (11.1)	16 (88.9)	0.424
	Ex-smoker	1 (25.0)	3 (75.0)	
	Ever smoker	93 (24.6)	285 (75.4)	
Monthly income (Iraqi dinars)	<1 million	42 (18.8)	182 (81.3)	0.013
	1-2 million	42 (29.2)	102 (70.8)	
	>2 million	12 (37.5)	20 (62.5)	

The proportions of participants with sufficient knowledge were significantly higher among those with history of chronic disease (P-value=0.043), history of cancer (P-value=0.016), history of gynaecological presentations (P-value<0.001), and participants who had Pap smear (P-value<0.001) as shown in table 7.

Table 7: Association between knowledge score history of the participants (chronic diseases, cancer, sexually transmitted disease, gynaecological history, and Pap smear).

Medical and gynaecological history		Knowledge score		P-value
		Sufficient No. (%)	Insufficient No. (%)	
History of chronic diseases	Yes	28 (32.2)	59 (67.8)	0.043
	No	68 (21.7)	245 (78.3)	
Cancer	Yes	3 (75.0)	1 (25.0)	0.016
	No	93 (23.5)	303 (76.5)	
Sexually transmitted disease	Yes	1 (50.0)	1 (50.0)	0.388
	No	95 (23.9)	303 (76.1)	
History of gynaecological presentations	Yes	31 (44.9)	38 (55.1)	<0.001
	No	65 (19.6)	266 (80.4)	
Women had Pap smear	Yes	21 (45.7)	25 (54.3)	<0.001
	No	75 (21.2)	279 (78.8)	

Social media was the main source of knowledge as 55 (57.3%) of the participants with sufficient knowledge followed by healthcare providers (21.9% and family or friends (14.6). Participants who had their information from healthcare providers had a significantly higher knowledge score than others (P-value=0.00) as shown in figure 3.
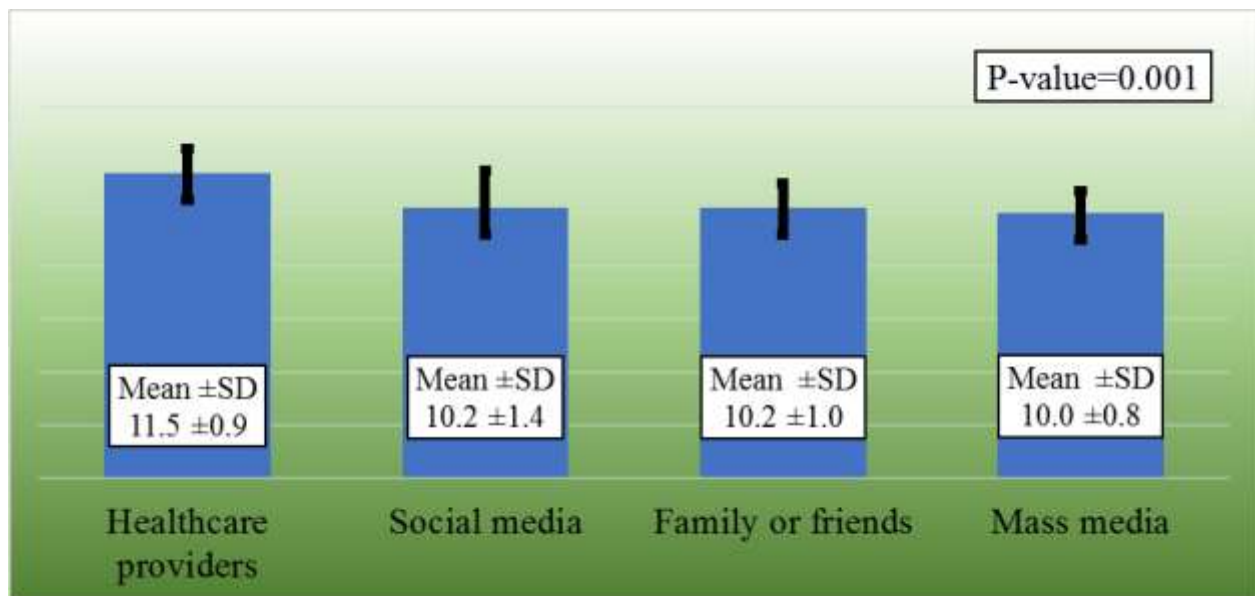
Figure 3: Association between the knowledge score and source of information among participants with sufficient knowledge.

DISCUSSION

Regular and early cervical cancer screening is a crucial strategy to reduce incidence and mortality, particularly in low- and middle-income countries where access to preventive healthcare remains limited.[19] Understanding women's knowledge, attitudes, and perceived barriers is essential to designing effective public health interventions.[20] This study aimed to assess these factors among Iraqi women attending primary healthcare centers, and the findings reflect both the challenges and opportunities in promoting cervical cancer screening. In the current study, only 11.5% of participants had undergone a Pap smear, and in all cases, the test was requested by a physician due to clinical symptoms, not for routine screening. This rate is slightly higher than that reported in India (5%)[21] and Iran (4.2%)[22], but significantly lower than figures reported in Turkey (28.7%)[23], and Portugal (9.1%).[20] The variation in screening rates likely reflects differences in national health policies, public awareness, accessibility of services, and cultural attitudes toward preventive care. The most commonly reported barrier in this study was the absence of symptoms, reinforcing the misconception that screening is unnecessary without visible health issues. Other barriers included lack of physician recommendation, fear of pain or positive results, limited knowledge, and economic or time constraints. These findings are consistent with reports from Saudi Arabia, Iran, and various Arab and African countries, where barriers included lack of regular physician visits, low perceived risk, cultural beliefs, fear, and misinformation.[24-26] In Western countries like the UK and USA, barriers also included emotional and practical factors such as embarrassment, fear, financial burden, and lack of time.[27,28] Knowledge levels in the current study were generally poor, with approximately 75% of women categorized as having insufficient knowledge. This aligns with findings from Saudi Arabia (11.3%)[29],

and contrasts with higher awareness reported in China (51.9%)[30], Ethiopia (52.1%).[19] Key knowledge gaps were observed in understanding the role of HPV and early marriage as risk factors, while awareness of symptoms and the impact of smoking or sexually transmitted diseases was relatively higher. Similar patterns of selective awareness have been noted in studies from Iran, Saudi Arabia, and Ethiopia.[19,31,32] Demographic analysis revealed that women aged 30–39, with higher education and income, had significantly better knowledge, which echoes findings from studies.[22,30] Participants with a history of gynecological issues, chronic disease, or previous Pap smears also demonstrated greater awareness, supporting conclusions from studies in Nigeria and Ethiopia.[33,34] Importantly, while social media was the most common information source, participants who cited healthcare professionals had higher knowledge scores—a finding consistent with studies in Saudi Arabia, Iran.[35,36] This emphasizes the critical role of healthcare providers in patient education and the need for health systems to actively promote screening through direct communication and outreach.

CONCLUSION

The majority of participants had not undergone Pap smear screening, with tests conducted only in response to gynecological symptoms. Key barriers included feeling healthy, lack of physician recommendation, and fear. Most women demonstrated insufficient knowledge, influenced by factors such as age, education, income, and medical history. Social media was the primary information source for those with sufficient knowledge.

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