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Systematic Review

Factors Contributing to Cervical Cancer Among Women: A Systematic Review and Meta-Analysis

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ABSTRACT

Cervical cancer is among the top 10 most common cancers worldwide, and it is the third most common malignancy among women in Pakistan, with a reported incidence rate of 5.98%. Unprotected and early sex, low socioeconomic status, early menstrual cycles, multiparty relationships, HPV infection, co-infections, hormonally changed immune system, smoking, and low education level, among others are all risk factors associated with cervical cancer. **Objective:** The targeted objective of this review and meta-analysis was to identify how comprehension and attitude may impact on how frequently women utilize services for cervical cancer screening. **Methods:** The review of the literature was done using a variety of resources, including Google Scholar, PubMed, MEDLINE, and other databases. The keywords "incidence of cervical cancer in Pakistan," "prevalence of cervical cancer," and "risk factors of cervical cancer in Pakistan" were used. **Results**: From this literature review, following factors has been identified that are effecting cervical cancer development. Sexually Transmitted Infections (STI), multiple sexual partners, marrying before age 18 years, multiple childbirths, Oral Contraceptive Pills (OCPs), smoking, obesity, nutritional and dietary factors, and low socioeconomic status. **Conclusions:** The burden of cervical carcinoma has increased as a result of the rising prevalence of the condition. Although Pakistan has a lower prevalence of cervix carcinoma than other western nations. Mortality rates are high as a result of inadequate awareness, poor follow-up, and late presentation of cervical malignancies.

INTRODUCTION

Cervical cancer is among the top 10 most common cancers worldwide, and it is the third most common malignancy among women in Pakistan, with a reported incidence rate of 5.98% [1]. In 2012, this aggressive cervical cancer affected over 528,000 women annually, around the world, and 99.7% of cases were brought on by high-risk human papilloma virus [2]. The International Agency for Research on Cancer (IARC) and HPV (Human Papilloma Virus) Information Center report that in Pakistan in 2018, there were about 5,601 instances of cervical cancer; 3,861 of those cases were fatal [3]. Pakistan is one of the top 10 nations with the greatest rates of female mortality due to the prevalence of cervical cancer, where about 20 women die from the disease every day. According to WHO, cervical cancer will cause over 500,000 women to die by 2030, and more than 98% of these fatalities are projected to take place in poor nations like Pakistan [4]. The onset of the cervical cancer is a severe issue as HIV/AIDS raised the problem to a serious level [5]. The primary cause of cervical cancer is sexually transmitted infection-causing human papilloma virus (HPV) [6]. Currently, vaccinations against HPV infection are readily available [7]. However, in environments with limited resources, early detection by screening and treatment of pre-cancerous lesions remains the greatest method of prevention against cervical cancer [8]. In several countries, cervical cancer precursors and

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cases have decreased as a result of prompt treatment with cryotherapy combined with HPV screening. However, it has been demonstrated that HPV-based screening is more efficient than cytology for the diagnosis of cervical cancer precursors and prevention of cervical cancer [9]. However, it has been noted that few low- and middle-income nations have high rates of cervical cancer screening tests [10]. Statistics show that compared to low- and middle-income countries, high-income countries have three times higher (19%) screening rate for cervical cancer [11]. Many low- and middle-income countries believe that a number of issues, such as women's aversion to testing and a lack of understanding about the disease's risk factors and treatment choices, are to blame for the low uptake of cervical cancer screening tests [12]. Therefore, it is crucial to comprehend how knowledge and attitude impact the frequency with which cervical is utilized. For the development of successful strategies, the use of cancer screening tests is required [9]. However, the goal of this systematic review and meta-analysis was to determine how knowledge and attitude may impact how frequently women use services for cervical cancer screening.

METHODS

According to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) declaration, the current systematic review was reported. The keywords "cervical neoplasm," "cervical cancer," "risk factors," and "contributing factors" were combined to create the search parameters. The scoping search and entry terms from Medical Subject Headings were used in the systematic search for primary papers relevant to the review question "What are the contributing factors of cervical cancer among women?" In order to maintain balanced sensitivity and accuracy during database search, these keywords were paired with Boolean operators. These words include: female health, cervical screening, early cancer detection, Pap smear, HPV testing AND awareness, OR attitudes, practices, determine, access, facilitators, barriers, socioeconomic, AND OR low- and middle-income countries between March and April 2022, five electronic databases namely, MEDLINE, Embase, CINAHL, Scopus, and Web of Science were searched, and a second search was carried out in June 2022. We used special syntax and symbols (such as truncations or wildcards) to keep search consistency across a few databases. American Cancer Association (2016) and (2019, 2020) also researched for a thorough examination of Cervical Cancer. The American Cancer Society and the International Agency for Cancer Research expert panel committee's extensive investigation was taken into consideration. Before conducting database searches, we identified important publications that satisfied predetermined inclusion criteria in order to assure the thoroughness of our search for pertinent primary research. These important publications were found in the search results, demonstrating that our search was successful. Furthermore, we carried out a supplementary search for grey literature and studies not indexed in selected databases using Google and Google Scholar. The first 15 pages of results were retained and examined for relevant primary studies. Reference list search of all included studies was conducted to identify related articles. There were 25 articles about the prevalence of cervical cancer in Asia, Pakistan, and other places. After abstracts were reviewed, 12 papers were found to be pertinent. The inclusion criteria include all primary source and peer-reviewed reports on factors contributing towards cervical cancer among women. The review included all the literature from 2012 to 2022 to capture all the work that was written in the English language and reported during this period. And all the other work that did not conform with the above requirement and those which are not written in the English language are excluded. The methodological quality, informative usefulness, and legitimacy of the records gathered in this way were assessed. First, the names of the articles were used to pick all records. The relevance and significance of the shortlisted titles' abstracts to the research question were then evaluated. Following that, only abstracts that highlighted factors contributing towards cervical cancer in women and those published between the study's time period (i.e., 2012 and 2022) were thoroughly reviewed. The full-text entries that didn't fit the requirements for inclusion were taken out and omitted out of the review. The data was analyzed using the content analysis approach, with the data acquired from all of these records serving as the unit of analysis. The analysis's ideas and concepts are now provided as findings and recommendations that might have an impact on policymakers, the government, and Non-Governmental Organizations(NGO).

RESULTS

From literature review, there are some factors identified most commonly causing cervical cancer among women. The main risk factors for cervical cancer in women are STDs, multiple sexual partners, marriage before the age of 18, multiple pregnancies, oral contraceptive use, smoking, obesity, and low socioeconomic position. Infection with high-risk or oncogenic HPV strains is the main contributor to precancerous and cancerous cervical lesions. Moreover, eight records including grey literatures were included in the review as summarized in table 1 and appendix 1. Eight factors emerged: sexually transmitted disease; multiple

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sexual partner; marrying before age 18 years and multiple childbirths; use of oral contraceptives; smoking; obesity; nutritional and dietary factors; and low socioeconomic status.

No.	Author & Year	Country	Study type	Factors Identified	Effect on Cervical Cancer
1	Venkatas & Singh (2020) [A1]	Worldwide	Review	Sexually Transmitted Diseases (STD)	The paper show a pre-cancerous and malignant cervical lesions are primarily brought on by infection with high-risk or oncogenic HPV strains. [13]
2	Liu et al., (2015) [A2]	Worldwide	Review & meta- analysis	Multiple Sexual partners	This paper estimate multiple sexual partners increase a person's risk of developing cervical cancer. [15]
3	Laan et al., (2017) [A3]	Netherland	Quantitative study	Marrying before age 18 years and multiple childbirths	The work highlight that starting sexual activity earlier and with more stable relationships both raise the risk of cervical cancer. [16]
4	Denny & Prendiville (2015) [A4]	South Africa	Descriptive	Oral Contraceptive Pills (OCP)	This article focuses on use of the OC technique for five years or more can increase cancer risk by twofold. However, individuals who took just injectable progesterone for five years or more experienced a small increase in the prevalence of invasive cervical cancer. [17]
5	Roura et al., (2014) [A5]	Europe	Cohort & case control	Smoking	The paper assay smoking is one of the major risk factors for invasive cervical cancer. Smoking can increase the risk of cervical neoplasia in a variety of ways. [18]
6	Poorolajal & Jenabi (2016) [A6]	Iran	Meta- analysis	Obesity	This study identified that obesity influences the incidence of cervical adenocarcinoma linked to hormonal risk factors and raises the risk of cervical carcinoma. [19]
7	Momenimovahed & Salehiniya (2017) [A7]	Iran	Review	Nutritional and dietary factors	The study discovers higher intakes of the nutrients vitamin C, folate, vitamin E, beta-carotene, vitamin A, lycopene, and vegetarian meals are associated with a lower risk of cervical cancer. [20]
8	Kashyap et al., (2019) [A8]	India	Case control	Low socioeconomic status	The paper highlighted that women from low socioeconomic backgrounds and those who are poor do not get screened for cervical cancer. They are unaware of these medical services, and some people choose to ignore the symptoms out of shyness. [21]

Table 1: Summary of the Included Studies.

DISCUSSION

Cervical cancer (CC) is a public health issue as there is a greater prevalence and mortality rates of cervical cancer in reproductive-age women from lower socioeconomic strata [22]. It is the main factor in female morbidity and mortality. Globally, GLOBOCAN 2018 reports that there were 18 million new instances of cancer and over 9.6 million cancer-related deaths in 2018 [23]. There are several factors that contribute to the advanced state of the disease when it is presented, but ignorance is still the biggest one [1]. Unprotected and early sex, low socioeconomic status, early menstrual cycles and multiparty relationships, HPV infection, co-infections, hormonally changed immune system, smoking, low education level, etc. are all risk factors of cervical cancer [4]. According to Nausheen et al., 50% of smokers all over the world experience dysplasia [24]. According to a cross-sectional study done at three hospitals in Punjab, Pakistan, impoverished people (72.7%) and persons who resided in

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rural regions (59%) were more likely to develop cancer [25]. Based on a study released in June 2013, patients with cervical intraepithelial neoplasia had a higher frequency and percentage of low socioeconomic class (58.33%) than those with other risk factors [26]. At Karachi's Aga Khan University Hospital (AKUH), Jahan et al. evaluated the risk factors for 103 female patients. Young females were shown to suffer from early marriages, and the likelihood of abnormality dropped as age beyond 26. Male circumcision was thought to protect against the development of cervical tumour in women, and that study found that 17.6 % of patients were below the matric level, increasing the risk. Additionally, education has an impact on parity, perineal hygiene, and contraceptive choice to assess health opportunity and health-seeking behaviour [27]. Young girls are now more at danger than ever before, and a high incidence rate was seen, particularly in younger women who had disease that was well advanced in stage [28]. The social prohibition on all sex-related activities and the counting of sexually transmitted illnesses presents a significant challenge in assessing the epidemiology of HPV in Pakistan. Additionally, there is a dearth of population-wide screening. Cervical cancer incidence is rising daily as a result of a lack of understanding and awareness regarding its causes and risk factors. The majority of studies demonstrate that having more stable partners and beginning sexual activity at a younger age increases the risk of cervical cancer [14,15]. Through a number of ways, smoking can raise the risk of cervical neoplasia. The local stimulation of immune suppression by cigarette metabolites is one of the mechanisms. Additionally, tobacco-related substances like nicotine and its metabolites can harm squamous cells' DNA [17]. Obesity influences the incidence of cervical adenocarcinoma linked to hormonal risk factors and raises the risk of cervical carcinoma [18]. The risk factors and screening procedures for cervical cancer are also poorly understood by women. Women from low socioeconomic backgrounds and those who are poor do not get screened for cervical cancer (such as Pap tests). They are unaware of these health services, and some people disregard the symptoms out of shyness. Furthermore, they do not receive sufficient screenings or care for cervical cancer [20]. Therefore, there is a need to increase public awareness of cervical cancer risk factors and prevention.

CONCLUSIONS

The burden of cervical cancer has increased as a result of the condition's rising prevalence, its early detection, rising treatment costs with low success rates, and inadequate screening information. Although Pakistan has a lower prevalence of cervix carcinoma than other western nations, mortality rates are high as a result of inadequate awareness, poor follow-up, and late presentation of cervical malignancies. Implementing a countrywide screening programme and improving public health education are required for late-stage diagnosed conditions in order to save Pakistani women's lives.

REFERENCES

[1] Sadia H, Shahwani IM, Bana KFM. Risk factors of cervical cancer and role of primary healthcare providers regarding PAP smears counseling: Case control study. Pakistan Journal of Medical Sciences. 2022 Apr; 38(4Part-II):998-1003. doi: 10.12669/pjms.38.4.4969.

[2] Ngoma M, Autier P. Cancer prevention: cervical cancer. Ecancermedicalscience. 2019 Jul; 13:952. doi: 10.3332/ecancer.2019.952.

[3] Bruni LB, Barrionuevo-Rosas L, Albero G, Aldea M, Serrano B, Valencia S, et al. Human papillomavirus and related diseases in the world. Summary Report. 2015 Dec; 20140822.

[4] Batool SA, Sajjad S, Malik H. Cervical cancer in Pakistan: A review. Journal of Pakistan Medical Association. 2017 Jul; 67(7):1074-1077.

[5] Castle PE, Einstein MH, Sahasrabuddhe VV. Cervical cancer prevention and control in women living with human immunodeficiency virus. Cancer Journal for Clinicians. 2021 Nov; 71(6):505-526. doi: 10.3322/caac.21696.

[6] Sahara AL, Ibrahim F, Massi MN, Yasmon A. Association of Chlamydia trachomatis, Mycoplasma spp., Ureaplasma urealyticum and U. parvum with Human Papillomavirus in Patients with Cervical Cancer. In10th International Seminar and 12th Congress of Indonesian Society for Microbiology (ISISM 2019) 2021 Aug 12. Atlantis Press.

[7] Rosalik K, Tarney C, Han J. Human Papilloma Virus Vaccination. Viruses. 2021 Jun; 13(6):1091. doi: 10.3390/v13061091.

[8] Denny L, de Sanjose S, Mutebi M, Anderson BO, Kim J, Jeronimo J, et al. Interventions to close the divide for women with breast and cervical cancer between low-income and middle-income countries and high-income countries. Lancet. 2017 Feb; 389(10071):861-870. doi: 10.1016/S0140-6736(16)31795-0.

[9] Kassie AM, Abate BB, Kassaw MW, Aragie TG, Geleta BA, Shiferaw WS. Impact of knowledge and attitude on the utilization rate of cervical cancer screening tests among Ethiopian women: A systematic review and meta-analysis. PLoS One. 2020 Dec; 15(12):e0239927. doi: 10.1371/journal.pone.0239927.

[10] Olson B, Gribble B, Dias J, Curryer C, Vo K, Kowal P, et

DOI: https://doi.org/10.54393/pbmj.v5i8.675

al Cervical cancer screening programs and guidelines in low- and middle-income countries. International Journal of Gynaecology and Obstetrics. 2016 Sep; 134(3):239-46. doi: 10.1016/j.ijgo.2016.03.011.

[11] Mezei AK, Armstrong HL, Pedersen HN, Campos NG, Mitchell SM, Sekikubo M, et al. Cost-effectiveness of cervical cancer screening methods in low- and middle-income countries: A systematic review. International Journal of Cancer. 2017 Aug; 141(3):437-446. doi: 10.1002/ijc.30695.

[12] Alshahrani M, Sultan SA. Awareness and Attitude to the Risk of Cervical Cancer and Screening Methods among Women in the Najran Region of Southern Saudi Arabia. doi: 10.21203/rs.3.rs-33070/v1.

[13] Venkatas J, Singh M. Cervical cancer: a meta-analysis, therapy and future of nanomedicine. Ecancermedicalscience. 2020 Sep; 14:1111. doi: 10.3332/ecancer.2020.1111.

[14] Koskela P, Anttila T, Bjørge T, Brunsvig A, Dillner J, Hakama M, et al. Chlamydia trachomatis infection as a risk factor for invasive cervical cancer. International Journal of Cancer. 2000 Jan 1;85(1):35-9. doi: 10.1002/(sici)1097-0215(20000101)85:1<35::aid-ijc6>3.0.co;2-a.

[15] Liu ZC, Liu WD, Liu YH, Ye XH, Chen SD. Multiple Sexual Partners as a Potential Independent Risk Factor for Cervical Cancer: A Meta-analysis of Epidemiological Studies. Asian Pacific Journal of Cancer Prevention. 2015; 16(9):3893-900. doi: 10.7314/apjcp.2015.16.9.3893.

[16] Laan JJ, van Lonkhuijzen LRCW, van Os RM, Tytgat KM, Dávila Fajardo R, Pieters BR, et al. Socioeconomic status as an independent risk factor for severe late bowel toxicity after primary radiotherapy for cervical cancer. Gynecologic Oncology. 2017 Dec; 147(3):684-689. doi: 10.1016/j.ygyno.2017.10.013.

[17] Denny L, Prendiville W. Cancer of the cervix: Early detection and cost-effective solutions. International Journal of Gynaecology and Obstetrics. 2015 Oct; 131 Suppl 1: S28-32. doi: 10.1016/j.ijgo.2015.02.009.

[18] Roura E, Castellsagué X, Pawlita M, Travier N, Waterboer T, Margall N, et al. Smoking as a major risk factor for cervical cancer and pre-cancer: results from the EPIC cohort. International Journal of Cancer. 2014 Jul; 135(2):453-66. doi: 10.1002/ijc.28666.

[19] Poorolajal J, Jenabi E. The association between BMI and cervical cancer risk: a meta-analysis. European Journal of Cancer Prevention. 2016 May; 25(3):232-8. doi: 10.1097/CEJ.0000000000000164.

[20] Momenimovahed Z, Salehiniya H. Incidence, mortality and risk factors of cervical cancer in the world. Biomedical Research and Therapy. 2017 Dec; 4(12):1795-811.

[21] Kashyap N, Krishnan N, Kaur S, Ghai S. Risk Factors of Cervical Cancer: A Case-Control Study. Asia Pacific Journal of Oncology Nursing. 2019 Sep; 6(3):308-314. doi: 10.4103/apjon.apjon_73_18.

[22] Zubair ZA, Masood SO, Parveen A, Ali SI, Syed AA. Prevalence of Knowledge and Awareness Regarding Cervical Cancer among Females Presenting in a Tertiary Care Hospital: A Cross-Sectional Study. Pakistan Journal of Medical and Health Sciences. 2020; 14(2):293-6.

[23] Abbas G, Shah S, Hanif M, Asghar A, Shafique M, Ashraf K. Cancer prevalence, incidence and mortality rates in Pakistan in 2018. Bull Cancer. 2020 Apr; 107(4):517-518. doi: 10.1016/j.bulcan.2019.12.011.

[24] Aliya N, Naeem UR, Saadia Aziz K. Relationship between cervical cancers and tobacco smoking.

[25] Mumtaz A, Saif N, Salahuddin N. Pap Smear Study for Cervical Cancer Screening and its Associated Risk Factors in Positive Cases. Pakistan Postgraduate Medical Journal. 2016 Dec; 27(1):16-20.

[26] Jbeen M, Gul F, Javed N, Mehroz S. Frequency of cervical intraepithelial neoplasia in women attending Liaqat Memorial Hospital Kohat. Khyber Medical University Journal. 2013 Sep; 5:132-6.

[27] Jahan F, Nabi N, Qidwai W, Azam I. Frequency of abnormal pap smears and assessment of risk factors for cervical cancer in an out-patient clinic. Journal of Dow University of Health Sciences. 2008; 2(2):55.

[28] Memon IA. Get your daughters vaccinated before they sign on the dotted line. The Express Tribune Pakistan. 2010 Nov 6.