



Cervical Cancer Awareness and Screening Practices Among Women in Benghazi: A Cross-Sectional Study (2023)

Amina Muftah Elsaid¹

¹Department of Community, Faculty of Medicine, Libyan International Medical University (LIMU), Benghazi, Libya

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Address for correspondence Amina Muftah Elsaid, Department of Community, Faculty of Medicine, Libyan International Medical University (LIMU), Benghazi, Libya (e-mail: amina.elsaid@limu.edu.ly).

Abstract

Background Cervical cancer remains a significant public health concern in Libya, yet awareness and screening rates remain low.

Aim This study assessed knowledge, beliefs, and attitudes toward cervical cancer among women in Benghazi.

Methods A cross-sectional study was conducted among 137 women attending a cervical cancer awareness campaign in January 2023. Data were collected using a structured, self-administered questionnaire assessing demographics, knowledge (7-item scale), beliefs (4-item scale), and attitudes (11-item scale). Responses were scored and categorized as poor/good knowledge, unfavorable/favorable beliefs, and negative/positive attitudes. Statistical analysis was performed using SPSS v25, with chi-square and Fisher's exact tests to examine associations between demographic factors and outcomes.

Results The mean age of participants was 40 ± 11.7 years, with 34.3% aged 40 to 50 years. Most were married (66.4%), had a university degree (43.8%), and 51.8% were unemployed. Note that 65.7% had poor knowledge, 83.9% held unfavorable beliefs, and 61.1% had negative attitudes toward cervical cancer. No significant association was found between age and knowledge, beliefs, or attitudes. However, married, educated, and employed women had significantly higher knowledge levels ($p < 0.05$). No significant differences were observed between demographics and beliefs or attitudes. Only 16% had ever undergone a Pap smear, and 62% were unaware of the human papillomavirus (HPV) vaccine.

Conclusion The study revealed alarmingly low knowledge, unfavorable beliefs, and negative attitudes toward cervical cancer, along with minimal screening uptake. These findings suggest inadequate public health education and a lack of structured screening programs in Libya. Targeted awareness campaigns, improved access to screening, and HPV vaccination programs are urgently needed to reduce cervical cancer burden.

Keywords

- awareness
- practice
- cervical cancer
- screening
- Benghazi, Libya

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المقالة باللغة العربية

التوعية بسرطان عنق الرحم وممارسات الفحص بين النساء في بنغازي: دراسة مقطعية (2023)

المؤلف: أمينة الصبد، الجامعة الليبية الدولية للعلوم الطبية، بنغازي، ليبيا. amina.elsaid@limu.edu.ly **بريد الكتروني:**

الخلفية: يُعد سرطان عنق الرحم مصدر قلق صحي عام كبير في ليبيا، ومع ذلك فإن معدلات التوعية والفحص لا تزال منخفضة.

الهدف: هدفت هذه الدراسة إلى تقييم المعرفة والمعتقدات والمواقف تجاه سرطان عنق الرحم بين النساء في مدينة بنغازي.

الطرق: تم إجراء دراسة مقطعية شملت 137 امرأة شاركن في حملة توعية بسرطان عنق الرحم في يناير 2023. جُمعت البيانات باستخدام استبيان ذاتي منظم تناول الخصائص الديموغرافية، والمعرفة (مقياس من 7 بنود)، والمعتقدات (مقياس من 4 بنود)، والمواقف (مقياس من 11 بنداً). تم تصنيف الإجابات إلى معرفة (ضعيفة/جيدة)، ومعتقدات (غير ملائمة/ملائمة)، ومواقف (سلبية/إيجابية). تم إجراء التحليل الإحصائي باستخدام البرنامج SPSS v25. وتم استخدام اختبارات مربع كاي واختبار فيشر لفحص العلاقات بين الخصائص الديموغرافية والنتائج.

النتائج: بلغ متوسط أعمار المشاركات 40 ± 11.7 سنة، وكانت 34.3% منهن في الفئة العمرية 40–50 سنة. أغلب المشاركات كن متزوجات (66.4%)، وحاصلات على شهادة جامعية (43.8%)، و51.8% منهن غير عاملات. أظهرت النتائج أن 65.7% لديهن معرفة ضعيفة، و83.9% لديهن معتقدات غير ملائمة، و61.1% لديهن مواقف سلبية تجاه سرطان عنق الرحم. لم يتم العثور على علاقة ذات دلالة إحصائية بين العمر ومستوى المعرفة أو المعتقدات أو المواقف. ومع ذلك، كانت النساء المتزوجات، والمتعلّقات، والعاملات أكثر معرفة بشكل ملحوظ ($p < 0.05$). لم يُلاحظ وجود فروق ذات دلالة بين الخصائص الديموغرافية والمعتقدات أو المواقف. فقط 16% منهن أجرن مسحة عنق الرحم (Pap smear) سابقاً، و62% لم تكن لديهن معرفة بلقاح فيروس الورم الحليمي البشري (HPV).

الاستنتاج: كشفت الدراسة عن انخفاض مقلق في مستوى المعرفة والمعتقدات غير الملائمة والمواقف السلبية تجاه سرطان عنق الرحم، إلى جانب تدني نسبة إجراء الفحوصات. وتشير هذه النتائج إلى ضعف التوعية الصحية العامة وغياب برامج فحص منتظمة في ليبيا. هناك حاجة ملحة إلى حملات توعية موجهة، وتحسين إمكانية الوصول إلى الفحوصات، وتنفيذ برامج تطعيم ضد فيروس HPV من أجل تقليل عبء سرطان عنق الرحم.

الكلمات المفتاحية: سرطان عنق الرحم، موقف أو توجه، حملة توعية، بنغازي

Introduction

Cervical cancer remains a critical global health issue, ranking as the fourth most common malignancy in women worldwide.¹ In Africa, it is the leading cause of cancer-related deaths among women, disproportionately affecting those in their peak productive years (ages 35–45).^{2,3} According to GLOBOCAN 2020, approximately 604,127 new cases (3.1% of all cancers) and 341,831 deaths (7.7% of cancer mortality) were attributed to cervical cancer, underscoring its significant burden.⁴ Earlier estimates from 2018 reported 570,000 diagnoses and 311,000 deaths annually, with projections suggesting 44.4 million cases could occur by 2069—two-thirds of which will likely arise in low- and middle-income countries (LMICs).^{5,6}

The disparity is astonishing: 86% of cases and 88% of deaths occur in developing nations, where late-stage diagnosis and limited treatment access exacerbate outcomes.^{7,8} In 2008 alone, 275,000 deaths were linked to cervical cancer, with 88% occurring in LMICs—53,000 in Africa, 31,700 in Latin America, and 159,800 in Asia.⁹ Persistent infection with high-risk human papillomavirus (HPV) types (16/18), responsible for 75% of cases, drives most malignancies.^{5,10} While HPV vaccination (primary prevention) and regular screening (secondary prevention) can mitigate risks, implementation gaps persist, particularly in resource-limited settings.¹¹ Compounding the issue, women with human immunodeficiency virus face a sixfold higher risk of developing cervical cancer.¹²

The World Health Organization recommends Pap smears every 3 years for women aged 21 to 29 and every 5 years (with HPV testing) for those aged 30 to 65.¹³ Despite evidence that screening reduces incidence and mortality,¹⁴ LMICs face systemic barriers: inadequate health infrastructure, absent national programs, low awareness, and poor follow-up.⁷

In Libya, cervical cancer is the third most prevalent female cancer and the seventh most common among women aged 15 to 44.¹⁵ Annually, 240 new cases and 141 deaths are recorded, with a crude incidence rate of 7.05 per 100,000 women.¹⁵ Despite the introduction of the HPV vaccine in 2013, Libya lacks a national screening program, and vaccine coverage data remain unreported.¹⁶

This study assesses awareness, perceptions, and barriers to cervical cancer screening among Libyan women, aiming to inform targeted interventions to address this preventable disease.

Methods

A cross-sectional study was conducted during Benghazi's Cervical Cancer Awareness Month (January 2023) among 137 women attending public health centers. Participants completed a validated, self-administered questionnaire assessing three domains: knowledge, beliefs, and attitudes toward cervical cancer prevention.

The questionnaire's knowledge section (7 items, refer to ►Table 2) evaluated: awareness of cervical cancer itself, understanding of risk factors, recognition of symptoms (e.g., abnormal bleeding), familiarity with Pap smears and their purpose, knowledge of HPV vaccination, and personal screening history. Each correct response scored 1 point (maximum 7), with scores ≤ 3 indicating poor knowledge and ≥ 4 indicating good knowledge.

For beliefs (4 items, refer to ►Table 3), we assessed: whether women should begin Pap smears at marriage onset (43.1% agreed), if screening should continue after menopause, perceived effectiveness in reducing mortality, and whether normal results obviate future testing. Responses were scored similarly, with ≤ 2 indicating unfavorable beliefs.

Table 1 Distribution of women according to demographic characteristics

Variable	No.	%
Women age		
18–28	23	16.8
29–39	39	28.5
40–50	47	34.3
> 50	28	20.4
Marital status		
Single	30	21.9
Married	91	66.4
Divorce	6	4.4
Widow	10	7.3
Education level		
Primary	33	24.1
Secondary	44	32.1
University	60	43.8
Employment		
Employed	66	48.2
Unemployed	71	51.8

The attitudes section (11 items, refer to ► **Table 4**) examined practical and psychological barriers: fatalistic views, anticipated pain, embarrassment, logistical challenges, cost concerns, and fear of bad news. Scores ≤ 5 reflected negative attitudes.

Statistical analyses were performed using SPSS version 25. After computing descriptive statistics (frequencies, percentages, means, and standard deviations) for participant characteristics, we examined associations between demographic variables and knowledge/belief/attitude scores. For categorical comparisons, we employed chi-square tests, supplementing with Fisher's exact test when cell counts fell below 10 to maintain statistical validity. This analytical approach allowed us to identify significant patterns while accounting for the study's sample size limitations.

Result

The study included 137 participants with a mean age of 40 ± 11.7 years (range: 18–66). ► **Table 1** presents the demographic characteristics showing that most participants were married (66.4%), had university education (43.8%), and were unemployed (51.8%). The largest age group was 40 to 50 years (34.3%).

Knowledge of Respondents on Cervical Cancer

► **Table 2** summarizes participants' awareness and knowledge of cervical cancer screening. While nearly two-thirds (63.5%) reported familiarity with cervical cancer, only one-third learned about it through formal channels (24.1% from media, 16.1% from doctors). Critical knowledge gaps emerged: fewer than 20% could identify risk factors, and only 37.2% recognized symptoms. Although 56.2% had heard of Pap smears and 52.6% understood their purpose, just 38% were aware of HPV vaccination. Most strikingly, only 16% had

Table 2 Participant knowledge and awareness of cervical cancer risk factors, screening methods, and HPV vaccination (N = 137)

Questions		No.	%
Have you ever heard about cervical cancer?		87	63.5
The source of information	Media	33	24.1
	Doctor	22	16.1
	Relative and friends	33	24.1
Do you know the risk factors of cervical cancer?		27	19.7
Do you know signs and symptoms of cervical cancer?		51	37.2
Have you ever heard about the Pap smear?		77	56.2
Do you know the purpose of the Pap smear?		72	52.6
Have you heard about HPV vaccine?		52	38
Did you have a Pap smear?		22	16

Abbreviation: HPV, human papillomavirus.

ever undergone Pap smear screening, revealing a significant disparity between awareness and preventive action.

► **Table 3** summarizes participant agreement with four critical beliefs about cervical cancer screening. Less than half (43.1%) endorsed initiating Pap smears at marriage onset, while only 29.9% supported discontinuing screening after menopause. Notably, just 12.4% believed Pap smears fail to reduce mortality, though 36.5% incorrectly thought normal results obviate future screening. These findings reveal persistent misconceptions about screening protocols and effectiveness.

► **Table 4** reveals multiple dimensions of attitude and screening barriers, with psychological concerns being most prevalent. Over half of the participants (58.4%) expressed anxiety about potential early cancer detection, while nearly half anticipated pain (49.6%) or embarrassment (48.2%). Practical obstacles like clinic access (37.2%) and time constraints (30.7%) were reported less frequently than the widespread

Table 3 Questions of women belief about cervical cancer

Screening-related belief statement	Agreed ("Yes") n	Agreed ("Yes") %
Women should begin Pap smears at marriage onset	59	43.1
Pap smears should be discontinued after menopause	41	29.9
Pap smears are ineffective in reducing cervical cancer mortality	17	12.4
Normal Pap smear results eliminate need for future screening	50	36.5

Table 4 Questions of women attitude for cervical cancer

Barrier category	Specific concern	Endorsed ("Yes") <i>n</i>	Endorsed ("Yes") %
Psychological	Fatalistic attitude about cancer	57	41.6
	Fear of abnormal results	65	47.4
	Uneasy discussing cancer	57	41.6
	Worry about early cancer signs	80	58.4
Physical/Emotional	Expectation of pain during Pap smear	68	49.6
	Perception of procedure as embarrassing	66	48.2
Practical	Difficulty taking time off	42	30.7
	Challenges accessing clinic	51	37.2
	Work schedule conflicts	50	36.5
Financial	Perceived high cost of screening	56	41.6
Clinical misconception	Belief screening is unnecessary without symptoms	71	51.8

Table 5 Composite scores for knowledge, beliefs, and attitudes

Domain	Category	Number (<i>n</i> = 137)	Percentage (%)
Knowledge	Poor ($\leq 3/7$ correct)	90	65.7
	Good ($\geq 4/7$ correct)	47	34.3
Beliefs	Unfavorable ($\leq 2/4$ favorable)	115	83.9
	Favorable ($\geq 3/4$ favorable)	22	16.1
Attitudes	Negative ($\leq 5/11$ positive)	84	61.3
	Positive ($\geq 6/11$ positive)	53	38.7

misconception that asymptomatic women do not need screening (51.8%). Financial concerns affected 41.6% of respondents, similar to the rate of fatalistic attitudes (41.6%).

Results presented in ►Table 5 revealed significant gaps in cervical cancer awareness and prevention behaviors among participants. Assessment of knowledge demonstrated that nearly two-thirds of women (65.7%, *n* = 90) scored poorly, answering ≤ 3 of 7 questions correctly about risk factors, symptoms, and screening methods. Beliefs about screening were particularly concerning, with 83.9% (*n* = 115) holding unfavorable views—most failed to recognize the importance of regular Pap smears or their effectiveness in reducing mortality. Attitudes toward screening presented another barrier, as 61.3% (*n* = 84) expressed negative perceptions, primarily due to fear of pain (49.6%), embarrassment (48.2%), or the misconception that screening is unnecessary without symptoms (51.8%). The consistent pattern of low scores across all three domains (knowledge, beliefs, and attitudes) suggests comprehensive interventions are needed to improve screening uptake in this population.

The analysis revealed significant associations between demographic factors and knowledge levels, but not with beliefs or attitudes about cervical cancer screening (►Table 6). Age showed no significant relationship with any of the three domains (knowledge *p* = 0.941, beliefs *p* = 0.175, attitudes *p* = 0.843). However, marital status significantly impacted knowledge (*p* = 0.048), with widowed

women showing the poorest knowledge (100% scored poorly) and married women demonstrating relatively better understanding (59.3% poor knowledge).

Educational attainment showed the strongest association with knowledge (*p* < 0.001). While nearly all women with primary (92.9%) or secondary (94.7%) education scored poorly, university-educated participants showed markedly better results (46.7% poor knowledge). Employment status similarly influenced knowledge (*p* < 0.001), with employed women performing better (45.5% poor knowledge) than unemployed counterparts (84.5%).

Notably, none of the demographic characteristics significantly affected belief or attitude scores (all *p* > 0.05). The proportion of women with unfavorable beliefs remained consistently high across all groups (75–100%), as did negative attitudes (40–83.3%), suggesting these perceptions are widespread regardless of age, marital status, education, or employment.

Discussion

Our study evaluated cervical cancer knowledge, beliefs, and attitudes among women in Benghazi, Libya, revealing critical gaps between awareness and preventive practices. The findings underscore systemic challenges in a setting lacking structured screening programs, with three key paradoxes emerging.

Table 6 Association between demographic factors and screening knowledge, beliefs, and attitudes (%)

Demographic	Category	Knowledge %		Beliefs %		Attitudes %	
		Poor	Good	Unfavorable	Favorable	Negative	Positive
Age group	18–28 years	60.9	39.1	75.7	24.3	60.9	39.1
	29–39 years	66.7	33.3	79.5	20.5	56.4	43.6
	40–50 years	68.1	31.9	87.2	12.8	66.0	34.0
	> 50 years	64.3	35.7	75.0	25.0	60.7	39.3
	<i>p</i> -value	0.941		0.175		0.843	
Marital status	Single	70.0	30.0	83.3	16.7	66.7	33.3
	Married	59.3	40.7	81.3	18.7	60.4	39.6
	Divorced	83.3	16.7	100.0	0.0	83.3	16.7
	Widowed	100.0	0.0	100.0	0.0	40.0	60.0
	<i>p</i> -value	0.048*		0.316		0.316	
Education	Primary	92.9	7.1	92.9	7.1	71.4	28.6
Employment	Secondary	94.7	5.3	84.2	15.8	57.9	42.1
	University	46.7	53.3	81.7	18.3	58.3	41.7
	<i>p</i> -value	< 0.001*		0.787		0.796	
	Employed	45.5	54.5	80.3	19.7	66.7	33.3
	Unemployed	84.5	15.5	87.3	12.7	56.3	43.7
	<i>p</i> -value	< 0.001*		0.352		0.225	

Note: *There was no statistical significance relationship between women's age and knowledge of cervical cancer. However, the study concluded that there was a statistically significant relationship between marital status, educational level, and employment status, married, university-educated, and employed women are more likely to have knowledge of cervical cancer.

Knowledge–Action Disparity

Although 63.5% of participants recognized cervical cancer—a rate comparable to Oman (67.1%)¹⁶ and Ethiopia (65.8%)¹⁷—only 16% had undergone Pap smear screening. This disparity exceeds rates in Ethiopia (6.3%)¹⁸ and Nigeria (5.1%),¹⁹ suggesting Libya's absence of a national screening program exacerbates structural barriers.¹⁵ Notably, while 56.2% knew of Pap smears, fewer than 20% could identify risk factors, mirroring trends in Ethiopia²⁰ and Nepal.²¹ The predominance of informal information sources (24.1% from social media/friends) contrasts with Nigerian studies where TV/radio dominated,^{19,22} highlighting the need for standardized health messaging.

Contradictory Beliefs and Attitudes

Despite 62% acknowledging Pap smears' efficacy, 36.5% would forgo future screening after normal results—a misconception also observed in Ethiopia¹⁷ and Mexico.²² Attitudinal barriers were pervasive: 58.4% feared early cancer detection, 48.2% cited embarrassment, and 51.8% believed screening was unnecessary without symptoms. These findings align with global patterns^{7,17} but reveal deeper cultural stigmas; unlike Nigerian and Ethiopian studies where age and education improved attitudes,^{19,23} our cohort showed no demographic associations (all $p > 0.05$).

Demographic Paradoxes

University-educated women had significantly better knowledge (46.7% poor vs. 94.7% in less-educated groups, $p < 0.001$), yet screening uptake remained equally low across groups. This challenges assumptions from Ethiopia²⁰ and Bangladesh²⁴ that literacy directly enables prevention.

Limitations

The study's cross-sectional design and sample (health campaign attendees) may overrepresent health-conscious women. The small sample ($n = 137$) limits subgroup analyses, and self-reported data risk social desirability bias.

Conflict of Interest

None declared.

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During the writing of this work, the author used DeepSeek—an advanced AI language model specializing in text refinement—to improve the article's clarity, conciseness, and grammatical accuracy. After applying this tool, the author reviewed and edited the content as needed and takes full responsibility for the final publication.

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