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Systematic Review

A Systematic Review of the Factors Associated with Cervical Cancer Screening Uptake among Women in Low and Middle-Income Countries

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ABSTRACT

Introduction: The high prevalence of cervical cancer is a global health problem. Approximately 90% of deaths from cervical cancer occur in low- and middle-income countries. This can be because of the awareness and uptake of cervical cancer screening services having remained poor in these countries. This review aims to explore the factors influencing cervical screening uptake among women in low and middle-income countries.

Methods: The studies were systematically identified by searching electronic databases with the keywords "cervical cancer AND screening AND low of income countries AND middle of income countries." The results consisted of 94 articles from Scopus, 100 articles from Science Direct, 74 articles from EBSCO, and 32 articles from PubMed. Following this, 16 studies were included in this systematic review with the inclusion criteria being quantitative or qualitative studies exploring the factors influencing woman's cervical cancer screening uptake covering women in low- and middle- income countries, a clear study outcome and details on the associated factors, barriers to, and facilitators of screening uptake.

Results: Knowledge about the disease and its prevention, knowing someone with cervical cancer and someone who has ever been screened, attitude and perception, husband approval, advice from the health care providers, and the distance to health care service were all important factors related to cervical cancer screening uptake in low and middle-income countries. The uptake of cervical cancer screening services was poor in low and middle-income countries. There is a need to strengthen the knowledge and awareness of woman related to cervical cancer screening services.

Conclusion: The available evidence shows that intrapersonal and organizational factors are the most important factors that influence woman to undergo cervical cancer screening.

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cervical cancer; screening; low income countries; middle income countries

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INTRODUCTION

The high prevalence of cervical cancer is a global health problem. It causes hundreds of thousands of deaths among women annually worldwide. With an estimated 570,000 cases and 311,000 deaths in 2018 worldwide, this disease ranks as the fourth most frequently diagnosed cancer and the fourth leading cause of cancer death in women (Bray et al., 2018). Approximately 90% of deaths from cervical cancer occur in low- and middle-income countries (Idowu, Olowookere, Fagbemi, & Ogunlaja, 2016). Cervical cancer is a malignant proliferation of the cells of the uterine cervix and it occurs when abnormal cells in the lining of the cervix grow in an uncontrolled way (Donatus et al., 2019). This disease is potentially preventable and some effective screening programs can lead to reduced morbidity and mortality (Schliemann et al., 2019).

Early detection and education to promote early diagnosis and the screening of cervical cancer greatly increase the chances of successful treatment and

survival (Islam, Billah, Hossain, & Oldroyd, 2017). One of the screening methods is a cytology-based approach. The beneficial effects of this program are that it has hastened the decline in cervical cancer rates upon its implementation in high-income countries (Bray et al., 2018). This success has been attributed to greater access to healthcare, an increased uptake of cervical screening, and the increased awareness of screening practices among the women in these countries (Ncube, Bey, Knight, Bessler, & Jolly, 2015). In contrast, in low and middle-income countries, this program can't achieve a major impact in most settings because of the low screening uptake (Liebermann, VanDevanter, Hammer, & Fu, 2018).

Prior research in low- and middle- income countries has shown there to be several factors that are thought to affect the uptake of cervical cancer screening. Based on the "ecological models" by Mc Leroy et al about the factors that affect health behavior, they can be divided into 5 levels. These levels are interpersonal and intrapersonal factors, community, organizational and policy-related (Owen, Heart, & Fisher, 2008). The intrapersonal level describes an individual's characteristics such as knowledge and attitude which influences behavior. The interpersonal level describes their interactions with the primary groups of family and friends. This provides social support related to their health behavior. The organizational level includes the rules or regulations (and the physician's recommendations) that may constrain or modify their health behavior. The community level concerns the influence of social networks or the standards that exist either formally or informally among groups and organizations (e.g. acculturation). The policy-related level describes the existence of policies that support disease prevention and detection, control and management (e.g. health insurance) (Chan & So, 2017).

The objective of this systematic review was to explore the factors associated with the uptake of screening among women in low- and middle- income countries. These findings could be used to inform public policy and to develop and implement strategies to increase screening activities, thereby reducing the incidence, morbidity, and mortality of the disease. Understanding the factors and facilitators with cervical cancer screening encountered by the women in low and middle-income countries can guide the government in conducting health sector efforts to increase the screening rate among the population.

MATERIALS AND METHODS

Literature Search

The literature review was employed according to the PRISMA guidelines. The database search was performed in January 2020 for articles dated in the last 10 years. The databases included Scopus, EBSCO, PubMed, and Science Direct. The following keywords were used alone or in combination: factors, cervical cancer, screening, low-income countries, middle-income countries. The limitations of the literature search were that they had been published in the last 10 years and English-only articles. Once all of the articles were found, duplicate articles were removed.

Inclusion/Exclusion Criteria

The criteria for inclusion in this review were as follows: (1) quantitative or qualitative studies exploring the factors influencing woman's cervical cancer screening uptake; (2) studies covering women in low- and middle- income countries and (3) studies with the outcome related to the associated factors, barriers to, and facilitators of screening uptake. The criteria for exclusion included the following: (1) unpublished studies; (2) language used was not English and (3) outside of the limitation on publication, between 2011 - 2020.

Study Selection

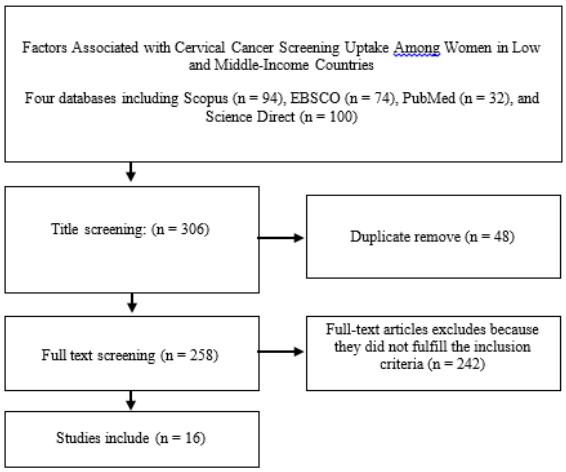

Figure 1. Flowchart of the Articles Selected for the Systematic Review and the Selection Process Using PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyzes)

Data Extraction

The following information was extracted from the 16 articles: information on the demographics, study design, outcome measures, sample size, associated factors, barriers to and facilitators of the screening uptake, country and year of publication.

RESULTS

General Features and Types of Study

All 16 studies were published between 2012 and 2020 and they were conducted in low and middle-income countries. Among these, 14 (88%) adopted quantitative and 2 (12%) adopted qualitative approaches. The target participants were women in the countries where the studies took place. They were grouped into 2 major categories: low-income

Table 1. General characteristics of the selected studies (n=16)

Category	n	%
Year of publishing		
2012	1	6
2015	3	19
2016	3	19
2017	3	19
2018	3	19
2019	1	6
2020	2	12
Type of Country		
Middle-income countries	10	63
Low-income countries	6	37
Factors associated with cervical cancer screening uptake		
Intrapersonal factors	16	100
Interpersonal factors	1	6
Community	1	6
Organizational factors	5	31,25
Type of study		
Cross-sectional	12	80
Case control	1	7
Qualitative	2	13

countries consisting of Ethiopia (n=2), Tanzania (n=2) and Uganda (n=2) and middle-income countries consisting of Cambodia (n=1), Cameroon (n=1), Indonesia (n=1), Iran (n=1), Jamaica (n=1), Kenya (n=2) and Nigeria (n=3). The sample size of the studies ranged from 82 to 9016, and the participants' ages ranged from 15 to 69 years old.

All of the studies (100%) that were included in this review reported that intrapersonal factors are associated with the uptake of cervical cancer screening. Good knowledge about the disease and its prevention were found to be the most important factors in 8 (50%) articles. Having good knowledge was a facilitator to get cervical cancer screening because it can make the women more aware and thus encourage them to undergo the screening intensively. Four studies (25%) mentioned that attitude and perception about the screening are associated factors that influenced the women to undergo cervical cancer screening. Having known somebody with cervical cancer or somebody who had undergone cervical cancer screening was a motivating factor for women to access screening in 5 (31.25%) studies.

The interpersonal factor mentioned in 1 (6%) study in this review was husband approval. The support from the husband is a way of providing social support for the women to undergo cervical cancer screening. To increase the awareness and knowledge about cervical cancer screening, 1study (6%) mentioned that the community factors can be altered through the management and health promotion conducted using public events, media, religious communities and other civic society channels.

The uptake of cervical cancer screening is associated with the organizational factors mentioned in 5 (31.25%) of the included studies. Women found it difficult to present for screening when the health facilities were not nearby. Being recommended to attend screening by the health care workers was a significant facilitator that was mentioned in 3 (18.75%) studies. Women who had been recommended by a health-care-worker were more likely to have been screened for cervical cancer compared with women who had not advised.

DISCUSSION

Intrapersonal Factors

The intrapersonal level describes an individual's characteristics, such as knowledge and attitude, which influence their behavior. It was noticed that some of the factors were common among women in low and middle-income countries. These factors include knowledge about the disease and its prevention (Ndikom & Ofi, 2012; Nigussie, Admassu, & Nigussie, 2019; Orang'O et al., 2016; Touch & Oh, 2018), knowing someone with cervical cancer and knowing someone who has ever been screened (Ncube et al., 2015; Ndikom & Ofi, 2012; Nigussie et al., 2019), attitude and perception, level of education (Anwar et al., 2018; Weng, Jiang, Haji, Nondo, & Zhou, 2020), literacy and media exposure (Tiruneh, Chuang, Ntenda, & Chuang, 2017), fear about the result of the screening, awareness, belief, self-efficacy, and having a history of gynecological examination (Donatus et al., 2019; Idowu et al., 2016).

Knowledge about the disease and its prevention is the most important factor at the intrapersonal level. If women have information concerning cervical cancer severity, they may utilize the screening services. This may be due to their knowledge about cervical cancer clearing up any rumors about cervical cancer and increasing their awareness about the advantages of undergoing screening (Nigussie et al., 2019). Level of education was consistently associated with higher odds of having an awareness about the cervical cancer screening uptake (Anwar et al., 2018). Education level was found to be positively associated with level of knowledge which means that a lack of knowledge could be due to the low education level and the low coverage of cancer awareness initiatives in the country (Weng et al., 2020).

Some evidence shows that knowing someone who has ever been screened for cervical cancer is associated with cervical cancer screening service utilization. Women who know someone who has ever screened been were more likely to undergo cervical cancer screening themselves when compared with women who do not know someone who has been screened for cervical cancer (Nigussie et al., 2019). This result is consistent with the study done in Uganda. This might be due to the screened women discussing it with unscreened women, focusing on the screening service-procedure and the time that it takes. This will decrease the fear of the women towards undergoing screening (Ndejjo, Mukama, Kiguli, & Musoke, 2017).

Belief and self-efficacy should be a concern of women in cervical cancer screening. Farzaneh et al showed that the perceptions of a specific health behavior play an important role in reducing the cervical cancer risk and engaging in the health behavior of focus (Farzaneh, Heydari, Shekarchi, & Kamran, 2017).

Interpersonal Factors

The interpersonal level describes the interactions with the primary group, their family, and friends. This provides social support to a given health behavior. In this review, we found that husband approval is the only interpersonal factor that influences a woman to get cervical cancer screening. The first family member closest to the wife is the husband, so the husbands' approval of cervical cancer screening is therefore strongly associated with the participants' cervical cancer screening status (Lyimo & Beran, 2012). This was confirmed by Rahmawati et al's (Rahmawati & Dewanti, 2018) study, which showed that the negative attitude of men towards the screening or the treatment of cervical cancer is to be a considered a

Table 2. Summary of the Selected Studies

Author	Type Of Country	Design	Sample	Variables	Results
(Nigussie et al., 2019)	Low-income country	Cross-sectional	737 respondents	Cervical cancer screening service utilization and the associated factors	Having a history of gynecological examinations, good knowledge of cervical cancer screening, perceived susceptibility to cervical cancer, government employee, knowing someone who has ever been screened and getting advice from the health care providers.
(Teame et al., 2019)	Low-income country	Case control	624 respondents	Factors affecting the utilization of cervical cancer screening services	Age, employee status, having ever given birth and a history of multiple sexual partners.
(Anwar et al., 2018)	Middle-income country	Cross-sectional	5397 respondents	Determinants of cancer screening awareness and participation.	Level of education, social participation, health insurance and a shorter distance to the health services were the determinant factors of cervical cancer screening participation.
(Tiruneh et al., 2017)	Middle-income country	Cross-sectional	9016 respondents	Individual- and community-level factors related to cervical cancer screening.	Media exposure, a higher household wealth index, employed, insured, and had visit a health facility in the last 12 months in addition to sexual autonomy.
(Steinhardt et al., 2015)	Middle-income country	Cross-sectional	2505 respondents	Factors associated with the limited uptake of the screening services.	A high percentage of women knew that it is appropriate for all women to getcervical cancer screening, but only a small proportion of women actually got screening. The associated factors were Knowledge, Fear and Beliefs.
(Weng et al., 2020)	Low-income country	Cross-sectional	1483 respondents	Attitudes toward the acceptability of and barriers to cervical cancer screening (CCS).	Educational level, Family income, Personal and family history, Paritas, Fear of screening and the Inconvenience of screening.
(Ndejjo et al., 2017)	Low-income country	Qualitative	119 participants	Community knowledge, facilitators and barriers to cervical cancer screening	The perceptions of cervical cancer and screening were majorly positive with many of the participants stating that they were at risk of getting cervical cancer. The facilitators to accessing cervical cancer screening were experiencing signs and symptoms of cervical cancer, a family history of the disease and awareness of the disease/screening service.

(Pyatak et al., 2018)	Middle-income country	Cross-sectional	440 respondents	Knowledge, attitude, and the practices related to cervical cancer prevention	The intrapersonal factors related to cervical cancer prevention are knowledge about the disease and prevention, and personal choice.
(Donatus et al., 2019)	Middle-income country	Cross-sectional	253 respondents	Cervical cancer knowledge and associated factors for uptake in cervical cancer screening.	The majority of the participants had heard of cervical cancer and had undergone cervical cancer screening. Following this, 24.51% and 29.25% of the participants respectively could not identify any of the risk factors and symptoms of cervical cancer.
(Farzaneh, Heydari, Shekarchi, & Kamran, 2017)	Middle-income country	Cross-sectional	1,134 respondents	Screening behaviours for breast and cervi-cal cancer, self-efficacy, beliefs, and the barriers to breast and cervical cancer screening.	Females who had high belief scores were more likely to undertake a mammogram, BSE, and pap smears. Females who had high self-efficacy scores were more likely to perform regular screening for breast and cervical cancer.
(Ncube, Bey, Knight, Bessler, & Jolly, 2015)	Middle-income country	Cross-sectional	403 respondents	Women's cervical cancer screening history, knowledge, attitudes and the practices regarding the disease and screening	Interpersonal: being married, age, parity, perception of the consequences of not having a pap smear ad knowing a person with cervical cancer. Health care system: discussing cancer with the health provider.
(Ndikom & Ofi, 2012)	Middle-income country	Qualitative	82 participants	Awareness, perception of the utilization of the cervical cancer screening service	Intrapersonal factors: ignorance, illiteracy, belief in not being at risk, having many contending issues, nonchalant attitude to their health, financial constraints and a fear of having a positive result.
(Idowu, Olowookere, Fagbemi, Ogunlaja, 2016)	Middle-income country	Cross-sectional	338 respondents	Determinants of cervical cancer screening uptake	Knowledge and self awareness were the determinant factors of cervical cancer screening uptake.
(Okunowo et al., 2018)	Middle-income country	Cross-sectional	225 respondents	Knowledge of cervical cancer and an uptake of Pap smear screening	The knowledge of the women in this study regarding the symptoms and risk factors of cervical cancer was very poor. Fear of a positive result, and the recommendation to be screened given by doctors/nurses were the important factors.
(Lyimo & Beran, 2012)	Low-income country	Cross-sectional	354 respondents	Demographic, knowledge, attitude, and accessibility factors are associated with the uptake ofcervical cancer screening	Women's level of education, and their knowledge of cervical cancer and its prevention, embarrassment and pain concerning the screening, preference for the health provider female, awareness, husband's approval of the cervical cancer screening and the distance to the cervical cancer screening services.
(Ndejjo, Mukama, Musabyimana, & Musoke, 2016)	Low-income country	Cross-sectional	900 respondents	Uptake of cervical cancer screening and the associated factors	Knowing where the screening services are offered, knowing someone who had ever been screened and being recommended to do so by a health worker

screening services.

Community

According to the WHO recommendations on the management of cervical cancer, health promotion should be conducted through public events, media, religious communities and other civic society channels. Preventive measures include mass screening, mainly for cervical cancer using a visual inspection with acetic acid, which should be organized as a public event. Social participation may help to enhance the presence of cancer screening in low-resource settings (Anwar et al., 2018).

Organizational Factors

The organizational level includes the rules or regulations (and physician's recommendations) that may constrain or modify health behavior. Consultation/advice from the health professions was associated with cervical cancer screening service utilization. Women who had advice from their health care providers were more likely to be screened when compared to women who had not had such advice. This may be due to the information from the health care providers increasing their awareness of the disease and the advantages of the screening services (Nigussie et al., 2019). It has been shown that the non – recommendation of a pap smear test is a major reason for not doing the test. Several studies have identified physician recommendation as a major determinant and predictor of the uptake of cancer screening tests. The regular health education of women and the recommendation to undergo a pap smear screening by clinicians and other health care providers will go a long way to improving the uptake and ultimately reducing the incidence and burden of the disease (Okunowo et al., 2018).

Accessibility has also been identified as an organizational factor related to the screening uptake. The long distance to the cervical cancer screening service reduces the likelihood of women accessing screening. Women who know the location of the nearest cancer screening facility are more likely to have been screened for cervical cancer compared to those who do not (Lyimo & Beran, 2012).

CONCLUSION

The uptake of cervical cancer screening services is poor in low and middle-income countries. There is a need to strengthen the knowledge and awareness of the woman towards the cervical cancer screening services. The available evidence shows that the intrapersonal factors of knowledge about the disease and its prevention and organizational factors are the most important factors that influence the woman in low- and middle-income countries when it comes to undertaking cervical cancer screening.

CONFLICT OF INTEREST

No Conflicts of interest have been declared.

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