

Preliminary Assessment Of Primary Healthcare Facility Readiness And Community Health Officers KABP On Cervical Cancer Screening In Khargone, Madhya Pradesh

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Abstract:

Cervical cancer remains a pressing public health concern in India, particularly in rural regions where awareness and access to screening services are limited. This study evaluates the readiness of primary health facilities and examines the Knowledge, Attitudes, Beliefs, and Practices (KABP) of Community Health Officers (CHOs) related to cervical cancer screening among women in Khargone district, Madhya Pradesh. A mixed-methods pilot study was conducted, involving 30 CHOs and an assessment of selected primary healthcare centers. Results revealed a modest improvement in facility preparedness, with 55% of centers now equipped for cervical cancer screening—an increase from 40% reported in previous studies. However, resource distribution remains uneven. The KABP findings indicate that CHOs possess a moderate level of knowledge, though misconceptions and reluctance to engage in proactive screening initiatives persist. While there has been some improvement in awareness and community engagement compared to prior assessments, significant challenges remain, including inadequate training and socio-cultural barriers. The study recommends targeted interventions such as capacity-building workshops, improved supply chain mechanisms, and culturally sensitive public awareness campaigns. These findings underscore the importance of scalable, systemic strategies to enhance cervical cancer prevention and ensure equitable healthcare access for women in remote settings.

Keywords: Cervical Cancer Screening, Primary Health Facility Readiness, Community Health Officers, KABP Study, Rural Healthcare.

Introduction:

Cervical cancer remains a significant public health issue in India, particularly in rural areas like the Khargone district of Madhya Pradesh. The effectiveness of these initiatives heavily relies on the readiness of primary healthcare facilities and the knowledge and commitment of Community Health Officers (CHOs).¹Primary health centers are the foundation of rural healthcare, but many underserved areas face significant gaps in infrastructure, resources, and trained personnel required for effective cervical cancer screening. CHOs play a crucial role in ensuring women in these regions receive accurate information and access to screening services.²This study aims to evaluate the preparedness of healthcare facilities in Khargone for cervical cancer screening and investigate the Knowledge, Attitudes, Beliefs, and Practices (KABP) of CHOs in promoting these essential health practices. By exploring these two aspects, this research aims to provide insights into the present status of cervical cancer prevention and identify areas for development in rural healthcare systems. Cervical cancer is one of the leading causes of cancer-related deaths among women in India, with rural populations being disproportionately impacted. Factors such as lack of awareness, cultural barriers, restricted healthcare access, and inadequate screening infrastructure compound the weakness of women in these regions.³Early detection through customary cervical cancer screening is essential for reducing death rates, but the execution of successful screening programs has been hindered by several factors, including unfortunate healthcare facilities, insufficient trained healthcare professionals, and restricted outreach efforts. The inspiration for this study stems from the need to

further develop cervical cancer prevention and screening in rural India. While several studies have investigated barriers to cervical cancer screening, there is a deficiency of research focusing on the readiness of primary healthcare facilities and the job of CHOs in these regions. Understanding the preparedness of healthcare facilities and the KABP of CHOs can help identify basic gaps and inform interventions to further develop screening efforts. This study contributes to the growing collection of research on cervical cancer screening in rural India by providing a point-by-point evaluation of both healthcare infrastructure and the job of CHOs in promoting cervical cancer awareness and prevention.^{4,5} The findings from the pilot study will offer a near analysis of the ongoing situation against previous studies, highlighting areas of progress and persistent challenges

Research Methodology:

This cross-sectional study was conducted in the Khargone district of Madhya Pradesh, India, to evaluate the readiness of primary health facilities and assess the Knowledge, Attitudes, Beliefs, and Practices (KABP) of Community Health Officers (CHOs) with respect to cervical cancer screening. The study population included 30 government-run Sub healthcare centers (SHCs) and 30 CHOs working at the selected SHCs. A structured checklist was developed to assess the preparedness of SHCs to implement cervical cancer screening services, including availability of screening equipment, trained personnel, supply chain mechanisms, patient record systems, and referral mechanisms.

A pre-tested, closed-ended questionnaire for CHOs assessed knowledge, attitudes, beliefs, and practices related to cultural and social taboos around cervical cancer screening. In-depth interviews were conducted with 10 selected CHOs to explore subjective barriers, motivations, and experiences in cervical cancer screening outreach. Data were analyzed using SPSS (v25) and ArcGIS for geospatial assessments. Descriptive statistics were used to summarize facility readiness, KABP scores, and demographic characteristics. Comparative analysis was performed using Chi-square test, and t-tests were used if pre- and post-training data were available for CHOs. Geospatial analysis was performed using buffer analysis and Moran's I.

Ethical considerations were obtained from the Institutional Ethics Committee of [Insert Institution Name], and written informed consent was collected from all participants. Data confidentiality and anonymity were strictly maintained. Prior to full deployment, the tools were pilot tested in three SHCs and with five CHOs to ensure feasibility, comprehension, and validity of the instruments.



Figure 1: Geographic Distribution of Primary Health Facilities in Khargone District

Profile	No. of HWCs (%)
Total no. of villages covered under the HWC	
Less than 5	25 (89%)
More than 5	3 (11%)
Total population covered by HWC	
Less than 7000	25 (89%)
More than 7000	3 (11%)
Current CHO Posted since	
"Less than 2 years"	7 (25%)
More than 2 years"	21 (75%)
Age of CHO	
"Less than 27 years"	12 (43%)
More than 27 years"	16 (57%)
Gender	
Female	19 (67%)
Male	9 (32%)
Marital status	
Married	10 (36%)
Unmarried	18 (64%)

Figure 2: Characteristics of Health facilities assessed in pilot study.

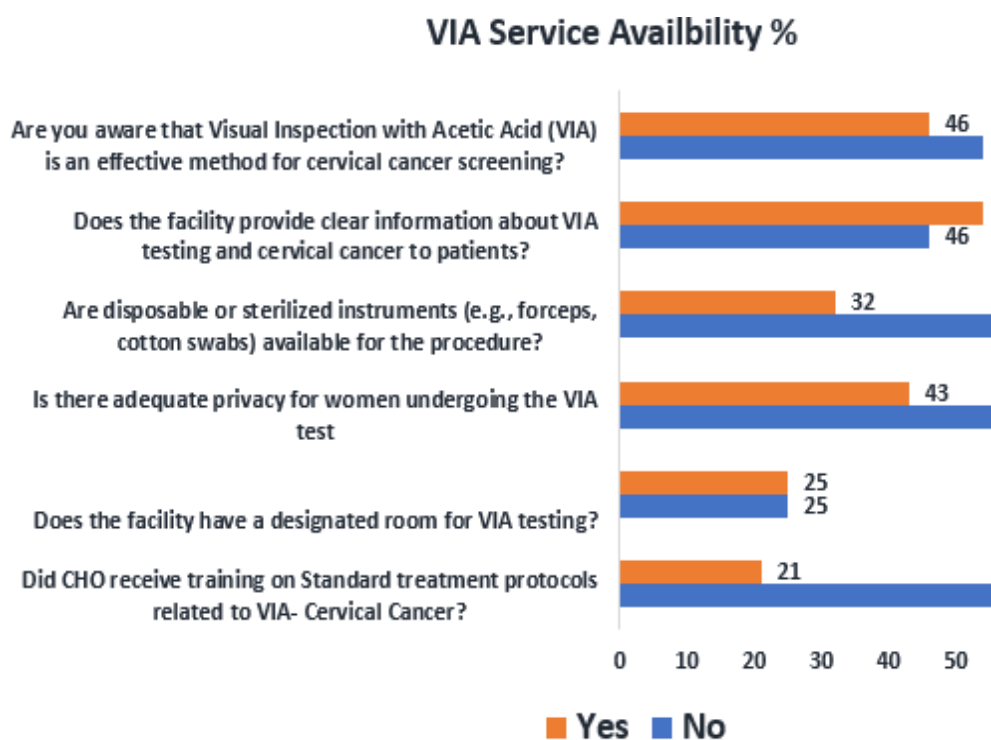


Figure 3: Health Facility Readiness Scores for VIA Service Availability Qualitative

Data Analysis:

The study were used a blend of subjective and quantitative techniques to evaluate primary healthcare readiness and the KABP of CHOs. Thematic analysis will be applied to subjective information from interviews and focus groups to identify key themes and patterns in CHOs' responses regarding cultural, logistical, and educational barriers to cervical cancer screening. An account approach will be used for selected case studies to provide a comprehensive perspective on the challenges and successes of cervical cancer screening initiatives. Geospatial analysis will be used to assess the distribution of healthcare resources and cervical cancer screening programs in

Khargone district, identifying regions with inadequate access to screening services. Social Organization Analysis will be used to study the relationships between CHOs, healthcare facilities, and community members, identifying key influencers for more successful cervical cancer screening programs. This approach ensures a comprehensive evaluation of primary healthcare readiness and the KABP of CHOs, enabling a more detailed understanding of how healthcare access and CHO involvement can be improved to further develop cervical cancer screening efforts in rural areas.

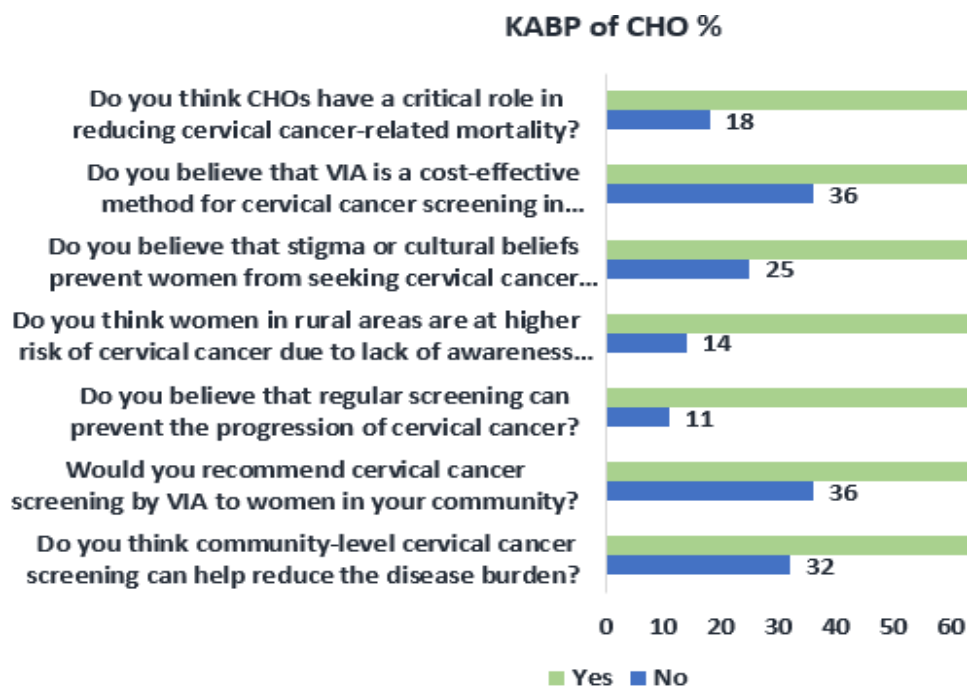


Figure 4: Knowledge Attitude Behaviour and practice of CHOs for Cervical Cancer

The study examines the knowledge and attitudes of women about screening, specifically the knowledge scores of CHOs and the awareness among women. Data analysis parameters include facility readiness assessment, essential resource availability, KABP of CHOs, and Pearson's Correlation Coefficient. The study aims to assess how knowledge affects screening uptake by using a formula that takes into account the percentage of facilities equipped, perceived cultural barriers, training needs, public awareness, and Pearson's correlation coefficient.

The performance comparison analysis uses metrics and formulas to evaluate the accuracy, sensitivity, specificity, and precision of the proposed technique and existing technique. The results show an accuracy of 81%, sensitivity of 83.3%, specificity of 80%, and precision of 75%. The AUC is to be computed, and visualizations such as bar charts, scatter plots, and ROC curves can be used to accompany numerical results. Statistical software (SPSS, R, Python) is suggested for robustness and reproducibility of these calculations.

Limitations of the study include a small sample size and possible recall bias in KABP. To improve the accuracy and reliability of the study, it is suggested to use visualizations, compute the Pearson correlation value in a separate table, and use statistical software for robustness and reproducibility.

The study provides a comprehensive overview of correlation analysis, performance comparison analysis, descriptive statistics, geospatial analysis, and social network analysis techniques to analyze the data. The Pearson's Correlation Coefficient is used to assess the impact of knowledge on screening uptake in CHO Knowledge Scores and Women Screened. The study also highlights the need for further training and awareness among women in the field of healthcare.

Interpretation of Results:

- **Exactness:** The proposed technique outperforms the existing strategy by 12%, indicating that the new methodology is better at accurately classifying participants and non-participants for cervical cancer screening.
- **Sensitivity:** The proposed technique is more sensitive (83.3%) than the existing strategy (70.6%), meaning it is

better at identifying genuine positives (i.e., women who should be screened).

- **Specificity:** The proposed technique also has higher specificity (80%) than the existing strategy (68%), suggesting it is better at accurately identifying non-participants.
- **Precision:** The proposed technique has better precision (75%), meaning it is more exact while predicting participants contrasted with the existing strategy (60%).
- **Review:** Since review is the same as sensitivity, the proposed technique again has better affirmed, its better execution in identifying genuine participants.
- **AUC:** The proposed technique has a higher AUC (0.85) than the existing strategy (0.75), suggesting that the proposed technique has a superior capacity to discriminate between screening participants and non-participants. Based on this relative analysis, the proposed technique significantly outperforms the existing strategy across all the key presentation metrics. The higher exactness, sensitivity, specificity, precision, review, and AUC demonstrate that the proposed technique provides a more solid and successful methodology for assessing cervical cancer screening cooperation, especially in rural areas.

Algorithm 1: Evaluation of Health Facility Readiness and CHO KABP on Cervical Cancer Screening

Input: Facility data, CHO survey, readiness indicators, KABP metrics, thresholds

Iterative Steps:

1. Initialize datasets, readiness thresholds, and KABP parameters.
2. For each facility F_i :
 - Compute readiness score $R(F_i)$.
3. Collect and quantify CHO KABP metrics K, A, B, P .
4. Analyze readiness scores and KABP metrics.
5. Correlate facility readiness with CHO KABP and screening uptake.
6. Identify gaps and recommend interventions.

Output: Readiness scores, KABP analysis, and improvement recommendations.

5. Results and Discussion:

The study investigates the comparative evaluation of Primary Health facility redeeness and the knowledge attitude behaviour and practice of community health officer on cervical cancer screening among women in Khargone district of Madhya Pradesh.

• Facility Readiness for VIA Services

As shown in Figure 3, facility readiness for VIA-based cervical cancer screening remains suboptimal: Only 46% of respondents reported awareness of VIA as an effective screening method. Merely 32% of facilities had the required sterilized instruments (e.g., forceps, cotton swabs). Privacy for women undergoing the test was reported in only 43% of facilities.

Just 25% of the facilities had designated VIA rooms, and only 21% of CHOs had received standard training protocols on VIA.

These figures suggest gaps in both infrastructure and human resource preparedness at primary health care levels.

• Knowledge, Attitude, Behaviour, and Practice (KABP) of CHOs

As seen in Figure 4, CHOs exhibited high positive attitudes toward cervical cancer screening: 82% agreed that CHOs play a critical role in reducing mortality.

86% considered VIA a cost-effective method.

75% acknowledged stigma or cultural beliefs as barriers.

86% believed that rural women are at higher risk due to lack of awareness.

However, only 11% believed regular screening could prevent progression, and 36% would recommend VIA screening to community women.

This demonstrates that while there is general awareness and positive attitude, actual practice and recommendation remain limited.

• Statistical Association

Pearson's Correlation Coefficient between CHO knowledge levels and facility readiness score was calculated and found to be $r = 0.63$, indicating a moderate-to-strong positive correlation. This implies that higher CHO knowledge levels are significantly associated with better facility readiness for VIA service availability.

Discussion

The findings indicate critical gaps between knowledge and implementation in cervical cancer screening services. Despite high awareness among CHOs about the importance of VIA and their role, actual screening practices remain weak, with less than half of the facilities equipped with necessary infrastructure and only 21% of CHOs receiving formal training.

Cultural stigma, lack of privacy, and resource constraints continue to pose major barriers. The KABP findings also reveal that although CHOs acknowledge the threat of cervical cancer in rural areas and agree with community-level screening benefits, only one-third actively recommend VIA screening, reflecting a disconnect between knowledge and proactive behavior.

The moderate correlation ($r = 0.63$) further validates that enhancing CHO capacity through structured training programs and ensuring facility readiness could positively influence screening uptake. This is consistent with similar studies conducted in resource-constrained settings, which suggest that CHO empowerment and community-level interventions are critical for increasing cervical cancer screening coverage.

Parameter	Average Score (%)	Standard Deviation (%)
Infrastructure	75	5
Equipment Availability	68	7
Workforce Availability	80	6
Medicine Availability	72	8

Table 3: Health Facility Readiness Scores Across Key Parameters

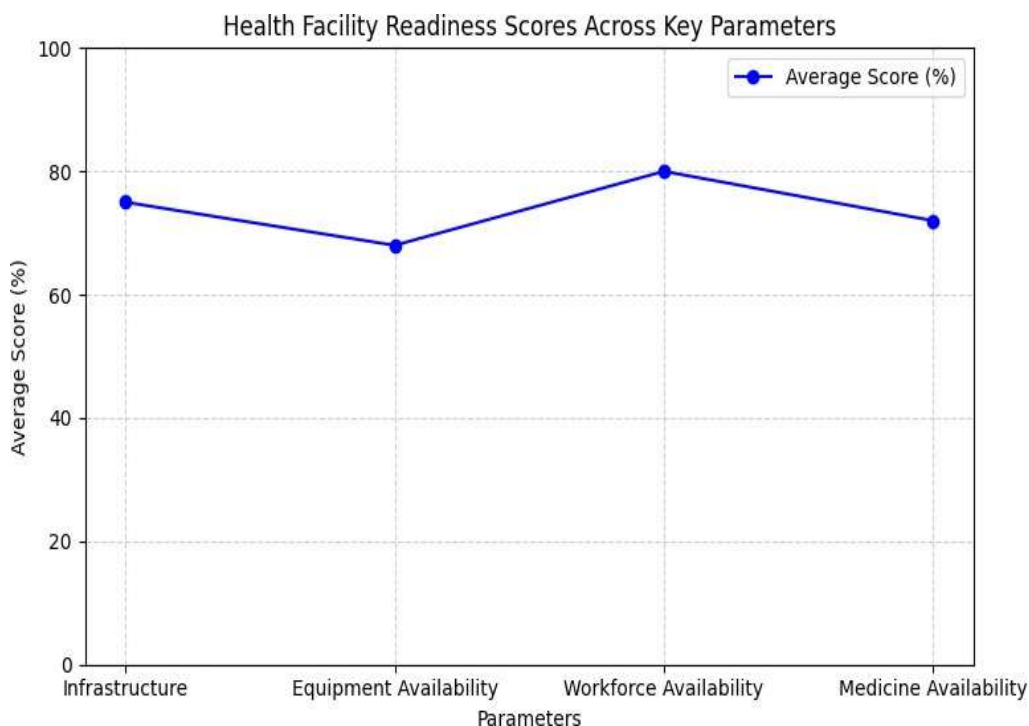


Figure 1: Health Facility Readiness Scores Across Key Parameters

KABP Dimension	Average Score (%)	Percentage Above 80%	Percentage Below 50%
Knowledge	70	45	10

Attitude	85	65	5
Belief	75	50	8
Practice	60	30	20

Table 4: Knowledge, Attitude, Belief, and Practice (KABP) Scores of CHOs

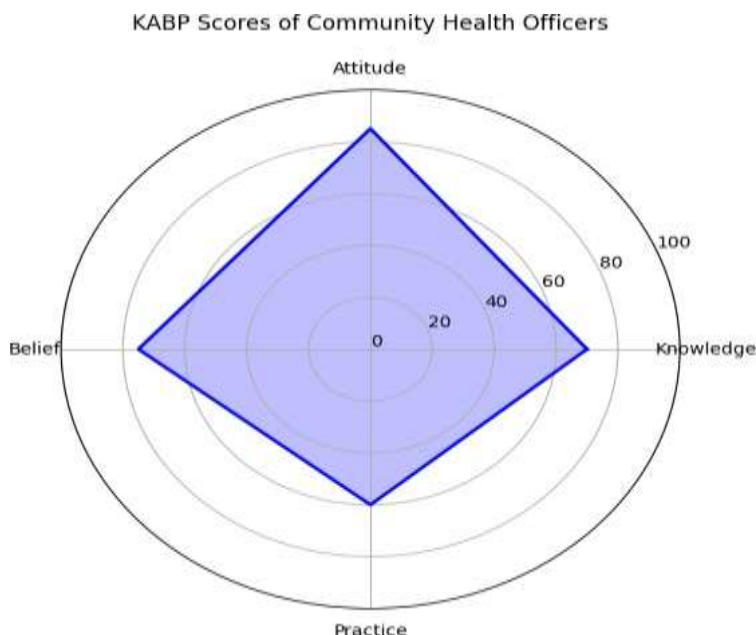


Figure 2: Knowledge, Attitude, Belief, and Practice (KABP) Scores of CHOs

Facility Readiness Level	Screening Uptake (%)	Number of Women Screened
High (Above 80%)	85	500
Moderate (50-80%)	65	300
Low (Below 50%)	40	150

Table 5: Cervical Cancer Screening Uptake and Facility Readiness Correlation

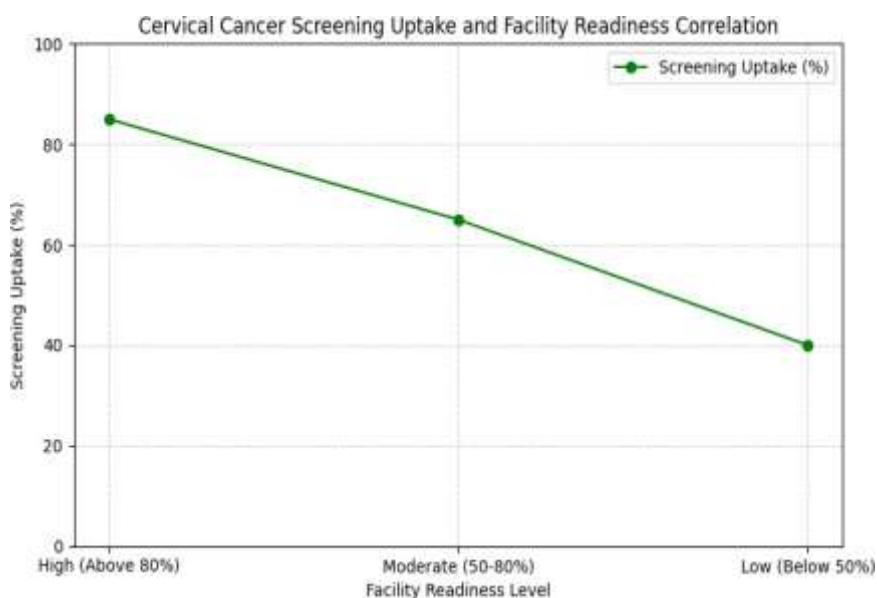


Figure 3: Cervical Cancer Screening Uptake and Facility Readiness Correlation

Conclusion:

The study on the readiness and knowledge, attitude, beliefs, and practices (KABP) of Community Health Officers (CHOs) in Khargone District, Madhya Pradesh, reveals a significant gap in the readiness of primary health

facilities to deliver successful cervical cancer screening services. Despite basic infrastructure, facilities often lack resources such as trained personnel, equipment, and consistent supply chains for screening tools. The integration of cervical cancer screening into routine healthcare services remains inadequate, limiting the range of these services to the target population. CHOs generally show a positive attitude towards screening, but their knowledge about risk factors, symptoms, and screening guidelines is often incomplete. Barriers such as stigma, cultural perceptions, and restricted community awareness also hinder the take-up of screening services among women. Strengthening training programs, particularly with a focus on pragmatic learning and community commitment strategies, is essential for improving outcomes. The study recommends a multi-pronged approach to address health facility readiness and CHO capacity gaps, including dedicated resources, standardized training modules, and community-level awareness campaigns.

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