

A Study to Assess Health Literacy and Attitude Regarding Cervical Cancer among Women at Selected Community Areas at Bokaro

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Abstract

Background: Cervical Cancer remains a major public health concern among women despite being one of the most preventable forms of cancer. Limited awareness regarding risk factors, warning signs, screening methods, and preventive measures often contributes to delayed diagnosis and poor health outcomes. Health Literacy and attitude play an important role in influencing women's participation in Cervical Cancer prevention practices.

Objectives: To assess the level of Health Literacy and Attitude regarding Cervical Cancer among women at selected Community Areas at Bokaro and to find association with selected demographic variables.

Method: A quantitative descriptive cross-sectional design was used. 160 women aged 18 years and above were selected through non-probability purposive sampling. Data were collected using a self-structured Health Literacy questionnaire and a five-point Likert scale attitude tool, and analyzed using frequency, percentage, mean, SD, and chi-square test.

Result: Majority 132 (82.5%) women had good Health Literacy and 146 (91.25%) had a positive attitude toward cervical cancer. Significant association was found between Health Literacy and age and education, and between attitude and occupation, at 0.05 level of significance.

Conclusion: Most women showed good Health Literacy and positive attitude toward cervical cancer. Focused community education programs targeting younger women, less-educated groups, and homemakers are recommended to further strengthen preventive practices and screening uptake.

Keywords: Health Literacy¹, attitude², cervical cancer³, women⁴, screening⁵, HPV vaccination⁶, community health nursing⁷

Introduction

One of the oldest known diseases, which was mentioned in the Egyptian traces and Indian Vedic texts. Afterwards, this information had been refined by studying carcinogenesis. At the micro level, a cell fails to process the normal regular functions of life due to various disruptions of tissue and organ systems.[1] Cervical cancer is a type of cancer that develops from unregulated growth of altered cells in the cervix, which commonly arises from the transformational zone; if it had been left untreated, it could spread throughout the vagina and different organs of the body, such as the lungs and liver. [2]. Two major

histological types are squamous cell carcinoma, which accounts for about 70% of cases, and the second one is adenocarcinoma, which accounts for approximately 25%; it is also very difficult to diagnose because of its location of occurrence. There are also various other types, but they are quite uncommon to diagnose.[2]. Adenosquamous carcinoma and rarer variants such as small cell carcinoma and cervical sarcoma are also documented, although with low frequency [2].

Despite being largely preventable, cervical cancer is estimated to claim a woman's life approximately every 90 seconds worldwide, and it is frequently termed a “silent disease” because it progresses without conspicuous early symptoms [3]. Beyond its health burden, the disease is also associated with poverty, as it can undermine the financial stability of affected families [3]. The World Health Organization's 2025 elimination strategy targets fewer than four cases per 100,000 women, a goal that depends on wide access to screening and vaccination [3]. Approximately 660,000 new cases were reported globally in 2022, making cervical cancer the fourth most common cancer among women, and 94% of the estimated 350,000 related deaths that year occurred in low- and middle-income countries, reflecting persistent inequalities in access to screening, treatment, and immunization [3]. Persistent infection with high-risk strains of human papillomavirus is responsible for approximately 95% of cases, and women living with HIV face a six-fold higher risk [3].

A body of research links health literacy with cervical cancer screening behavior. Among women attending primary healthcare settings in Egypt, higher health literacy and knowledge were positively associated with participation in screening, indicating that increased awareness improves screening uptake [4]. A systematic review of 33 studies among sub-Saharan African women similarly found low knowledge and negative attitudes toward screening, particularly in rural areas, with healthcare workers and media identified as major sources of information [5]. Among reproductive-age women attending Kiryandongo General Hospital in Uganda, the majority had low knowledge of cervical cancer, although a considerable proportion held positive attitudes toward screening [6]. Using a modified Delphi technique involving 20 experts and 67 indicators, researchers in China developed a multi-level evaluation index for health literacy specific to cervical cancer, underscoring its importance in prevention and health education [7]. Among Muslim women assessed through a cross-sectional survey, awareness of cervical cancer was high (91.6%), though awareness of the Pap smear was comparatively lower (59.0%), and higher literacy was associated with better knowledge and attitude [8]. In contrast, a study among village health volunteers in Thailand found that although knowledge and attitude levels were both high, no significant correlation existed between them [9].

Although cervical cancer is preventable and curable when detected early, screening coverage in India remains between 2.6% and 5%, considerably lower than in other developing countries, despite estimates that nearly 80% of cases could be prevented through early diagnosis [10]. Human papillomavirus vaccination is most protective when administered between 9 and 14 years of age, and the World Health Organization recommends initiating screening before 30 years of age, or earlier among high-risk groups [11]. Health literacy, defined as an individual's capacity to find, understand, evaluate, and apply health information, has been shown to correlate with attitude toward prevention, although a positive attitude does not always indicate adequate knowledge [11,12]. Barriers such as limited healthcare access and low awareness remain more pronounced in rural areas, whereas urban populations tend to show better screening participation linked to higher literacy [12].

Globally, cervical cancer accounted for approximately 570,000 new cases and 311,000 deaths in 2018, ranking fourth among major cancers [13]. In India, it is the second most common cancer among women

aged 15 to 44 years, with nearly 96,922 new cases occurring annually [14]. Locally, an awareness drive at Sadar Hospital, Bokaro, screened 30,865 women and identified 132 new cases, highlighting persistent gaps in early detection attributable to limited awareness and delayed health-seeking behavior [15]. Vaccination is considered most beneficial when administered prior to the onset of sexual activity [16], and the absence of organized, accessible prevention programs in low-resource settings continues to contribute to late diagnosis and preventable mortality among women in their most productive years [17].

Health literacy involves not only the acquisition of health-related information but also critical engagement with health systems and the ability to express personal and community health needs [11,18]. Women with higher health literacy are better able to search for, understand, and retain information about cervical cancer, including the importance of regular screening and early detection [18]. Attitude, in turn, reflects how a person thinks, feels, and acts toward a given issue; while attitudes tend to be relatively stable, they remain capable of change over time [19]. Notably, even when women demonstrate good knowledge and a positive attitude toward screening, uptake often remains inconsistent, pointing to a persistent gap between awareness and practice that further educational interventions may help address [20].

This gap between knowledge, attitude, and actual screening behavior, combined with the locally documented burden of late-stage detection in Bokaro, underscores the need to assess health literacy and attitude regarding cervical cancer among women in the community, in order to inform targeted screening and health education interventions.

Statement of the Problem

A study to assess health literacy and attitude regarding cervical cancer among women at selected community areas at Bokaro.

Purpose of the Study

This study aimed to assess the level of health literacy and attitude regarding cervical cancer among women, and to determine the association between health literacy and attitude and selected demographic variables.

Objectives

1. To assess the level of health literacy regarding cervical cancer among women at selected community areas at Bokaro.
2. To assess the level of attitude regarding cervical cancer among women at selected community areas at Bokaro.
3. To determine the association between health literacy regarding cervical cancer among women and their selected demographic variables.
4. To determine the association between attitude regarding cervical cancer among women and their selected demographic variables.

Materials and Methods

Research Approach and Design

A quantitative approach with a descriptive cross-sectional design was adopted to assess the level of health literacy and attitude regarding cervical cancer among women in selected community areas of Bokaro.

Setting

The study was conducted in selected rural and urban community areas of Bokaro, namely Balidih and Bh-

uchundih.

Population, Sample, and Sampling Technique

The population comprised women residing in the selected community areas [21]. The sample consisted of 160 women aged 18 years and above who met the eligibility criteria, selected using a non-probability purposive sampling technique. The study variables were health literacy and attitude; the demographic variables included age, religion, level of education, occupation, monthly family income, marital status, and number of children.

Sample Selection Criteria

Women were included if they were available during data collection, aged 18 years or above, able to read and write English or Hindi, mentally and physically healthy, and residing in the selected community areas. Women were excluded if they had a family history of cervical cancer, were health professionals, or had participated in the pilot study.

Description of Tools

Three tools were developed by the investigator following an extensive review of literature and expert consultation: a seven-item demographic proforma; a self-structured multiple-choice questionnaire assessing health literacy regarding cervical cancer, finalized at 36 items after expert review, with scores interpreted as poor, average, or good knowledge; and a five-point Likert scale assessing attitude regarding cervical cancer, finalized at 16 items, with total scores interpreted as negative or positive attitude.

Validity and Reliability

Content validity was established by submitting the tools to eight experts from the fields of medical-surgical nursing and medical-surgical medicine, and the tools were revised according to their suggestions. Reliability was estimated using Cronbach's alpha during the pilot study; the health literacy scale yielded a coefficient of 0.91 and the attitude scale a coefficient of 0.77, both exceeding the accepted threshold of 0.7 and indicating that the tools were consistent and dependable for use in the main study.

Pilot Study

A pilot study was conducted on 18 April 2026 among 16 participants (8 from rural and 8 from urban areas) selected by non-probability purposive sampling, after obtaining formal permission and informed consent. The mean health literacy and attitude scores among the pilot sample were 29.45 and 54.7, respectively, and the tools were found feasible for the main study.

Data Collection Procedure

Following formal permission from the selected community areas, data were collected from 22 to 23 April 2026 among 160 participants in Balidih and Bhuchundih. After obtaining informed consent, data were collected through a self-report technique using the structured health literacy questionnaire and the Likert attitude scale, requiring approximately 30 minutes per participant.

Statistical Analysis

Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to describe demographic characteristics and to summarize health literacy and attitude scores. The chi-square test was used to determine the association between health literacy and attitude and selected demographic variables, with the level of significance set at $p < 0.05$.

Results

Data pertaining to the demographic profile, level of health literacy, and level of attitude of the 160 women recruited from the selected urban and rural community areas of Bokaro were analyzed using descriptive and inferential statistics. Findings are presented under four heads: demographic characteristics, level of

health literacy, level of attitude, and the association of these variables with selected demographic characteristics.

Demographic Characteristics of the Study Participants

Age-wise distribution showed that most of the participants, 69 (43.13%), belonged to the 18–25 year age group, followed by 54 (33.75%) in the 26–35 year group, while women aged 46 years and above formed the smallest group, 10 (6.25%). With regard to religious affiliation, Muslim women, 74 (46.25%), formed the largest group, followed by Hindu women, 61 (38.13%), and Christian women, 25 (15.63%); no participant reported affiliation with any other religion. Considering educational attainment, secondary education was the most common level reported, by 70 (43.75%) women, while only 15 (9.38%) were graduates or held a higher qualification. Regarding occupation, government employment was reported by the largest proportion, 62 (38.75%), closely followed by homemakers, 59 (36.88%). More than half of the sample, 82 (51.25%), belonged to the highest income category (above ₹9,414 per month) on the modified B.G. Prasad scale (2025). The majority of participants were married, 112 (70.00%), and most reported having two children, 70 (43.75%). The complete demographic profile is presented in Table 1.

Table 1: Frequency and Percentage Distribution of Demographic Characteristics of Women at Selected Community Areas at Bokaro (N = 160)

Demographic Variable	Category	Frequency (f)	Percentage (%)
Age (years)	18–25	69	43.13
	26–35	54	33.75
	36–45	27	16.88
	46 and above	10	6.25
Religion	Hindu	61	38.13
	Muslim	74	46.25
	Christian	25	15.63
	Others	0	0.00
Level of Education	Primary education	20	12.50
	Secondary education	70	43.75
	Higher secondary	55	34.38
	Graduate and above	15	9.38
Occupation	Homemaker	59	36.88
	Government employee	62	38.75
	Private employee	22	13.75
	Others	17	10.63
Monthly Family Income (₹)	Above 9414	82	51.25
	4707–9413	24	15.00
	2824–4706	18	11.25
	1412–2823	28	17.50
	Below 1412	8	5.00
Marital Status	Married	112	70.00
	Unmarried / Single	28	17.50
	Widow	17	10.63

	Divorced	3	1.88
Number of Children	0	27	16.88
	1	47	29.38
	2	70	43.75
	3 and more	16	10.00

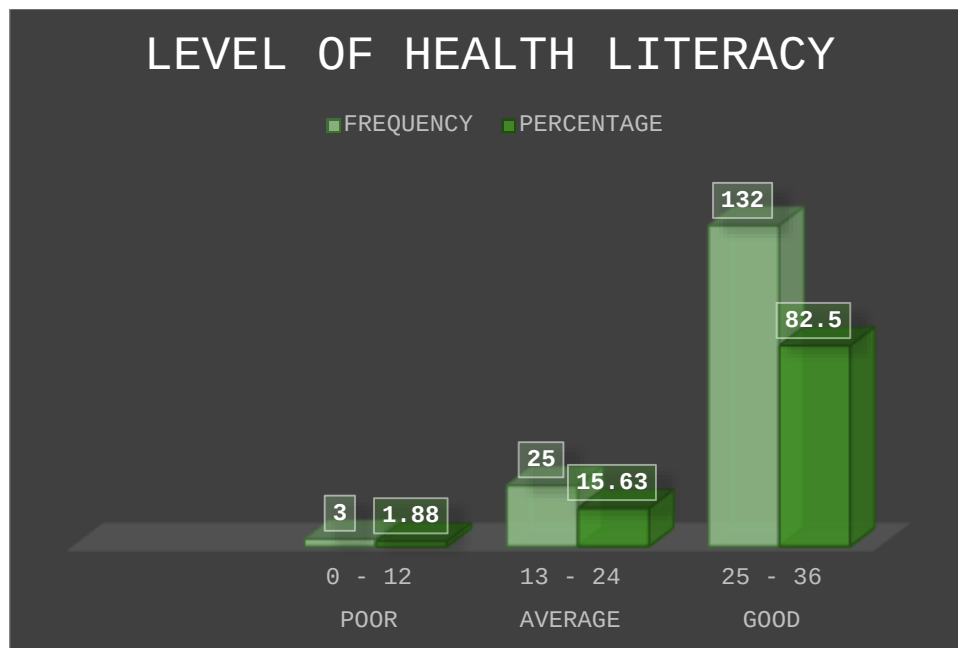
♦ According to the modified B.G. Prasad scale, 2025.

Level of Health Literacy regarding Cervical Cancer

The health literacy scores of the women, obtained using the self-structured 36-item questionnaire, were categorized into good, average, and poor levels. As shown in Table 2, the majority of women, 132 (82.50%), demonstrated a good level of health literacy regarding cervical cancer, 25 (15.60%) demonstrated an average level, and only 3 (1.90%) demonstrated a poor level. The overall mean health literacy score was 29.44 (mean percentage 81.78%), with a standard deviation of 5.9, indicating that most women possessed adequate knowledge and understanding of cervical cancer, its risk factors, screening, and prevention.

Table 2: Frequency and Percentage Distribution of Level of Health Literacy regarding Cervical Cancer among Women, with Mean, Mean Percentage, and Standard Deviation (N = 160)

Health Literacy Level (Score Range)	Frequency (f)	Percentage (%)	Mean / Mean% / SD
Good (25–36)	132	82.50	29.44 / 81.78% / 5.9
Average (13–24)	25	15.60	
Poor (0–12)	3	1.90	



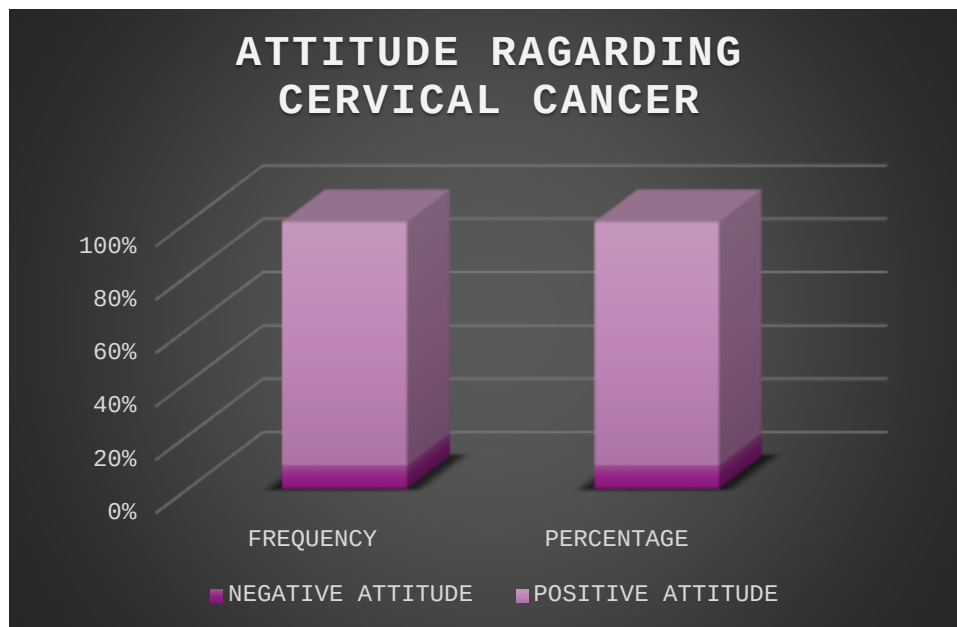
Level of Attitude regarding Cervical Cancer

Attitude was measured using a 16-item, five-point Likert scale. As presented in Table 3, the majority of women, 146 (91.25%), held a positive attitude toward cervical cancer, while 14 (8.75%) held a negative

attitude. The overall mean attitude score was 54.7 (mean percentage 34.19%), with a standard deviation of 7.8, indicating that most women held favorable beliefs and dispositions toward cervical cancer screening and prevention.

Table 3: Frequency and Percentage Distribution of Level of Attitude regarding Cervical Cancer among Women, with Mean, Mean Percentage, and Standard Deviation (N = 160)

Attitude Level	Frequency (f)	Percentage (%)	Mean / Mean% / SD
Positive Attitude	146	91.25	54.7 / 34.19% / 7.8
Negative Attitude	14	8.75	



Association between Health Literacy and Selected Demographic Variables

Chi-square test was applied to determine the association between the level of health literacy regarding cervical cancer and selected demographic variables, at the 0.05 level of significance. As shown in Table 4, a statistically significant association was found between health literacy and age ($\chi^2 = 14.09$, df = 6, table value = 12.59) and between health literacy and level of education ($\chi^2 = 16.20$, df = 6, table value = 12.59). No significant association was found between health literacy and religion, occupation, monthly family income, marital status, or number of children

Table 4: Association between Level of Health Literacy regarding Cervical Cancer and Selected Demographic Variables among Women (N = 160)

Demographic Variable	χ^2 Value	df	Table Value	Result
Age	14.09	6	12.59	Significant
Religion	4.25	6	12.59	Not Significant
Level of Education	16.20	6	12.59	Significant
Occupation	7.38	6	12.59	Not Significant
Monthly Family Income	12.04	8	15.51	Not Significant

Marital Status	6.30	6	12.59	Not Significant
Number of Children	8.91	6	12.59	Not Significant

Association between Attitude and Selected Demographic Variables

Similarly, chi-square test was applied to examine the association between the level of attitude regarding cervical cancer and selected demographic variables. As shown in Table 5, a statistically significant association was found between attitude and occupation ($\chi^2 = 9.64$, $df = 3$, table value = 7.82). No significant association was found between attitude and age, religion, level of education, monthly family income, marital status, or number of children.

Table 5: Association between Level of Attitude regarding Cervical Cancer and Selected Demographic Variables among Women (N = 160)

Demographic Variable	χ^2 Value	df	Table Value	Result
Age	3.95	3	7.82	Not Significant
Religion	2.22	2	5.99	Not Significant
Level of Education	3.63	3	7.82	Not Significant
Occupation	9.64	3	7.82	Significant
Monthly Family Income	5.57	4	9.49	Not Significant
Marital Status	0.58	3	7.82	Not Significant
Number of Children	1.36	3	7.82	Not Significant

Discussion

The present study found that a large majority of women, 82.50%, possessed good health literacy regarding cervical cancer. A comparable community-based assessment among reproductive-age women attending a tertiary-care facility in an eastern Indian state used a similarly structured health-literacy tool and likewise centered its findings on the factors that shape health-literacy levels in this population group, lending regional support to the pattern observed in the present sample [22]. This finding is also consistent with the community nursing perspective advanced by Amin et al., who identified health literacy as a key determinant of cervical cancer screening uptake and cautioned that sustained community-level programs are required to preserve such gains over time [23].

Not all comparable populations, however, reported similarly favorable levels of awareness. A cross-sectional study among Moroccan nursing and health-technician students reported considerable variation in health literacy despite the participants' exposure to a health-sciences curriculum, suggesting that formal education alone does not guarantee adequate cervical-cancer-specific literacy [24]. Likewise, a web-based survey of Japanese women found a gap between general awareness of cervical cancer and the more specific knowledge needed for informed screening or treatment decisions [25]. Such contrasts suggest that the comparatively high literacy levels observed in the present community may reflect the influence of localized awareness drives rather than a uniformly high standard of cervical-cancer literacy nationally.

The significant association found between health literacy and both age and level of education in the present study is consistent with earlier work. A study among married Turkish women reported a similar demographic patterning of health-literacy and knowledge scores [26], while a systematic review by Kim and Han concluded that education level and age were among the most consistent predictors of health-literacy and screening-related outcomes across diverse study settings [27]. A study conducted among

women attending health centers in Yazd, Iran similarly corroborated the role of educational attainment in shaping cervical-cancer-related health literacy [28]. The convergence of these findings across culturally distinct populations strengthens the inference that education level is a consistent and potentially modifiable determinant that community health nursing interventions could specifically target

With regard to attitude, the present study found that 91.25% of women held a positive attitude toward cervical cancer. This finding stands in useful contrast to a large community-based study conducted among reproductive-age women in Gondar, Ethiopia, where only 65.1% of participants reported having ever heard of cervical cancer and more than 80% were unaware that human papillomavirus is a causative agent [29]. Read together, these findings suggest that the overall climate of awareness and literacy within a community strongly shapes the attitude that women subsequently develop, and that the comparatively favorable health literacy observed in the Bokaro sample likely contributed to its correspondingly favorable attitude scores. This interpretation is compatible with the observation of Ghalavandi et al. that knowledge, attitude, and self-efficacy regarding cervical cancer screening tend to develop together rather than independently of one another [30]. A predominance of positive attitude alongside identified gaps in more specific screening practice has also been reported among women in Brazil [31] and Nepal [32], indicating that a favorable attitude does not automatically translate into completed screening behavior — a distinction that lay outside the scope of the present study but merits attention in future research.

The significant association observed between attitude and occupation is broadly supported by earlier hospital-based work in India, which reported occupation-related differences in knowledge, attitude, and practice scores among adult women [33], as well as by a study from Qatar in which employment status differentiated attitudes toward cervical cancer screening, plausibly through differential exposure to workplace-based health information and peer networks [34]. In the present study, homemakers showed a comparatively higher proportion of negative attitude than women in government employment, a pattern consistent with the possibility that structured occupational settings afford greater incidental exposure to health-related communication.

No significant association was found between attitude and religion, marital status, monthly family income, or number of children in the present study. This is broadly consistent with a comparative study of urban and rural Turkish women, which found that place of residence, rather than religion, differentiated cervical-cancer-related knowledge, attitude, and behavior [35]. It contrasts, however, with findings among premarital Malay Muslim women, where religion-linked cultural beliefs were found to shape screening intention and attitude more directly [36], a difference that may be explained by the distinct socio-religious context of that population compared with the religiously mixed community sampled in the present study. Taken together, the absence of a significant association between attitude and most background characteristics in the present study suggests that the community may benefit relatively uniformly from planned health education interventions, regardless of religion, marital status, income, or parity.

Conclusion

The present study indicates that women residing in the selected urban and rural community areas of Bokaro largely possess adequate health literacy and hold favorable attitudes toward cervical cancer, its screening, and its prevention. Health literacy was found to vary significantly with age and level of education, while attitude varied significantly with occupation, indicating that these characteristics mark out the sub-groups most likely to require additional support. Younger and older women at the extremes of the age range, women with lower educational attainment, and homemakers emerged as comparatively more vulnerable

groups within an otherwise favorable overall picture. These findings support the continued value of community-based, nurse-led health education directed at cervical cancer prevention, with particular attention to the sub-groups identified above, and point to the need for larger, multi-site, and longitudinal studies to confirm and extend these associations.

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References

1. Dutta dk. Cervical cancer: awareness, vaccination, screening. Hyderabad: Indian medical association; 2024.
2. Cancer council Australia. Understanding cervical cancer: a guide for women with cancer, their families and friends. Sydney: cancer council Australia; 2017.
3. World health organization. Cervical cancer. Who fact sheets [internet]. 2025 dec 02 [cited 2026 Apr 21]; available from: <https://www.who.int/news-room/fact-sheets/detail/cervical-cancer>
4. Amin SM, et. al. Unlocking prevention: the role of health literacy in cervical Cancer screening: community nursing perspective. BMC Nurs. 2025 Feb 11;24:160. Available from: <https://link.springer.com/article/10.1186/s12912-025-02797-4>
5. Chepkorir J, et al. The role of health information sources on cervical cancer literacy, knowledge, attitudes and screening practices in sub-Saharan African women: a systematic review. Int j environ res public health. 2024 jul;21(7):872. Doi :<https://doi.org/10.3390/ijerph21070872>
6. Kironde E C, et. al. Understanding knowledge, attitude, and uptake of cervical Cancer screening among women in Kiryandongo general hospital. Idosr j sci technol. 2024;10(1):23-34. Doi: <https://www.idosr.org/understanding-knowledge-attitude-and-uptake-of-cervical-cancer-screeningamong-women-in-kiryandongo-general-hospital/>
7. He C, et al. Developing evaluation indicators of health literacy for cervical Cancer among Chinese women: a modified Delphi method study. BMC cancer. 2023 Aug 24;23:863. Available from: <https://link.springer.com/article/10.1186/s12885-023-11208-3>
8. Baharum N, et. al. Health literacy, knowledge on cervical cancer and pap smear and its influence on pre-marital Malay Muslim women's attitude towards pap smear. Asian pac j cancer pre 2020 jul;21(7):2021–2028.<https://pmc.ncbi.nlm.nih.gov/articles/pmc7573396/>
9. Srisuwan S, et. al. Knowledge, attitudes and practices regarding cervical Cancer screening among village health volunteers. Asian Pacific journal cancer Prev [internet]. 2015 [cited 2026 May 17];16(7):2895-2898. Available from: https://journal.waocp.org/article_30846.html
10. Taneja N, et. al. Knowledge, attitude, and practice on cervical cancer and screening among women in India: a review. Cancer control. 2021 Jan– dec;28:10732748211010799. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/pmc8204637/>
11. World health organization. Health literacy. Who fact sheets [internet]. 2025 dec 22 [cited 2026 Apr 21]; available from: <https://www.who.int/news-room/fact-sheets/detail/health-literacy>

12. Kumar P, et. al. Cervical cancer awareness, knowledge, behaviour patterns and practice of screening and vaccination in females of hilly regions of north India. J family med prim care. 2024 Feb 08;13(2):e10931858. Available from: <https://pmc.ncbi.nlm.nih.gov/articles/pmc10931858/>
13. Arbyn M, et. al. Estimates of incidence and mortality of cervical cancer in 2018: a worldwide analysis. Lancet glob health. 2020 Feb 01;8(2):e191–e203. Available from: [https://www.thelancet.com/journals/langlo/article/piis2214-109x\(19\)30482-6/fulltext](https://www.thelancet.com/journals/langlo/article/piis2214-109x(19)30482-6/fulltext)
14. India state-level disease burden initiative cancer collaborators. Secular trends in incidence and mortality of cervical cancer in India and its states, 1990–2019: data from the global burden of disease study 2019. BMC cancer. 2022 Feb 03;22(1):139. Available from: <https://doi.org/10.1186/s12885-022-09232-w>
15. The times of India. Bokaro cancer screening: 548 suspected cases identified in awareness drive. Times of India [internet]. 2026 Feb 24 [cited 2026 Apr 21]; available from: <https://timesofindia.indiatimes.com/city/ranchi/bokarocancer-screening-548-suspected-casesidentified-in-awareness-drive/articleshow/127916724.cms>
16. National cancer institute. Cervical cancer causes, risk factors, and prevention. NCI [internet]. 2024 Aug 02 [cited 2026 Apr 21]; Doi :<https://www.cancer.gov/types/cervical/causes-risk-prevention>
17. World health organization. Global strategy to accelerate the elimination of cervical Cancer as a public health problem [internet]. Geneva: who; 2020 [cited 2026 May 18]. Available from: <https://www.who.int/publications/i/item/9789240014107>
18. Amin SM, et. al. Unlocking prevention: the role of health literacy in cervical Cancer screening: community nursing perspective. BMC Nurs. 2025 Feb 11;24:160. <https://pmc.ncbi.nlm.nih.gov/articles/pmc11816506/#:~:text=individuals%20with%20higher%20health%20literacy,symptoms%20associated%20with%20cervical%20cancer>.
19. Cherry k. Attitudes: how they form, change, and shape behaviour. Very well mind. 2024 may 05; available from: <https://www.verywellmind.com/attitudes-how-they-form-change-shape-behavior-2795897>
20. Narayana g, et. Al. Knowledge, attitude, and practice toward cervical Cancer among women attending obstetrics and gynaecology department: a cross-sectional, hospital-based survey in south India. Indian j cancer. 2017 Apr–jun;54(2):481–487
21. Sharma Sk. Nursing Research And Statistics. 4th ed. New Delhi: Elsevier; 2021.
22. B.N. Naik, M. Verma, R. Rao U.R., S.K. Nirala, S. Pandey, S. Jha, A. Ramalingam, B. Singh. Level of health literacy on cervical cancer and its correlates among women of reproductive age group in an eastern state of India. Clin Epidemiol Glob Health. 2025 Jul–Aug;34:102091. Available from: [https://www.ceghonline.com/article/s2213-3984\(25\)00180-0/fulltext](https://www.ceghonline.com/article/s2213-3984(25)00180-0/fulltext)
23. S.M. Amin, M.M. El-Sayed, A.H. El-Monshed, M.H.R. Atta. Unlocking prevention: the role of health literacy in cervical cancer screening: community nursing perspective. BMC Nurs. 2025 Feb 11;24:160.<https://pmc.ncbi.nlm.nih.gov/articles/pmc11816506/#:~:text=individuals%20with%20higher%20health%20literacy,symptoms%20associated%20with%20cervical%20cancer>.
24. A. Kharbach, et al. Evaluation of health literacy for cervical cancer and associated factors among Moroccan nursing and health technician students: an analytical cross-sectional study. Clin Epidemiol Glob Health. 2024. <https://doi.org/10.1016/j.cegh.2024.101633>

25. M. Minamitani, K. Morishima, A. Katano, S. Ohira, K. Nakagawa. Exploring the correlation between health literacy and knowledge of cervical cancer and radiotherapy among Japanese women: a web-based survey. *J Cancer Educ.* 2024;39:530–536. <https://doi.org/10.1007/s13187-024-02432-x>
26. Z. Tiraki, M. Yilmaz. Cervical cancer knowledge, self-efficacy, and health literacy levels of married women. *J Cancer Educ.* 2018 Dec;33(6):1270–1278. <https://doi.org/10.1007/s13187-017-1242-3>
27. K. Kim, H.R. Han. Potential links between health literacy and cervical cancer screening behaviors: a systematic review. *Psychooncology.* 2016 Feb;25(2):122–130. <https://doi.org/10.1002/pon.3883>
28. A. Aghaei, M. Nasirian, A. Pirzadeh. Health literacy related to cervical cancer among women referring to health centers of Yazd, Iran. *J Midwifery Reprod Health.* 2020;8(4):2397–2405. [10.22038/jmrh.2020.47785.1586](https://doi.org/10.22038/jmrh.2020.47785.1586)
29. A. Mengesha, A. Messele, B. Beletew. Knowledge and attitude towards cervical cancer among reproductive age group women in Gondar town, North West Ethiopia. *BMC Public Health.* 2020 Feb 11;20(1):209. [10.1186/s12889-020-8229-4](https://doi.org/10.1186/s12889-020-8229-4)
30. S. Ghalavandi, A. Heidarnia, F. Zarei, R. Beiranvand. Knowledge, attitude, practice, and self-efficacy of women regarding cervical cancer screening. *Obstet Gynecol Sci.* 2020 Dec 28;64(2):216–225. [10.5468/ogs.20236](https://doi.org/10.5468/ogs.20236)
31. N.F.S. Fernandes, J.R. Galvão, M.M.A. Assis, P.F. Almeida, C.A.S.T. Santos. Cervical cancer: knowledge, attitude and practice on the prevention examination. *Rev Bras Enferm.* 2019;72(1):25–31. [10.1590/0034-7167-2017-0645](https://doi.org/10.1590/0034-7167-2017-0645)
32. J. Shrestha, R. Saha, N. Tripathi. Knowledge, attitude and practice regarding cervical cancer screening amongst women visiting a tertiary centre in Kathmandu, Nepal. *Nepal J Med Sci.* 2013 Oct;2(2). <http://dx.doi.org/10.3126/njms.v2i2.8941>
33. A.B. Bansal, et al. Knowledge, attitude, and practices related to cervical cancer among adult women: a hospital-based cross-sectional study. *J Nat Sci Biol Med.* 2015 Jul–Dec. [10.4103/0976-9668.159993](https://doi.org/10.4103/0976-9668.159993)
34. F.M. Al-Meer, M.T. Aseel, J. Al-Khalaf, M.G. Al-Kuwari, M.F.S. Ismail. Knowledge, attitude and practices regarding cervical cancer and screening among women visiting primary health care in Qatar. *East Mediterr Health J.* 2011 Nov;17(11):855–861. [10.26719/2011.17.11.856](https://doi.org/10.26719/2011.17.11.856)
35. D. Yeşilfidan, M. Ozkan, F. Adana. Comparison of cervical cancer-related knowledge, attitudes, and behaviors among women in urban and rural regions. *BMC Public Health.* 2025 Jul 28;25(1):2561. [10.1186/s12889-025-24001-7](https://doi.org/10.1186/s12889-025-24001-7)
36. N.N. Baharum, F. Ariffin, M.R. Isa, S.T. Tin. Health literacy, knowledge on cervical cancer and pap smear, and its influence on pre-marital Malay Muslim women's attitude towards pap smear. *Asian Pac J Cancer Prev.* 2020 Jul 01;21(7):2021–2028. [10.31557/APJCP.2020.21.7.2021](https://doi.org/10.31557/APJCP.2020.21.7.2021)