Barriers to Cervical Cancer Screening Among Women Aged 30–50 in Low Income Urban Areas, Pakistan

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Abstract:

Background: In Pakistan, cervical cancer is a public health issue for women aged 30-50 years old. Cervical cancer is a very painful infectious disease caused by Human Papillomavirus (HPV). Early diagnosis is very necessary. There is a specific risk for women who live in rural areas, as they typically have less infrastructure, stigma, and awareness. Women in urban contexts, while having some improved access to services even when compared with rural women, but still underserved, with some of the same barriers, but due to misinformation and lifestyle factors.

Methods: A systematic review was conducted (PRISMA, PCC) on studies published in the period 2020-2025, through PubMed, Scopus, Web of Science, Elicit, and Google Scholar. Included studies were evaluated using CASP checklists, and information on awareness, uptake of screening, and barriers to screening among low-income, urban women aged 30-50 was extracted.

Results: Cervical cancer is the second most diagnosed cancer in females aged 30-50 years in Pakistan, with about 20 cases diagnosed per day. Pakistan is among the top ten countries with deaths from cervical cancer. Due to cultural reasons, knowledge regarding cervical screening is low, which leads to limited programming for screening, and several socio-cultural hurdles for women to access screening. These result in a diagnosis at a later stage, and the cervical cancer-related deaths are higher in Pakistan than for women in developed countries.

Conclusion: Awareness of cervical cancer, to date, is very low in the cultures studied, with screening for cervical cancer through Pap smears maintained at less than 3%. Factors contributing to low awareness are low education levels, lack of a viable healthcare system, cultural stigmas, and socio-economic backdrop. Education must be culturally relevant and affordable, and reasonable accessibility to care for all aspects of family and language has to be factored into early detection of cervical cancer.

Keywords:

Cervical Cancer, Screening, Barriers, Awareness, Misconceptions, Low-income, Urban women

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Introduction:

Cervical cancer is the second most common cancer diagnosis among women and is one of the most preventable and treatable groups of cancers if detected early (1). It's a form of cervical cancer that progress in the cervix; the bottom part of the uterus that attaches to the vagina. It's caused by the chiefly initiated to persistence contamination with the hazardous specie of Human Papillomavirus (HPV). Mainly 2 strains showed dominancy HPV-16 & HPV-18. Although we have screening and prevention strategies in place, the disease continues to impose a staggering and disproportionate burden of disease in LMICs, including Pakistan. The age cohort of women 30-50 years of age is the most susceptible to progression from precancerous lesions to invasive disease, and compliance with screening services among undereducated and economically

disadvantaged women is very low. Barriers to compliant screening and preventative services among this demographic includes cultural stigma, unawareness, economic hardship, and access to healthcare intervention, all of which affect low-income urban and rural populations the most, with low-income women being the worst off.

Importance: Screening programs like Pap smears and Visual Inspection with Acetic Acid (VIA) are quite affordable and effective in cervical cancer prevention from progressing to advanced stages. Unfortunately, screening uptake/ compliance in Pakistan is some of the lowest, with many women unaware of such services. This is compounded with poor health education, sociocultural taboos related to sexual and reproductive health, and even when available, the inconvenience related to accessibility to the service. The natural history of cervical cancer, primarily driven by persistent infection with high-risk Human Papillomavirus (HPV), indicates a strong need for early detection. It is not uncommon for women in Pakistan to be diagnosed at a delayed stage, often presenting with advanced disease due to lack of awareness, misconceptions, stigma, don't trust on health awareness teams and medical strategy campaigns, poorly structured hospitals for screening, and health systemic failures.(3)

The aim of this systematic review is to identify and synthesize evidence related to barriers in cervical cancer screening for women aged 30-50 years from rural and urban areas in Pakistan. The objective of the review is to provide a comprehensive overview of the structural, social, economic influences on screening behavior and individual-level factors that limit cervical cancer screening uptake in these settings, built on global and national evidence to realize culturally relevant and accessible interventions.(4)

Objectives: "This review has two objectives; the principal focus is on the barriers to cervical cancer screening identified in the academic literature for women ages 30-50 in rural and urban Pakistan. The second objective is to assess structural, social, economic, and individual impacts on screening behaviors, and to offer recommendations for culturally appropriate and accessible interventions."

Methodology

Study design

This study is a systematic review of the literature published from 2020–2025, in English that focused on the barriers to cervical cancer screening for women aged 30 to 50 years in low income urban centers of Pakistan. This research design was most appropriate to investigate the barriers related to knowledge, beliefs, and practice around cervical cancer in the extent study, with an emphasis on this age group of women, in Pakistan. The study involves a systematic literature review, utilizing PRISMA 2020 procedures and the Population-Concept Context (PCC) framework in order to reduce the publication bias. This review brings together evidence from published and grey literature on barriers to cervical cancer screening for aged 30 to 50 years living in low-income urban settings of Pakistan.

Inclusion Criteria & Exclusion Criteria:

Inclusion Criteria

Population

- Studies of women between ages 30-50 years in low-income urban settings (slum, disadvantaged neighborhoods, peri-urban
- settlements)
- Women who are considered at risk for cervical cancer and/or did not have a diagnosis of cervical cancer
- Studies that took place in Pakistan

Intervention / Expose

- Studies that discussed cervical cancer screening approaches (Pap smear, VIA, HPV testing)
- Studies that discussed barriers and facilitators (financial, cultural, structural, knowledge, stigma) to screening
- Studies that reported programs that could increase awareness/knowledge that might affect screening
- The types of articles: quantitative (cross-sectional, cohort), qualitative, mixed methods, systematic reviews that present findings on primary data use, barriers or screening outcomes. Grey literature

including theses, and government publications.

Study Design

- For systematic reviews or meta-analyses that reported on barriers to screening

Outcomes

- Studies that reported uptake of screening for cervical cancer screening (Pap smear, VIA, HPV test)
- Studies that reported barriers (structural, cultural, financial, knowledge)
- Studies that reported facilitators (awareness programs, reduced costs, female providers)
- Studies that reported screening coverage, prevalence of awareness, or gaps in access

Exclusion Criteria

Population

- Women younger than 30 years or older than 50 years living only in rural settings (if the study population did not indicate an urban subgroup)
- Women with a prior diagnosis of cervical cancer or having had a hysterectomy
- Studies of only publicly health providers or medical students (knowledge is likely at a different level)
- Intervention / Exposure
- Studies that did not include screening (i.e. treatment studies only, vaccination studies only)
- Studies of cancers of other gynecologic cancers (i.e. ovarian, endometrial)
- Studies that were lab or genetics/molecular only, and did not include a screening barrier

Study Design

- Case reports or case series
- Editorials, opinion articles, or commentaries, with no primary data
- Non-peer-reviewed (blogs, newspaper articles, conference abstracts with no full text)
- Studies conducted in populations outside of Pakistan (unless comparative to provide a context for findings)

Outcome

- Studies that did not give outcome data on screening participation or barriers
- Studies that reported on cervical cancer incidence and/or mortality without context of screening
- Studies that reported on outcomes not related to cervical screening program (i.e., treatment outcomes or survival rate)

Search Strategy

The Boolean operators (AND, OR, NOT) used to connect keywords and refine search results.

For narrow down all the searches, the search string used on all sides from where database collected for the systematic literature review in Google Scholar, Elicit, Scopus, Web of Science was;

- "Cervical cancer" AND "Screening"
- "Cervical cancer" NOT "Breast Cancer"
- "Screening" OR Pap smear" OR "VIA" OR "HPV" test
- "Barriers" OR "Awareness" OR "Behavior" AND "Pakistan" OR "Low-income areas of Pakistan"

The searches were limited to English articles between 2020 and 2025 in Pakistan. Moreover, there are no data present within some search engines like Pub Med, Scispace, Cochrane Library, Web of Science (816 Articles related the topic but not Pakistani) don't have article database regarding Barriers of Cervical Cancer and Screening aged 30-50 in low-income urban areas.

Information Source or Database:

Information for the systematic review of article taken from published and grey literature on barriers to cervical cancer screening for Pakistani women aged 30 to 50 years living in low income urban settings. The sources are:

- Google Scholar
- Elicit
- Grey literature

Data Extraction

"Two reviewers independently undertook study selection and data extraction. Both reviewers screened the title, abstracts, and full-text documents against the inclusion and exclusion criteria. Using a standardized extraction form for data extraction, the data were checked for accuracy across two reviewers. Any disagreements were settled in discussion and consensus. "We reviewed all the titles and abstracts of the retrieved studies and remove duplicates. Then determined the inclusive and exclusive criteria, reviewed the full text of the selected articles.
Data extraction of the following information will occur using a pilot-tested data extraction form:

- Authors, year, location and setting of the study, study design, population or sample size, intervention, comparator, outcome, key results or findings. (1) (5) (2) (3) (4) (6)
  (7) (8) (9) (10)
- Demographic information (age, education, socioeconomic status). (5) (3)
- Awareness/knowledge of cervical cancer and screening. (1) (9)
- Take-up of screening methods (Pap smear, VIA, HPV testing) (2) (10)
- Barriers to screenings (social, cultural, economic, health-system). (6) (8)
- Awareness and take-up of HPV vaccination (if reported). (5)

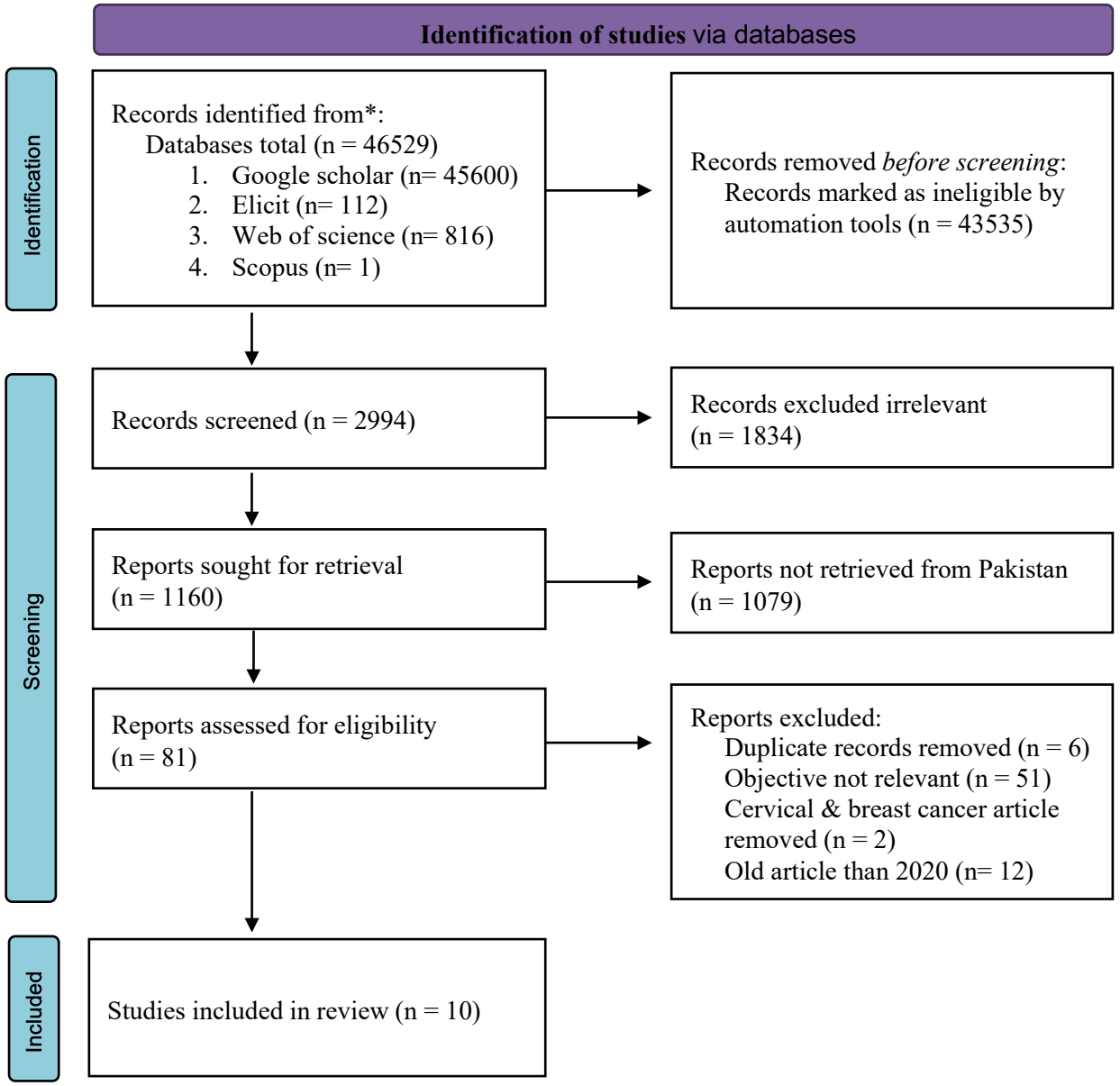
Quality Assessment

The standard of research on challenges to cervical cancer screening for females aged 30–50 in low-income urban Pakistan is moderate to low. Much of the existing evidence consists of cross-sectional surveys, based on convenience samples, which limits the generalizability of findings and causal interpretation of variables. The studies emphasized KAP (knowledge, attitudes and practices) questionnaires, although KAP was often invalidated, bringing into question if the methodology produced applicable and reliable findings. The studies were consistent in finding low awareness, and low uptake of screening. However, this literature base does not include longitudinal, national representation or enough attention paid to the target age cohort, which limits the applicability of the findings to the larger target population. The intervention literature was all short term studies, and there were limited studies overall. Collectively, there is an opportunity to facilitate evidence building through valid, rigorous, large-scale and culturally relevant research.

Data Synthesis and Analysis:

As a result of the significant heterogeneity across studies, data was synthesized narratively. When comparisons were made across surveys, hospital-based studies, and registries, data was examined for themes and discrepancies. The findings presented key variables (knowledge, attitudes, practices, and screening uptake) inter-societal, cultural, educational, and systemic health barriers. Quantitative findings were summarized as percentages; qualitative findings provided context to survey %, and occasional footprints into operational themes. Overall, the synthesis revealed similar trends across data of low awareness of screening programs, universally low screening numbers, and systemic barriers. (1) (5) (2)

PRISMA 2020 flow diagram for new systematic reviews which included searches of databases



Results:

Study selection: The initial search yielded (n = 46529) records on different search engines. After removing before screening marked as illegible (n = 43535), selected for screening (n = 2994) and screening titles and abstract as irrelevant (n = 1834) removed, Reports sought for retrieval (n = 1160) and removed the reports not retrieved from Pakistan (n = 1079), and then (n = 81) full text articles were assessed for eligibility. Finally, removed Reports excluded: Duplicate records removed (n = 6), Objective not relevant (n = 51), Cervical & breast cancer article removed (n = 2), Old article than 2020 (n= 12) and get Studies included in review (n = 10) met the objective relevancies were included in this review.

Study characteristics: Included studies were conducted between 2020 and 2025 and included mainly cross-sectional, survey, systematic review & meta-analysis, descriptive/observational, and some registry-based and hospital-based designs. The studies were primarily conducted in urban centers such as Lahore and Karachi, while only a few studies appeared to directly address rural or low-income urban populations. Sample size included the largest number of participants of 1070 as the smallest to 226; mainly women aged 19-50 years old. (1) (9)

Quality of the Evidence: The methodological quality of the studies included in this review ranged from moderate to low, with a majority employing convenience sampling in a hospital outpatient clinic, limiting the generalizability of the studies. Structured questionnaires were utilized, although only some had been validated. Very few studies were intervention studies overall, and were short-term in focus and examined awareness outcomes instead of sustained uptake of screening.

Synthesis of studies:

- **Awareness and Knowledge:** Awareness of cervical cancer and Pap smear screening remained low, with over 70% of women reporting little to no knowledge. Fewer than 3% reported ever having been screened. Education was related to knowledge level. (1)
- **Attitudes & Practices:** Interestingly, despite poor knowledge, many women displayed positive attitudes toward screening and vaccination when provided with appropriate information. In this respect, they expressed willingness to participate in both activities if facilitators for screening were enhanced, and barriers reduced. (5)
- **Barriers:** Barriers fell into four types:
    - Socioeconomic: low income, limited access to healthcare, high costs.
    - Cultural: stigmatization, fear of diagnosis, hesitancy about male physicians. o Educational: low literacy, lack of health education.
    - Healthcare system: untrained staff limited screening sites, poor referral systems. (6) (3) (7)

Outcomes of Interventions: There were relatively few educational interventions for patients that improved short-term knowledge and none reported a sustained improvement in screening uptake.
Quantitative results (for example, prevalence of awareness or uptake) were summarized in tables, while qualitative results were summarized by theme. Although we could pool proportions when there was enough homogeneity, we did not conduct a meta-analysis because of the differences in methodologies across studies.

Overall Findings:

Abundant evidence across studies demonstrates limited knowledge, very low screening uptake, and ongoing structural and cultural barriers in low-income urban populations in Pakistan. Although attitudes indicate some readiness for screening if barriers are removed, substantial large-scale implementation of interventions is lacking.

Sensitivity and Supplementary Analyses

- Sensitivity analyses were conducted to assess the robustness of findings by excluding studies which were assessed to have very low methodological quality.

Where data allowed, a meta-regression was conducted to determine potential sources of heterogeneity including study region, year of publication, and study design.

- The results were reported in accordance with PRISMA 2020 guidelines, complete with the PRISMA flow diagram, risk-of-bias and quality assessment tables, an evidence summary table, and a structured summary of findings.

- As this study was a **systematic review** of previously published literature, formal ethical approval was not sought. Findings were relayed through public dissemination via publication in a peer-reviewed journal and shared with stakeholders in Pakistan who may be stakeholders including public health departments and non-governmental organizations (NGOs) to help inform policy and practice regarding cervical cancer screening in Pakistan.

Table of studies:

Sr.#	Author	Year/ Country/ Study design	Population/ Sample size	Intervention & comparator	outcomes	Key results
1	R. Zafar, Asma Burney	Pakistan 2022 Survey	873 women (18–28). 1070 women (21–30)	Awareness & screening programs Limited access & awareness	Low Awareness & Knowledge Barriers to Screening High Disease Burden Low Screening	2nd most common cancer (15–44) 20 cases daily, high mortality 70% unaware, 2.2% know risks Pap smear uptake 2% Barriers: education, info, socioeconomic, cultural
2	Samina Hirani, Sarah Khan, Sidra Akram, S. Virji, P. Shaikh, E. Naeem, Rayaan Asad Chaudhry, Ahmed Bilal Khalid, Jalal Ud Din Khan, Muhammad Qasim, I. Jehan	Pakistan 2020 Survey	Survey of 384 Karachi women (15–50).	Intervention: Awareness toolkit assessment - Comparator: Poor knowledge/ practices	61% aware of cervical cancer, 47% Pap smear (73% tested), 25% HPV vaccine (10% vaccinated). Conclusion: Knowledge and practices remain poor.	61% aware of cancer, 47% Pap smear, 25% HPV vaccine. Knowledge and practices remain poor.
3	Shamaila Shamaun, R. Jaleel, Y. Gull, A. Shahid, Mehreen Iqbal, T. Qazi	Pakistan 2022 Survey	226 women	Awareness and vaccination programs Comparator (C): Poor awareness and uptake	Participants: Sexually active women (specific exclusions) Tool: Structured questionnaire Analysis: SPSS 19 Outcomes: Knowledge & attitudes on screening/vaccination	Awareness- cervical cancer 41.2%, screening 33.6%, HPV vaccine 1.8% Screening history 15.9%, willingness 31%, 96.9% unaware of risk factors; only education linked to awareness

4	Zummorrad Khurshid, Kabir Ozigi Abdullahi, K. Parveen, Sadia Khan	Pakistan 2022 Systematic review & meta-analysis		Intervention (I): Risk factor identification Comparator (C): Screening barrier analysis	Risk factors: STIs, early marriage, multiparty, OCPs, smoking High mortality: late diagnosis, low awareness Poor Screening & barriers Protective diet: vitamins, carotenoids, vegetarian	Risk factors: STIs, early marriage, multiparty, OCPs, smoking High mortality: late diagnosis, low awareness
5	Lubna Riaz, S. Manazir, Fatima Jawed, S. Arshad Ali, Ramsha Riaz Cureus	Pakistan 2020 Cross-sectional survey,	450 women (Karachi)	Intervention (I): Education and screening access Comparator (C): Low knowledge and practice	Findings: 51.3% aware cervical cancer; 34.2% Pap smear; 40.2% HPV vaccine; screening 2.1%, prevention 1.8%; knowledge linked to SES/education; positive learning attitude.	Findings: 51.3% aware cervical cancer; 34.2% Pap smear; 40.2% HPV vaccine; screening 2.1%, prevention 1.8%; knowledge linked to SES/education; positive learning attitude.
6	Muhammad Ahmad, Edward Narayan, Ishtiaq Ahmed, Mohammed Hussen Bule	Pakistan 2023 Descriptive / observational	Pakistan, rural areas; details not specified	- Intervention: Comprehensive screening programs Comparator (C): Adequate testing facilities	Findings: Low awareness (5%) and screening (2.6%); high incidence/mortality ; cultural and infrastructure barriers; limited HPV vaccine use Conclusion: Urgent need for accessible screening and barrier reduction	Findings: Low awareness (5%) and screening (2.6%); high incidence/mortality; cultural and infrastructure barriers; limited HPV vaccine use Conclusion: Urgent need for accessible screening and barrier reduction

7	Saira Shahnaz, Eduardo S Fricovsky, Ramesha Anwar, M. Arain Cureus	Pakistan 2023 Cross-sectional, interventional study	150 urban women (30–50 yrs)	Intervention: 45-min educational outreach Comparator: Low awareness baseline	Findings: +45% knowledge; 31% planned Pap smear; reduced screening barriers Conclusion: Education improves awareness and screening intent	Findings: +45% knowledge; 31% planned Pap smear; reduced screening barriers Conclusion: Education improves awareness and screening intent
8	Novera Chughtai, Kausar Perveen, Sehar Rahim Ali Gillani, Aamir Abbas, R. Chunara, A. Manji, Salima A. Karani, A. Noorali, Maheen Zakaria, U. Shamsi, Uzma Chishti, A. Khan, S. Soofi, S. Pervez, Zainab Samad	Pakistan Data from Karachi, Punjab, cancer registries 2023 Systematic review 1995– 2022	ASIR 5.2–8.4/100k ~6,166 new cases/year	**Intervention:** Data analysis review Comparator not applicable	ASIR 5.2–8.4/100k ~6,166 new cases/year Burden above WHO targets Population-adjusted estimates Geospatial incidence mapping	ASIR 5.2– 8.4/100,000 women ~6,166 new cases/year Burden exceeds WHO target Sensitive to health-seeking behavior
9	S. Minhas, Aneequa Sajjad, M. Kashif, Zobaria Rehman, M. Idrees, F. Ansari	Pakistan 2020 Systematic review	200 women (30–50 yrs), low-income urban Punjab	Intervention: Self-administered questionnaire Comparator: Poor knowledge and acceptance	Findings: Low knowledge; education improves awareness; positive screening attitude. Conclusion: Health education essential.	Findings: Low knowledge; education improves awareness; positive screening attitude. Conclusion: Health education essential.
10	Nazia Ayub, Mahliqa Maqsud, Huma Tahseen, M. Sharif, N.	Lahore Pakistan 2020 Cross-	600 women aged 1950 years	Intervention: Nurses' knowledge & practices Comparator: General	Findings: Good knowledge of cervical cancer, causes, and screening; supportive of	Findings: Good knowledge of cervical cancer, causes, and screening; supportive of
	Waris, A. Rai	sectional study		population women	prevention measures Conclusion: Nurses have satisfactory knowledge and practices	prevention measures Conclusion: Nurses have satisfactory knowledge and practices

Discussion:

Findings: This review shows that cervical cancer screening for women aged 30-50 years old is very low in Pakistan, especially in low-income urban areas. Knowledge of the disease and potential screening options was consistently low among women; cultural stigma and myths about the disease, as well as feelings of embarrassment and lack of spousal support for screening, were discouraging. Women also faced economic barriers (e.g., cost, transportation) and systemic barriers (e.g., limited female healthcare providers and no national screening programs) in equally jeopardizing their ability to access cervical cancer screening. Ultimately, the evidence, both quantitative and qualitative, supports a similar thread - low awareness and low screening uptake, and a significant range of sociocultural and structural barriers.

Limitations of This Review: Limitations in the number and quality of studies available, many of which were hospital based or convenience samples, constrain the review's findings. There was substantial study heterogeneity which consequently did not permit the meta-analysis to be conducted, and a narrative synthesis of the available data is the outcome. Additionally, the review's focus on peer-reviewed English language studies may exclude some local evidence that may be relevant. Overall, the review does demonstrate a useful summary of the barriers to cervical cancer screening in Pakistan, and is an important basis for the future research and policy.

Strengths of the Review: This review takes an in-depth look at women aged 30 – 50 in low-income urban areas of Pakistan, a cohort that is often overlooked and is especially vulnerable. By bringing together quantitative as well as qualitative evidence, it addresses not just statistical, but also social and cultural obstacles. By grouping surveys together with hospital based studies and qualitative studies, the thematic synthesis provides a context-specific perspective of the situation and points out gaps in the evidence and possibilities for future studies in culturally appropriate intervention.

Gaps in Cervical Cancer Screening: The existing literature on cervical cancer screening in Pakistan indicates significant deficits. The vast majority of studies conducted to date have been focused in hospitals or larger cities, use small, convenience samples, and non-validated tools, which limit their ability to generalize. The majority of studies conducted to date focused solely on women's awareness, while systemic, provider, and policy-level barriers remain almost completely unnamed and unexplored. Sociocultural aspects, including stigma, spousal influence, and gender norms are noted, but rarely studied. Also, men's perspectives and the perspectives of healthcare providers are nearly nonexistent. Furthermore, there are very few intervention-based or longitudinal studies, which necessitates a more focused and rigorous community-based studies to not only develop and examine culturally appropriate methods (e.g., HPV self-sampling/self-collection) and community education, but for any sort of research, in this area.

Significance of Screening and Early Diagnosis: Cervical cancer is one of the very few cancers that is easy to prevent if detected and treated early. Early detection means a greater chance of survival in cases where clinical evaluation is done quickly. Women should seek clinical medical assistance and evaluation for any of the following reasons: bleeding after sexual intercourse, abnormal bleeding from the vagina, abnormal vaginal discharge or too much discharge, persistent unexplained pelvic or back pain, unexplained weight loss, and swelling of the legs. A proper clinical evaluation is key to the diagnostically work-up, which includes histopathology, imaging, and staging of disease.

Management and Quality of Care: Women diagnosed with invasive cervical cancer should have access to complete management pathways. Components of quality care include coordination of a multidisciplinary team, adherence to National guidelines of treatment, and integrated holistic psychological, physical, and palliative care. Treatment can improve survival and quality of life, when done in a timely coordinated manner - surgery, radiotherapy, and/or chemotherapy.

With the expansion of screening coverage in low- and middle-income countries - such as Pakistan - there will be more invasive cases found in previously unscreened populations. As result, referral systems and cancer management processes developed parallel to prevention and screening. Expanding integrated approaches would improve the early detection and support effective, equitable and compassionate care for women who have cervical cancer.

Suggestions: To enhance prevention of cervical cancer in Pakistan, awareness campaigns led by community health workers and women providers that are sensitized to stigma and myths about cervical cancer are required. Screening services must be affordable and accessible in primary health care (PHC) that includes appropriate referral pathways, as well as awareness of the national cervical cancer screening program, together with appropriate referral pathways for follow-up. Future research should focus on larger community

studies, with implications for men and providers, and/or consider innovative strategies to continue examining barriers to screening and early detection (e.g., HPV self-sampling, community education).

Conclusion

In Pakistan, cervical cancer continues to be a major public health concern, particularly amongst women aged 30–50 years (and within urban poor populations) where knowledge of both the disease and appropriate screening have been substandard. This review examines some relevant barriers, which include but are not limited to lack of knowledge, cultural taboos, cost, and access to non-appropriate health services, leading to diagnosis at a later stage of disease and eventual death of women. User-friendly public education and awareness campaigns, access to appropriate and low-cost screening and vaccination, and user-friendly and culturally appropriate frameworks for the identification and prevention of cervical cancer is needed. Future studies should be focused in the range of both large-scale community research studies to intervention design models that address both structural and sociocultural barriers to cervical screening in Pakistan.

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