



Roles of Nurses in Promoting Cervical Cancer Awareness

Literature Review

Jessieflor Riihinen

Bachelor's thesis

December 2023

Health and Welfare

Bachelor's Degree Programme in Nursing

Riihinen, Jessieflor

Role of Nurses in Promoting Cervical Cancer Awareness

Jyväskylä: JAMK University of Applied Sciences, December 2023, 51 pages.

Health and Welfare, Degree Programme in Nursing, Bachelor's Thesis

Permission for web publication: Yes

Language of publication: English

Abstract

Nurses play a significant part in influencing the public by spreading awareness about cervical cancer to both men and women educating the possible causes of getting the disease and its risk factors. They should be the source of information about the importance of participating in cervical cancer screening, pap smears, and HPV vaccination for preteens. When promoting awareness to the public, nurses should understand the illness, beliefs of the patients, and culture, gaining the patient's trust and influencing their behavior towards the relationship between human papillomavirus and cervical cancer.

The research aims to gather information from available evidence-based literature about the role of nurses in promoting cervical cancer awareness. The study aims to raise awareness about cervical cancer in the early stage to reduce the risk of developing the disease globally.

The study was conducted through a literature review, extracting data from CINAHL Ultimate, PubMed, and Medline. The researcher has found six (6) research articles that answered the research question. During the study, the researcher identified four (4) themes from these articles, for instance: Upkeep the nursing skills and competencies in cervical cancer prevention and care, Multi-professionalism and patient-centered interventions to promote health and cervical cancer awareness, Creating an approach to how to deal with the patient's challenges and General patient education regarding the importance of cervical cancer screening and HPV vaccine.

Cervical cancer is preventable and curable when diagnosed in early stage. Nurses are the closest healthcare professionals in the society, the source of primary education about cervical cancer screening, pap smear, and HPV vaccine; therefore, nurses should be devoted to spreading awareness, especially the rural and community nurses taking action in collaboration with the local and administrative department thus the less privileged in the society can partake the program in eliminating the cervical cancer.

Keywords/tags (subjects)

Nurse, nurses, nursing, nursing care, nursing staff, cervical cancer, awareness, knowledge, understanding, education

See Project Reporting Instructions, section 4.1.2

Miscellaneous (Confidential information)

For example, the confidentiality marking of the thesis appendix, see Project Reporting Instructions, section 4.1.2

Contents

1	Introduction	4
2	Background	5
2.1	Cervical Cancer and Human Papillomavirus	6
2.2	Warning signs and early detection of Cervical Cancer.....	8
2.2.1	Understanding cervical cancer and its risk factors and warning signs.....	8
2.2.2	Early detection of Cervical Cancer.....	9
2.3	Women’s awareness of Cervical Cancer	9
2.3.1	Barriers to participate in cervical cancer screening and HPV vaccination	9
2.3.2	Stigma, cultures, and beliefs regarding cervical cancer	11
2.3.3	Competence of Nurses for cervical cancer prevention	12
3	Aim, purpose, and research question	13
4	Methods.....	13
4.1	Literature Review	13
4.2	Article selection process	14
4.3	Method of Analysis	17
5	Results.....	18
5.1	Upkeep the nursing skills and competencies in cervical cancer prevention and care ...	19
5.1.1	Reflect on skills and competencies related to cervical cancer care	19
5.1.2	Training and education received by nurses.....	19
5.2	Multiprofessional and patient-centered interventions to promote health and cervical cancer awareness.....	20
5.2.1	Managing collaboration with other healthcare professionals and the community to promote cervical cancer awareness.....	20
5.2.2	Promote cervical cancer awareness as part of treatment plan	20
5.3	Creating an approach on how to deal with patients’ challenges	21
5.3.1	Patients support and promotion of patients’ mental well-being.....	21
5.3.2	Assisting the patient, ensuring communication and care coordination in the community and the patients’ family members.....	21
5.4	General patient education regarding the importance of Cervical Cancer screening and the HPV vaccine	22
5.4.1	Primary source of knowledge and information about cervical cancer and HPV... ..	22
5.4.2	Organizing the cervical cancer screening process and reaching out the vulnerable group in the society.....	22

6	Discussion	24
7	Ethical considerations, Limitations, Validity and Reliability	28
8	Conclusion	29
	References	30
	Appendices	37
	Appendix 1. Critical appraisal of articles	37
	Appendix 2. Article assessment	38
	Appendix 3. The process of content analysis.....	42

Tables

Table 1.....	6
Table 2.....	9
Table 3.....	10
Table 4.....	10
Table 5.....	14

Figures

Figure 1.....	16
---------------	----

1 Introduction

In 2018, cervical cancer took the lives of approximately 90% of women from third-world countries and 300 000 women around the globe. In that same calendar year, the director general of the World Health Organization affirmed the demand to raise awareness to eradicate cervical cancer worldwide and appealed to the administrative department to join their general goal of eliminating the subject, the cervical cancer (WHO, 2023).

In 2020, the World Health Organization passed a comprehensive approach concerning the epidemiology of cervical cancer and a respective target criterion in 2030 that every country should fulfill. The goal target for 2030 must be that 90% of girls as early as 15 should be vaccinated. Women must undergo cervical cancer screening by the age of 35 and a follow-up screening after ten (10) years, and women who have been gone to pre-treatment and who has cancer will be taken care of by that time (WHO, 2023).

HPV virus is the leading factor for cervical cancer. It takes decades to progress the disease and persistent infection of the virus before it will become recognizable if it is not detected early (Hu and Ma, 2018). New concepts and technologies are developed for cervical cancer prevention and interventions in the future. A nurse-led intervention has the possible effect of dominating the upkeep of the cervical cancer detection rate.

Nurses can provide patient guidance and education about the disease, triage cancer-positive patients, and send them to the right stage of treatment (Li et al., 2020). Nurses are in every corner of the world and can influence and change the attitude of patients toward cervical cancer screening, pap smears, and HPV vaccination. Odunyemi et al. (2018) noted that among the 69 participants in their research study, there were 25% of them remarked that nurses had informed them about cervical cancer.

The rationale of this literature review is to determine the role of nurses in promoting awareness about cervical cancer and to sustain the flagship call of the World Health Organization to achieve the 2030 goal of 90-70-90 targets to eliminate this epidemic.

2 Background

Nurses, in general, have a tremendous contribution to influencing women in the community or the health care settings. Nurses give education to the public about cervical cancer, its causes and risks factors so that people will be aware of themselves and will participate in regular cervical cancer screening and partake the HPV vaccination. Understanding the barriers to why Cervical Cancer uptake is declining could help to boost it. Some women are not comfortable verbalizing their health issues, particularly in women's sexual health, with male nurses or healthcare workers. Nurses should understand the beliefs and cultures of some women to obtain a nurse-patient relationship. When nurses gain the patient's trust, it can help to influence their behavior to understand the importance of cervical cancer screening. Nurses can also monitor if the patient is regularly attends her cervical cancer screening (O'Connor et al., 2021). The word awareness is crucial for everyone to understand about it properly. Nurses should explain to the public of what it really means.

A slight simplification about awareness so that the people will gain a better understanding of the situation. According to Cambridge Dictionary (2023), awareness is something that we know exists, is interesting, and is essential. In addition, Merriam-Webster Dictionary (2023) defines it as a situation having a knowledge that something is happening, the consciousness that it exists. However, in the human context, awareness is defined as when a person is conscious of what is happening around such as feelings and thoughts. Cognitively, it will develop something in the human mind to understand it better that can be influenced by our decision whether to do something that is processing in the human brain (Bargh and Hassin, 2021). In nursing, nurses need to develop the ability of self-awareness to understand the patient appropriately to have a better nurse-patient relationship (Rasheed et al., 2019).

A nurse's competence can also be beneficial in influencing the public to participate in cervical cancer screening, nurses' collaboration with community, locals, and private zones. Appropriate and sufficient planning, prioritization, and adequate outline to deliver a piece of proper information about cervical cancer can help to eliminate the barriers of low uptake of cervical cancer screening (Mugassa and Frumence, 2019).

Women with a higher level of education, a family member who experienced cervical cancer, and women planning to have children in the future are mostly the positive ones who get involved in cervical cancer screening. Unfortunately, there are groups of women who are carrying the burden of having inadequate information due to illiteracy, fear of knowing they are holding the illness, embarrassment, and some cultures and beliefs that hinder them from partaking in cervical cancer screening. Nevertheless, nurses could empower men and women and raise some accurate and responsible acts of educating the public, and the risk of spreading cervical cancer will be prevented (Deguara et al., 2021).

2.1 Cervical Cancer and Human Papillomavirus

“Cancer of the cervix is predominantly squamous cell cancer and also includes adenocarcinomas” (Hinkle & Cheever, 2018, p.172). Several studies have used longitudinal data to examine informations and they found that cervical cancer is preventable. Despite of this, there was an overwhelming number of women diagnosed with cervical cancer. Every year, there are more than half a million cases that result in deaths of about 300 000 women worldwide, which predominantly occur in developing countries (Cohen et al., 2019).

Furthermore, in the research study of Matsuo et al. (2019), it is stated that they have revised the 2014 version of the International Federation of Gynecology and Obstetrics (FIGO) in staging cervical cancer. Between 1998 and 2014, using the Surveillance, Epidemiology, and End Results (SEER), a based-on population database launched in 1973 in the United States by the National Cancer Institute, approximately 28% were publicly available, and identified data has been used for the research. The revised version of 2018 now specifies the importance of recognizing the metastasis of tumors in the lymph nodes as a base for prognostic severe components of cervical cancer. The sizes of the tumor can be seen through a micro or microscope.

Table 1: Staging of cervical cancer

CHARACTERISTICS	FIGO SYSTEM (2014)	FIGO SYSTEM (2018)
STAGE 1B1	size of the tumor is ≤ 4 cm	size of tumor < 2 cm
STAGE 1B2	size of the tumor is > 4 cm	size of the tumor is 2–3.9 cm
STAGE 1B3	not applicable	size of the tumor is ≥ 4 cm
Stage IIIC1	not applicable	there is a metastasis found in the pelvic lymph node
Stage IIIC2	not applicable	the metastasis can be found in the para-aortic lymph node

Okunade (2020) specified in their article that human papillomavirus is frequently the cause of cervical cancer. Most of the HPV types are usually gone as time goes by. Still, the disease caused by high-risk HPV infection may cause cervical cancer, such as the invasive HPV 16 and 18 subtypes. Cervical cancer is a potent asymptomatic squamous cell in the cervix where the abnormal cell grows. It is a preventable and curable disease if detected early, but it remains the most common cancer next to the breast, causing the death of thousands of women globally (WHO, 2020).

World Health Organization (2022) stated that cervical cancer develops at the uterus entrance from the vagina, called the cervix. It is the fourth most common cancer in women, and 99% of them are associated with the human papillomavirus transmitted through sexual intercourse. Most of the infections show no signs or symptoms. It is one of the most preventable and treatable cancers once diagnosed in an early stage. According to WHO (2018), there were approximately 570 000 women diagnosed globally with cervical cancer, and 311 000 women died from cervical cancer. In Finland, the total female population in 2018 was about 2 805 000, and in that same year, there were 27 800 deaths reported.

2.2 Warning signs and early detection of Cervical Cancer

2.2.1 Understanding cervical cancer and its risk factors and warning signs

Cervical cancer has become less common than it was once because it can be detected through a pap smear. Giving proper education to women about the disease could help to prevent women from getting infected with human papillomavirus. As indicated by Hinkle and Cheever (2018), most cases of cervical cancer are caused by enduring infection of human papillomavirus. Still, the risk factors vary, such as family history of cervical cancer, early sexual activity, and multiple sexual partners. Su et al. (2018) in their research showed that passive smoking may also increase the risk of developing cervical cancer.

American Cancer Society (2022) expressed that to prevent cancers and even pre-cancers, a woman should get a human papillomavirus (HPV) vaccine. The vaccine is available to children ages 9 to 12 and young adults ages 13 to 26 as soon as possible. The effectiveness of vaccines for young adults is not as effective for children when they get them at an early age. Limit sexual engagement to people who have an HPV infection. The human papillomavirus can pass through skin-to-skin contact with an HPV carrier. Using a condom can prevent HPV from spreading. Lastly, avoid or quit smoking to lower the risk of getting pre-cancer and cancer.

Asthana et al. (2020) stated in their research that using oral contraceptive pills will increase the risk of developing cervical cancer, especially for those women who have been using oral contraceptives for an extended period. Women with multiple sexual partners and with poor hygiene, such as not washing the vulva after sexual intercourse and low intake of folate, will also be at risk of developing cervical cancer, whether they have or have not HPV infections (Liu et al., 2015).

Human papillomavirus is usually asymptomatic. Low-risk HPV subtypes typically cause genital warts, but on the contrary, HPV 16 and 18 are intimately connected to developing some lesions in the anogenital and oropharyngeal area (Ntanasis-Stathopoulos, 2020). Reducing the mortality rate of cervical cancer is very crucial, especially in developing countries. A study done by Elshami et al. (2018) shows that the factors that are related to the knowledge of women about cervical cancer awareness are deficient. During the study, the most identified warning signs were vaginal bleeding

after menopause (71.2%), fatigue (65.2%), and incomprehensible weight loss (64.9%). Out of 7223 participants in the study, only 27.4% of them have good knowledge about the warning signs of cervical cancer. The survival rate of cervical cancer also varies depending on what stage is diagnosed. According to Mwaka et al. (2016), some symptoms of cervical cancer include irregular bleeding, abnormal and displeasing discharge, bleeding after menopause, and pain in the lower part of the abdomen.

2.2.2 Early detection of Cervical Cancer

There are ways to detect the HPV infection that will cause Cervical Cancer through attending regular screening, pap smear tests, and HPV vaccine. Early detection of Cervical Cancer could help to save lives. WHO (2022) stated that when a woman got infected with an HPV virus, it will take up to 15 to 20 years to develop into cervical cancer for women who have average immune systems and 5 to 10 years for women who have an enervated immune system. With those time frames, it is enough time to detect the HPV infection when there is an immediate action. In some affluent countries, some programs will help women even at an early age to able to get HPV vaccinations to prevent developing cervical cancer and screenings to detect if there are some infections and pre-cancerous lesions so that it will be prevented from the early stage.

HPV vaccines were initiated earlier in some parts of the world in 2008, but it was not just about girls. In 2019, HPV vaccines were also introduced for teenage boys. To acquire some HPV vaccines in contemplation to protect ladies in the future from spreading the HPV infection. Globally, one of the leading causes of death for most women is caused by cervical cancer. Uplifting awareness to the public will urge them to participate in the screening, and because of this, Cervical Cancer will become preventable (Jones-Berry, 2020).

2.3 Women's awareness of Cervical Cancer

2.3.1 Barriers to participate in cervical cancer screening and HPV vaccination

The Royal College of Nursing (RCN) is calling the attention of nurses to encourage more women ages 25 to 64 to consistently pay attention to attending cervical cancer screening to find out if there are some irregularities in the cervix. In that way, cervical cancer can be prevented as soon as

possible. Nurses must strengthen awareness about HPV among men and women for Cervical Cancer to help save more women's lives (Sprinks, 2018).

Data from several research studies by King and Busolo (2022) showed lower cervical cancer screening rates in some low-income regions and high-income districts. The frequent hindrance of getting screening is associated with a lack of education, the profound socio-economic condition of its citizens, belonging to the ethnic society, poverty, and lack of access to the healthcare system. Nega et al. (2018) stated that women who are HIV positive are in a vulnerable condition and must be prioritized and need immediate care and action. Most low-income countries lack health education and guidance such as Cervical Cancer screening, pap tests, and HPV vaccination due to limited resources.

The rate of HPV vaccine is meager globally, especially for young boys compared to young females. There are lots of barriers to getting the HPV vaccine due to safety reasons and its side effects. Parents are frightened that their children will start to be active in their early sexual life. Parents and their children are also hesitant to accept the HPV vaccine due to stigma in society; thus, it is advisable to start with the school nurses to recommend the HPV vaccine to young students, boys and girls, and facilitate sufficient education to both parents and children (Grandahl et al., 2021).

In some countries, screening and pap testing are not covered by the insurance or in the health policy program where they are living. Women in this category want to know the options such as self-collecting HPV test, pap testing, and HPV testing where they can decide for themselves if they will go this kind of testing, but in some cases, they have no choice according to their status and standard of living (Wood, 2018). In addition, there are lots of countries that have limited awareness to the public about HPV since it is associated with a sexually transmitted disease and is part of the cultural taboo, and they believe that only immoral women can get the disease. Some women have uncertainty and lack trust in their healthcare providers (Liebermann et al., 2020).

Wakimizu et al. (2015) asserted that joint counseling with the parents and their children about the importance of the HPV vaccine is a good strategy to make them interested in the prevention of cervical cancer through HPV vaccination. Teenagers and young adults are concerned about the side effects of the vaccine, the pain of the intramuscular injection administration, therefore,

healthcare providers must execute their skills when administering the vaccine to reduce the anxiety of the vaccine recipients.

Farsi (2021) explicitly stated that social media is a trend nowadays, notably that the world uses advanced communication technologies. People can communicate with each other through this platform. As mentioned by Karafillakis et al. (2019), there is a considerable number of people who doubt accepting the HPV vaccine because of mistrust of the health workers for their safety, misunderstanding, misinformation, and being misguided. Nurses can influence people in healthcare settings about their perception of cervical cancer. In the study of Keim et al. (2017), nurses can use social media platforms to reach out to more people to raise awareness of cervical cancer. In their research, they used a social platform, Twitter, for the survey within two weeks using the hashtag HPV, and the post-analysis reached 1794 people.

In some countries, vaccination is free because of their healthcare law, especially in European countries such as France, Sweden, Germany, Norway, Finland, and the non-EU United Kingdom. These countries have set their goals on how much the percentage they are hoping to get vaccinated. They have included the HPV vaccination in the program (Virtanen and Salmivaara, 2021).

2.3.2 Stigma, cultures, and beliefs regarding cervical cancer

Human Papillomavirus (HPV) screening is noticed that it has a low level of participation in that ethnic group. Some groups of women are not attending because of bad and negative screening experiences involving some unethical behavior of physicians (Pakai et al., 2022). A massive number of women in rural areas have inadequate knowledge about cervical cancer and some women have a conclusive attitude on the grounds of their family history and background regarding cervical cancer but they do not engage in cervical cancer screening due to embarrassment and some of them are asymptomatic (Maharjan et al., 2020).

A humanitarian condition is a situation that we cannot disregard. Immigrants and asylum seekers are having trouble with their health issues. They do not have any permanent living where they can seek help from the community. These people's health is neglected because they cannot usually get involved as average citizens. Language barriers, religion, and different cultures hinder them from

having health benefits (Allen et al., 2019). Some of the immigrants, especially those asylum seekers in European countries, are willing to participate in cervical cancer screening. They will accept the HPV vaccination for their young daughters, but the hindrance for most of them is that they do not understand the language of the invitation letter for cervical cancer screening (Grandahl et al., 2015).

There is a vast number of women in different countries who lack understanding, are uneducated, belong to a low-income society, are of varying skin color, and receive inequality in the community because of no education. These people are ashamed to inquire about their health, and they do not have any idea about what HPV and cervical cancer are. Some of them are restricted from going for the test because they do not have enough resources and do not know how to do it. Some do not have time to do it (Ferreira de Melo et al., 2019).

On the other hand, some women also felt embarrassed when going to the screening of what people would think about them. There is a misconception and misunderstanding about Cervical Cancer in some religions and cultures, such as in Islam. There are lots of barriers to these women undergoing Cervical Cancer screening. They are worried that they will lose their marital relationship when they get a Cervical Cancer screening, embarrassment, stigma in the family and society, and, most significantly, their relationship with their husbands will be affected. Women are afraid to undergo cervical cancer screening, and even hearing the word cervical cancer will make them feel sick (Khazae-Pool et al., 2018).

2.3.3 Competence of Nurses for cervical cancer prevention

Pu et al. (2020) implied that some nurses, especially intern nurses, do not have adequate information about cervical cancer and how to prevent it, mainly about vaccination. Some nurses are aware of HPV and cervical cancer, nonetheless, there are lots of nurses who lack education about the disease, risk factors, and prevention. Boone et al. (2016) have said in their research that a group of healthcare professionals including nurses is skeptical and showing confusion and distrust of cervical cancer screening. These healthcare professionals are creating margin to abide by the recommendation of using evidence-based guidelines health policy about cervical cancer screening, which leads to unnecessary screening.

Nurses, being a substantial group among healthcare workers, can make an impact on the uptake of cervical cancer screening. The research study of Urasa and Darj (2011) says that most cases of cervical cancer are associated with HPV. Nonetheless, it shows that less than half of the nurses who participated in the research study have competent knowledge about cervical cancer. Most participants were insufficiently knowledgeable about the time frame of HPV screenings. The participant nurses are also not aware of the HPV vaccine. Most nurses in the research study had never undergone a pap smear test.

According to Blumenthal et al. (2005), new techniques and modern approaches to use cytology and visual examination in the prevention of cervical cancer and numerous visits for analysis of the test results have validated that in low-income countries, it is very demanding. Nurses and other healthcare professionals will undergo appropriate training combining modern cervical cancer prevention techniques. The training should be in the clinical setting and based on the trainee's competency.

3 Aim, purpose, and research question

This research aims to gather information from available evidence-based literature about the role of nurses in promoting cervical cancer awareness. The purpose of this research is to raise awareness about cervical cancer in the early stage to reduce the risk of developing the disease globally. The research question is: What is the role of nurses in promoting cervical cancer awareness?

4 Methods

4.1 Literature Review

As stated by Leite et al. (2019), literature review is a wide range conduct and dissertation of articles. It is a collection of information from a huge number of articles, books, and other databases. In that way, the writer will enumerate, analyze, and dissect all the gathered pieces of information. Writing a literature review entails some challenges and needs some guidance however, it is a very interesting process that will provide and identify the real picture of the writer's research and analyze each article, to simplify the results of the research. Anunobi and

Udem (2014) have pointed out that the writer should have literacy about the information in the research and the ability to convince the audience and create a landscape of the reader's curiosity.

A literature review is an extensive outline used to formulate existing research in regards to the researcher's research question. It can also bring the audience's interest to the topic. Literature review can also help the researcher to build self-discipline to pertain the related information to the preferred topic (Denny and Tewksbury 2013). There are several steps consider in writing a literature review such as choosing an article that will fit the research question, that the article is peer-reviewed, fit the description, the population involved or the problem, the intervention, comparison, and the outcome of each review article (Cant et al., 2022).

4.2 Article selection process

PICOS is a search tool used to find high-quality, evidence-based, and adequate information about the research, advancing the search strategies used in the study. The researcher uses this tool to formulate the eligibility in seeking information for the analysis. As mentioned by Huang et al. (2006) that PICOS controls the broadness of accessible articles and determine that the search is evidence-based and fit for the research question. (See Table 2).

Table 2: PICOS used in the research.

PICOS	CRITERION
Population, patient, or problem	women
Intervention/Interest	awareness, counseling
Comparison, control, comparator, context	healthcare settings/community settings
Outcome(s) (e.g., pain, fatigue, nausea, infections, death)	knowledge/education
Studies	Full text available for JAMK students, published articles between 2015 onwards, English language

Firstly, databases that were relevant to the nursing field were selected. The researcher extracted the research articles used in this review from three databases: CINAHL Ultimate, Medline, and PubMed. The keywords and synonyms such as "nurse OR nurse OR nursing OR nursing care OR

nursing staff AND cervical cancer AND awareness OR knowledge OR understanding OR education were used to filter the search.

Table 3: Keywords used in the literature research.

Keywords
nurs* OR nurse or nursing OR nurses OR nursing care OR nursing staff AND cervical cancer AND awareness OR knowledge or understanding or education

To narrow the search, the keywords and inclusion criteria limiters such as Boolean, Full text, Peer reviewed, English language, and Published date: 2015. The researcher has taken into consideration the exclusion and inclusion criteria, for instance, studies before 2015, literature review, those studies that only focused on the attitude of nurses, studies that are not accessible to full text, studies that are not relevant to the research question, and non-empirical studies (See Table 4).

Table 4: Inclusion criteria and exclusion criteria

Sources	Inclusion Criteria	Exclusion Criteria
CINAHL Ultimate Medline PubMed	Limiters: Boolean, Full text, Peer reviewed, English language Additional Limiters: Apply equivalent subjects (CINAHL, Medline) associated data (PubMed) Published date: 2015 onwards	- Studies before 2015 - Literature review - Studies that focus only on the attitude of nurses - Studies without access to the full text - Primary research that is not relevant to the research question - Non-empirical studies

The researcher found 120 articles from CINAHL, 210 in Medline, and 351 in PubMed. Duplicates were eliminated after the article search. Subsequently, the titles of all articles looked through, and there were selected articles that best suited the research question. Two hundred twenty pieces

have been selected by title. After that, abstracts were read, and 22 papers were selected based on that process. The remaining articles were screened by full text, which led to a selection of xx articles that answered the research questions. The pieces removed were considered unsuitable because the full text did not respond well to the research question, a few articles were literature reviews, and some focused only on the nurses' attitudes.

The selection process and the number of selected articles can be seen in the Prisma chart (See Figure 1)

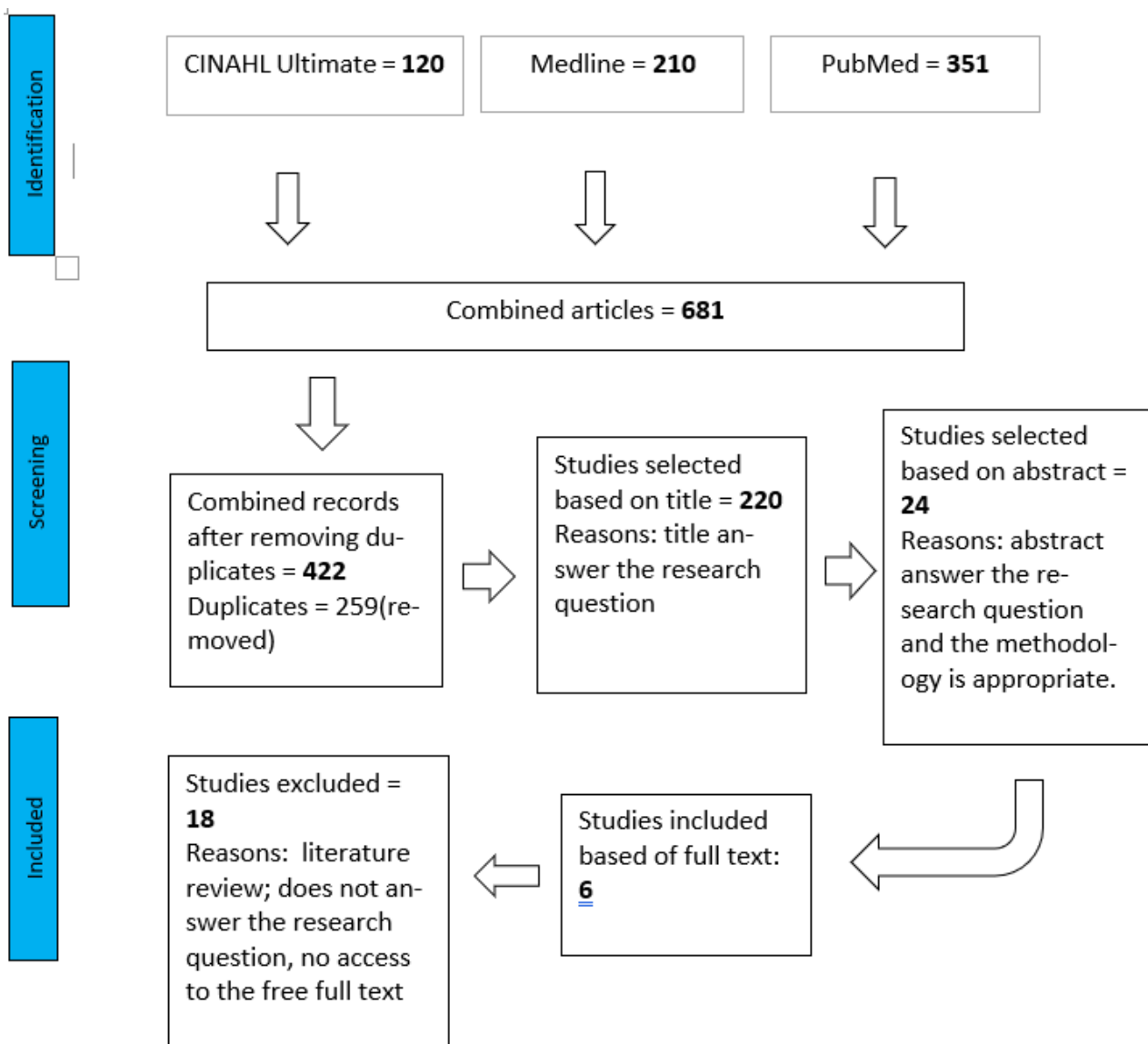


Figure 1: Prisma chart

4.3 Method of Analysis

Content analysis is a process used in gathering evidence from different sources, and it can be used either in inductive or deductive research (Elo and Kyngäs, 2008). Content analysis is used to justify the reliability of the data used during the different stages of the analysis (Lindgren et al., 2020). The researcher pondered using the inductive method because it allows more flexibility to analyze data from the different context in which the researcher was extracting the inceptions for further analysis (Elo and Kyngäs, 2008).

The researcher carefully read and examined the results part of the included articles. After reading, the researcher picked all related words and sentences put into a group and designed a code for each group. Subcategories were formed in this process. After designating the subcategories, the researcher placed the corresponding subcategories together and formed them into main categories. A sample of the process of content analysis is visible in Appendix 3.

5 Results

The examination of the results part of the included articles in this research, four findings found; Upkeep of the nursing skills and competencies in cervical cancer prevention and care, multi-professional and patient-centered interventions to promote health and cervical cancer awareness, creating an approach on how to deal with patient's challenges, and general patient education regarding the importance of the HPV vaccine and cervical screening to women (Table 5).

Table 5: Main categories and sub-categories

Main Categories	Sub-categories
Upkeep the nursing skills and competencies in cervical cancer prevention and care	<ul style="list-style-type: none"> • Reflect on skills and competencies related to cervical cancer • Training and education received by nurses
Multi-professional and patient-centered interventions to promote health and cervical cancer awareness	<ul style="list-style-type: none"> • Managing collaboration with other healthcare and community professionals to promote awareness • Promote cervical cancer awareness as a part of the treatment plan
Creating an approach on how to deal with patient's challenges	<ul style="list-style-type: none"> • Patients support and promotion of patients' mental well-being • Assisting the patient, ensuring communication and care coordination in the community and their family members
General patient education regarding the importance of cervical cancer screening and the HPV vaccine	<ul style="list-style-type: none"> • The primary source of knowledge and information about cervical cancer and HPV • Organizing the cervical cancer screening process and reaching out to vulnerable groups in the society

5.1 Upkeep the nursing skills and competencies in cervical cancer prevention and care

5.1.1 Reflect on skills and competencies related to cervical cancer care

Healthcare professionals must be sufficiently knowledgeable about cervical cancer, especially the correlation of human papilloma virus, and how to prevent them from getting it to address the patient's concerns. When healthcare professionals are adequately skilled in the disease, it is difficult to continue the process to alleviate the spread of the illness (Patel et al., 2017).

There are a few ways to detect cervical cancer, such as HPV screening and the HPV vaccine. When nurses know precisely the procedure on how to judge the situation of the patient critically and to ease the patient's anxiety about the disease, nurses, especially the practice nurses, must know how to provide better information and exemplary education to the patient that will not fear (Patel et al., 2017).

5.1.2 Training and education received by nurses

Nurses, mainly in rural regions are experiencing some hindrances in taking care of patients due to insufficiency of knowledge about cervical cancer (Carnahan et al., 2021). During the study, practice nurses are suggested to have improved training, so that nurses must have continuous education regarding the latest protocol for HPV screenings and HPV vaccines (Patel et al., 2017).

Training is one of the best and most effective ways to improve the practical skills of every nurse when taking cervical cancer screening samples and nurses will also be able to judge and interpret the right quality of the specimen (Gutierrez-Enriquez et al., 2017). A lack of understanding of cervical cancer will also hinder the nursing intervention because a nurse will not be able to triage HPV and transition of care of the patient (Patel et al., 2017).

In the research study of Carnahan et al. (2018), there are nurses eventually consider the opportunities to participate in several coalitions to share the methods and techniques for preventing cervical cancer advocacy. However, according to Patel et al. (2018), in their study, a couple of practice nurses were not willing to attend the training session even though they were

performing cervical cancer screening for a time frame of more than two years. In this matter, half of the participants answered the research survey questions accurately. Several participants have failed to distinguish the relationship between HPV and cervical cancer. Some of the participants are confused that HPV is unnecessary to have treatment. Uncertainty and misinterpretation about HPV and cervical cancer occurred to several nurses during the study.

5.2 Multiprofessional and patient-centered interventions to promote health and cervical cancer awareness

5.2.1 Managing collaboration with other healthcare professionals and the community to promote cervical cancer awareness

Nurses play a vital role in addressing disparities regarding cervical cancer care. In the rural areas with the scarcity of nursing staff, and urban areas where there is not enough resources, nurses continue to provide patient education about cervical cancer and assistance despite of the barriers they are experiencing in the community (Carnahan et al., 2021).

Nurses are the mediators who handle when the patients are facing challenges such as finances and expenses for check-ups and treatments. In the rural regions, most of them do not have any health insurance and the people cannot afford the treatment. Nurses are the ones trying to figure out the solutions for these kind of problems, taking action to charity programs just to cover the patients' treatment expenses (Carnahan et al., 2021). In addition, nurses are responsible for handling the HPV screening and testing for candidate patients and the continuous transition of care (Patel et al., 2017).

5.2.2 Promote cervical cancer awareness as part of treatment plan

It is the nurses' responsibility to modify the patient's treatment plans from the beginning up to the continuous care (Tucker et al., 2021). Nurses are also accountable to provide the necessary guidance for the patients up to their follow-up check-ups when needed (Altinel and Akin, 2022) or annual medical examinations despite the negative results (Patel et al., 2017).

Encompassing the studies of Odunyemi et al. (2018), during the pre-intervention, the knowledge level of the participants noticeably increased as they were exposed to education about cervical cancer by nurses. It shows that from 74% during the pre-intervention to 99% post-intervention, with these results, the respondents' knowledge score is developed during the study process. Furthermore, nurses were involved in the comprehensive process of the patient's treatment operation, including patient transportation and providing a patient-friendly environment for locals and immigrants for their medical appointments (Carnahan et al., 2021).

5.3 Creating an approach on how to deal with patients' challenges

5.3.1 Patients support and promotion of patients' mental well-being

As stated by Carnahan et al. (2021), nurses are engaging the patients as possible, providing support in different ways, such as taking medical actions to improve urban areas' lives. They are also responsible for addressing the disparities that they are experiencing while implementing cervical cancer awareness and care for the people in the urban community. Nurses are also concerned about the shortage of nursing staff that will serve rural populations that can affect in providing care for cervical cancer patients if they do not have enough nurses in rural areas.

Carnahan et al. (2021) expressed that in times of screenings and treatments, patients are also experiencing some hardship in life dealing with the battle of knowing nothing. Nurses also consider the patient's psychological matter and refer the patient to a psychologist for advice. Nurses are responsible for communication with their families if the patient will permit them to share it after asking permission how to include their families during the treatment along with communication with other healthcare professionals and collaboration alliance.

5.3.2 Assisting the patient, ensuring communication and care coordination in the community and the patients' family members

Nurses are helping the patients to figure out when they have lack of resources, managing the patients' insurance and benefits coverage from their work companies. Nurses are organizing charity funds to cover the costs of screenings and treatment. Nurses are also responsible in assisting the qualified patients, enrolling them in the Breast and Cervical Cancer Prevention and

Treatment Act (BCCPTA) program. Being in this plan, eligible cervical cancer patients will benefit from compensation for their cervical cancer treatment (Carnahan et al., 2021).

Nurses also discuss circumstances with patients and family members that will affect the treatment procedure, ensuring that the patient and their family understand the process and occurrence well. Nurses are accountable for communicating with the family members of cervical cancer patient, providing the best practice during the treatment, and cooperating with other healthcare team members (Tucker et al., 2021).

5.4 General patient education regarding the importance of Cervical Cancer screening and the HPV vaccine

5.4.1 Primary source of knowledge and information about cervical cancer and HPV

Odunyemi et al. (2018) denoted that nurses are the primary source of information vis-à-vis cervical screening for women. Nurses are giving guidance and information to the public, especially teenagers and mothers, to spread awareness about cervical cancer. Among healthcare workers, nurses are within reach of the public. Mothers and teenagers will get some enlightenment about cervical screening and the benefits of it to women, especially the young ones.

According to Odunyemi et al. (2018), most of the participants have heard about cervical cancer screening from the nurses. With enough information and guidance, countless mothers will be ready to accept the vaccination for their young children. Parents' permission is needed to vaccinate the young adults, therefore, some mothers prefer that it is better to start the vaccination from school.

5.4.2 Organizing the cervical cancer screening process and reaching out the vulnerable group in the society

As mentioned by Patel et al. (2017), to provide continuous knowledge about HPV, it is necessary to continuously inform the public, provide well-organized training and education. Altinel and Akin (2022) noted that group and online training, inspirational messages, and leaflets, consequently change the attitudes of the public towards HPV and cervical cancer screening. In that way, it will convert the public to positive attitude and they will take part to the program. Tucker et al. (2021)

stated that learning sessions can change the opinion of the public concerning the relationship of HPV and cervical cancer.

Carnahan et al. (2021) highlighted that the population in urban areas is also part of the vulnerable group. These inhabitants are experiencing difficulties where they cannot access the healthcare system. Most women in the countryside cannot afford to have cervical cancer screening because of poverty. Rural and community nurses are in the position to assist the patient's needs in this area of the population, extending hands to provide cervical cancer awareness.

6 Discussion

Nurses will play different roles in promoting awareness about cervical cancer. Before giving any education about cervical cancer, nurses should have sufficient knowledge about the disease. With the growing number of nurses worldwide, it can influence the government to provide affordable check-ups, especially for women. To provide effective counseling about Cervical Cancer, a healthcare professional, particularly nurses, must be knowledgeable about cervical cancer, human papillomavirus, screening and pap smear, and vaccination. Yörük et al. (2019) recommended that nurses and other healthcare professionals should be role models to influence other women to go for cervical cancer screening. Nurses and midwives must also undergo cervical cancer screening regularly to show other women the importance of cervical cancer screening. In this case, nurses can influence them and motivate women to visit their healthcare system for regular screening.

There are some factors and reasons why some women are not attending the cervical cancer screening and pap smears. Some women not attending because of inadequate and negative screening experiences involving some unethical behavior of physicians (Pakai et al., 2022). Some other reasons, such as some women have belonged to the vulnerable group. The most common barrier to getting a cervical cancer screening is due to a lack of knowledge about the risk factors of the disease that will cause to women in general. In some cases, women in low-income areas are also worried about the cost of the cervical cancer screening (Garcia et al., 2016). Inmates are also vulnerable, and the awareness of HPV and cervical cancer is degrading among this group (Allison et al., 2018). To help in reaching out this vulnerable group, with the help of the jail medical staff, healthcare professionals can team up and raise awareness, and introduce the vaccination program to the detainees (Allison et al., 2018).

The public healthcare system has to consider in providing resources for nurses and other healthcare professionals in order to bring public outreach for cervical cancer screening in urban areas. Özdemir and Kisa (2016). However, nurse practitioners can help to lessen the obstacles by providing an inventive and efficient way of care for women, which is evidence-based and beneficial to some cultures. Nurse practitioners are expected to find a way to collaborate with the national department to increase awareness and knowledge about HPV (Scott and Batty, 2016). Community nurses must be in touch with the community to reach out to women who need

cervical cancer screening and vaccination to improve the level of the patient-nurse relationship. It is recommended that healthcare providers including nurses will recommend cervical cancer screening and counseling for women in some countryside areas (Liebermann et al., 2020).

Based on Neilbart et al. (2021) women have limited access to the healthcare system because of the availability of their resources. Public healthcare must consider financing the healthcare system so that nurses and other healthcare professionals can provide some outreach and cervical cancer screening, especially in urban areas. Özdemir and Kısa (2016) highlighted in their research that nurses, especially public health nurses, must collaborate and work together in the community to educate people about cervical cancer and HPV on how to prevent it. It is recommended that premalignant and precancerous patients will undergo cervical cancer screening and assimilate compulsory routine care and treatment (Nega et al., 2018). A nurse-patient relationship is very important to build so that the cervical cancer patient can rely on to nurses to provide them with the appropriate care regarding the resources available (Wood, 2018).

There are different ways in expanding the cervical cancer campaign in reaching out the public to provide more information and educate them. Pearce (2021) uttered that nurses can be an advocate and create a campaign about cervical cancer and HPV vaccines using social media stage, they can target people, especially the young age using hashtags about cervical cancer and HPV and provide more education in their blogs/vlogs if abnormalities can be detected in early stage, then there is a big possibility on how to prevent it from spreading into the body system.

Borrull-Guardeño et al. (2021) mentioned that, although people have some knowledge about cervical cancer, it is inadequate. In general, nurses will play a big role in reaching out the community and provide enough information to the public and raise awareness about cervical cancer. People will be more aware of the disease and with all the nurses' knowledge, they can influence and encourage more women to participate the cervical cancer screening program. Nurses can use social media to engage the public in raising awareness, provide more details about cervical cancer screening and HPV vaccine. The commonality will discover the truth and realize that their understanding about cervical cancer is inaccurate. Social media marketing is one of the effective way to reach out more youth in this digital era. Healthcare providers will encourage

women to go for a test in routine and initiate cervical cancer campaigns targeting women of all ages (Muhaidat et al., 2022).

Johnson et al. (2022) have emphasized that, nurses, nurse practitioners, ought to provide direct care to university students to know about their health. Counsel even their parents because some parents are scared that their daughters will engage in some sexual activities when they get an HPV vaccine. Giving the students and parents some information about the importance of getting the HPV vaccine for their protection in the future and for preventative measures against HPV infection and not by any means (Johnson et al., 2022). Jacob et al. (2021) in their research they proved that healthcare professionals like school nurses should aim for school juveniles to oftentimes approach their parents directly for being attentive to their HPV vaccines.

Healthcare providers and nurses must be committed into taking urgent care and providing adequate information about their situation. To gain the trust of the patients, particularly the mothers' trust that their children will be taken into account the HPV vaccine, nurses must be able to answer mothers' questions about the HPV vaccine and provide fulfilling expectations and the right information about it (Odunyemi et al., 2018). It is commended that school nurses must integrate additional coaching to fully understand the cervical cancer and associated cancer caused by HPV (Grandahl et al., 2021). Nurses particularly school nurses must continue to create a campaign for the public to understand cervical cancer and the HPV vaccines (Virtanen and Salmivaara, 2021).

Confirming to Cheung et al. (2018) statement that there is misinformation that HPV only occurs in women. Healthcare providers along with nurses must ensure that there is no misinformation to the public and prevent stigma that will result in the negligence of participating in the awareness. It is very important to discuss as well with the male student the benefits of being vaccinated against HPV. Nurses must also encourage and influence the students to be vaccinated to increase the acceptance of HPV vaccination. The importance of treating fairly the public and not favoritism and discrimination of who must be the HPV vaccine recipient must also be considered as good conduct and quality of a good nurse (Jeyachelvi et al., 2016).

Healthcare workers including nurses have to consider in solving the language barriers. Nurses can include an attachment of a short explanation of some information which is available in different languages. It can help the immigrants to make their own choice about the cervical cancer screening and HPV vaccination of their young children. Healthcare professionals have to consider the immigrant's typical culture (Grandahl et al., 2015). Regarding other cultures for instance in Arabic community, nurses have to provide accurate patient education with the family members about cervical cancer. In this way, misunderstanding and misinformation to both sides will be avoided (Khazaee-Pool et al., 2018). Nurse also guide the community in a language and medical terms which is favorable and understandable to the public. These people need some help from health workers to provide them with health workshops and educational outreach, providing screening and pap tests for women

By considering the patients' wishes, respecting their health beliefs, nurses also be considerate when counseling ethnic groups. When nurses are being knowledgeable about Cervical Cancer, they can easily empower women and encourage them to be involved with the treatment and continuous check-ups (Sarwitree Pornsinsiriruck et al., 2022). All women are the same despite of what status, race and religion they have in life. Nurses are in the position to assist these people so that they can participate in cervical cancer screening. Nurses can recommend what is good for their health if they have some infection (Ferreira de Melo et al., 2019). Nurses must promote cervical cancer and HPV awareness beforehand to increase the recognition of cervical cancer prevention and avoid the circumstances of dishonoring the HPV vaccine beneficiary (Loke et al., 2017).

To increase participation in women to get into screening, community nurse can organize and implement such assistance targeting the ethnic women population (Pakai et al., 2022). Consideration to these women's culture when providing health education and cervical cancer screening is necessary, especially those women who are living in the mountains and remote areas. Some women prefer to have female doctor during cervical cancer screening (Maharjan et al., 2020). Nurses who have education about cervical cancer are more positive about how to prevent it (Tucker et al., 2015).

7 Ethical considerations, Limitations, Validity and Reliability

In this literature review, the researcher takes into consideration respect for the guidelines of research provided in each research article in the manner of protection and confidentiality, explicit approval and mutual agreements, and the pertinence of the publications of the included articles (Yip et al., 2016). Since this is a literature review, the researcher has no physical contact with participants but ensures each article has its limitations during their research and approval with the ethics committee in their respective diverse faculties.

Furthermore, the researcher has no intention of infringement and is conscious of avoiding plagiarism in this research. There are only six (6) research articles included in this review from five (5) different countries for instance, The USA, Turkey, The United Kingdom, Nigeria, and Mexico which answered the research question of the researcher. Most of the included research articles' participants are nurses from different levels and a group of women ages thirty-five to forty-one (35-41). The researcher carefully examined the selected articles' validity and reliability. Out of 6 research articles included, one was set to be exempted by the Institutional Review Board since the participants voluntarily responded to the poll survey during the nurses' conference.

Referencing and citations are according to the guidelines of JAMK University of Applied Sciences reporting instruction and properly give credit to the rightful authors considering the restriction of the format of the American Psychological Association (APA, 7th edition) from its original content. The Hawker et al. (2002) tool was used to appraise the validity and reliability of the chosen research articles. Each study article is diligently examined with no misconception in fabricating the data of the included research articles.

8 Conclusion

Cervical cancer is one of the most common cancers in women on a global scale. It is curable when diagnosed in the early stage, but it can be fatal when the illness' carrier neglects it. The HPV virus is the prime cause of cervical cancer. Nurses are one group of health workers within reach to the public and one of the most influential in the society. Nurses can develop techniques and collaborate with the people where there are juveniles and educate this population about healthy sexual life. Sex education should be offered to the parents and to their children as well, since parents are the first teacher in the family to provide safety for their children.

In this new era, sex education is not as shameful as ignorance of one's health since prevention is better than cure. Some countries have health insurance enabling them to go for a regular check-up when needed. In some countries, especially third-world countries with no available health insurance for everyone, it would be beneficial for nurses to know how to collaborate to create funding for unfortunate individuals. Community and rural nurses should spread awareness about the HPV virus and the risk of it, not solely to females but for males as well.

Nurses should collaborate with the public and with the health centers to monitor the numbers of young people and invite them for pap smear test or cervical cancer screening. School nurses should encourage not only the children but the parents too. Nurses should also consider planning collaboration on how to leave printed pamphlets about cervical cancer awareness in shopping malls and churches. Leaving some printed pamphlets in the shopping malls and even churches, advertisements on radios and televisions is another way of educating the public about cervical cancer. Creating some advertisements on radio and television is another way of educating the public about cervical cancer. These methods will impact the cervical cancer awareness and prevention of the HPV virus. It will inspire teenagers to take part in cervical cancer screening and encourage adolescents to have an HPV vaccination.

There is a necessity for further research about the nurses attending cervical cancer screening and pap tests and allowing their young children to get an HPV vaccination. This way, they will set an example and role model for the public.

References

Allen, E. M., Lee, H. Y., Pratt, R., Vang, H., Lightfoot, E., Desai, J. R., & Dube, A. (2019). Facilitators and Barriers of Cervical Cancer Screening and Human Papilloma Virus Vaccination Among Somali Refugee Women in the United States: A Qualitative Analysis. *Journal of Transcultural Nursing*, 30(1), 55–63. <https://doi-org.ezproxy.jamk.fi:2443/10.1177/1043659618796909>

Allison, M., Musser, B., Satterwhite, C., Ault, K., Kelly, P., & Ramaswamy, M. (2018). Human Papillomavirus Vaccine Knowledge and Intention Among Adult Inmates in Kansas, 2016-2017. *American Journal of Public Health*, 108(8), 1000–1002. <https://doi-org.ezproxy.jamk.fi:2443/10.2105/AJPH.2018.304499>

Altinel, B., & Akin, B. (2022). The effect of multiple interventions for women at risk for cervical cancer on their health responsibility, beliefs regarding cervical cancer and having screening: a randomized controlled trial. *Health education research*, 37(2), 94–103. <https://doi.org/10.1093/her/cyac004>

American Cancer Society (2022). Causes, risk factors, and prevention. Retrieved on June 5, 2022, from <https://www.cancer.org/cancer/cervical-cancer/causes-risks-prevention/prevention.html>

American Cancer Society (2023). Can Cervical Cancer Be Found Early? Retrieved on January 28, 2023, from <https://www.cancer.org/cancer/cervical-cancer/detection-diagnosis-staging/detection.html>

Anunobi, C. V., & Udem, O. K. (2014). Information literacy competencies: A conceptual analysis. *Journal of Applied Information Science and Technology*, 7(2).

Asthana, S., Busa, V., & Labani, S. (2020). Oral contraceptives use and risk of cervical cancer-A systematic review & meta-analysis. *European journal of obstetrics, gynecology, and reproductive biology*, 247, 163–175. <https://doi.org/10.1016/j.ejogrb.2020.02.014>

Bargh, J. A., & Hassin, R. R. (2021). Human unconscious processes in situ: The kind of awareness that really matters. *The cognitive unconscious*.

Blumenthal, P. D., Lauterbach, M., Sellors, J. W., & Sankaranarayanan, R. (2005). Training for cervical cancer prevention programs in low-resource settings: Focus on visual inspection with acetic acid and cryotherapy. *International Journal of Gynecology & Obstetrics*, 89, S30-S37.

Boone, E., Lewis, L., & Karp, M. (2016). Discontent and Confusion: Primary Care Providers' Opinions and Understanding of Current Cervical Cancer Screening Recommendations. *Journal of women's health* (2002), 25(3), 255–262. <https://doi.org/10.1089/jwh.2015.5326>

Borrull-Guardeño J, Sebastián-Laguarda C, Donat-Colomer F, Sánchez-Martínez V. Women's knowledge and attitudes towards cervical cancer prevention: A qualitative study in the Spanish context. *J Clin Nurs*. 2021 May;30(9-10):1383-1393. doi: 10.1111/jocn.15687. Epub 2021 Feb 15. PMID: 33528874.

Cambridge Dictionary. (2023). Awareness. In dictionary.cambridge.org online dictionary. Retrieved on MARCH 5, 2023 from <https://dictionary.cambridge.org/dictionary/english/awareness>

Cant, R., Ryan, C., & Kelly, M. A. (2022). A nine-step pathway to conduct an umbrella review of literature. *Nurse Author & Editor (Blackwell)*, 32(2), 31–34. <https://doi-org.ezproxy.jamk.fi:2443/10.1111/nae2.12039>

Carnahan, L. R., Abdelrahim, R., Ferrans, C. E., Rizzo, G. R., Molina, Y., & Handler, A. (2021). Rural Cancer Disparities: Understanding Implications for Breast and Cervical Cancer Diagnoses. *Clinical journal of oncology nursing*, 25(5), 10–16. <https://doi.org/10.1188/21.CJON.S1.10-16>

Cheung, T., Lau, J. T. F., Wang, J. Z., Mo, P. K. H., & Ho, Y. S. (2018). Acceptability of HPV vaccines and associations with perceptions related to HPV and HPV vaccines among male baccalaureate students in Hong Kong. *PloS one*, 13(6), e0198615. <https://doi.org/10.1371/journal.pone.0198615>

Cohen, P. A., Jhingran, A., Oaknin, A., & Denny, L. (2019). Cervical cancer. *Lancet (London, England)*, 393(10167), 169–182. [https://doi.org/10.1016/S0140-6736\(18\)32470-X](https://doi.org/10.1016/S0140-6736(18)32470-X)

Deguara, M., Calleja, N., & England, K. (2021). Cervical cancer and screening: knowledge, awareness and attitudes of women in Malta. *Journal of preventive medicine and hygiene*, 61(4), E584–E592. <https://doi.org/10.15167/2421-4248/jpmh2020.61.4.1521>

Denney, A. S., & Tewksbury, R. (2013). How to write a literature review. *Journal of criminal justice education*, 24(2), 218-234.

Elshami, M., Al-Slaibi, I., Abukmail, H., Alser, M., Radaydeh, A., Alfuqaha, A., ... & Bottcher, B. (2021). Knowledge of Palestinian women about cervical cancer warning signs: a national cross-sectional study. *BMC public health*, 21(1), 1-15.

Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of advanced nursing*, 62(1), 107–115. <https://doi.org/10.1111/j.1365-2648.2007.04569.x>

Farsi D. (2021). Social Media and Health Care, Part I: Literature Review of Social Media Use by Health Care Providers. *Journal of medical Internet research*, 23(4), e23205. <https://doi.org/10.2196/23205>

Ferreira de Melo, E. M., Pereira Linhares, F. M., Marques da Silva, T., Pontes, C. M., da Silva Santos, A. H., & Costa de Oliveira, S. (2019). Cervical cancer: knowledge, attitude and practice on the prevention examination. *Revista Brasileira de Enfermagem*, 72, 25–31. <https://doi-org.ezproxy.jamk.fi:2443/10.1590/0034-7167-2017-0645>

García, C., Lothamer, H., & Mitchell, E. M. (2016). Provider-Identified Barriers to Cervical Cancer Screening and Perceptions Toward Self-Collection of Human Papillomavirus in Southwest Virginia. *Public Health Nursing*, 33(6), 539–546. <https://doi-org.ezproxy.jamk.fi:2443/10.1111/phn.12285>

Grandahl, M., Tydén, T., Gottvall, M., Westerling, R., & Oscarsson, M. (2015). Immigrant women's experiences and views on the prevention of cervical cancer: a qualitative study. *Health Expectations*, 18(3), 344–354. <https://doi-org.ezproxy.jamk.fi:2443/10.1111/hex.12034>

Grandahl M, Nevéus T. Barriers towards HPV Vaccinations for Boys and Young Men: A Narrative Review. *Viruses*. 2021 Aug 19;13(8):1644. doi: 10.3390/v13081644. PMID: 34452508; PMCID: PMC8402923.

Gutiérrez Enríquez, S. O., Méndez Donjuan, L. F., Terán Figueroa, Y., Gaytán Hernández, D., Oros Ovalle, C., & Díaz Oviedo, A. (2017). Impact of Applying a Learning Strategy to Improve the Sample Quality in Cervical Screening in Nursing Staff in Social Service. *Investigacion y educacion en enfermeria*, 35(3), 340–347. <https://doi.org/10.17533/udea.iee.v35n3a10>

Hawker, S., Payne, S., Kerr, C., Hardey, M., & Powell, J. (2002). Appraising the evidence: reviewing disparate data systematically. *Qualitative health research*, 12(9), 1284–1299. <https://doi.org/10.1177/1049732302238251>

Hinkle, J.L. & Cheever, K.H. (2018). *Brunner & Suddarth's Textbook of Medical-Surgical Nursing* (14th ed.). Philadelphia: Wolters Kluwer.

Huang, X., Lin, J., & Demner-Fushman, D. (2006). Evaluation of PICO as a knowledge representation for clinical questions. *AMIA ... Annual Symposium proceedings. AMIA Symposium*, 2006, 359–363.

Hu, Z., & Ma, D. (2018). The precision prevention and therapy of HPV-related cervical cancer: new concepts and clinical implications. *Cancer medicine*, 7(10), 5217–5236. <https://doi.org/10.1002/cam4.1501>

Jacob, R. A., Abraham, P. S., Thomas, F. R., Navya, V., Sebastian, J., Ravi, M. D., & Gurumurthy, P. (2021). Impact of indirect education on knowledge and perception on cervical cancer and its prevention among the parents of adolescent girls: an interventional school-based study. *Therapeutic Advances in Vaccines & Immunotherapy*, 9(50), 1–10. <https://doi-org.ezproxy.jamk.fi:2443/10.1177/2515135521990268>

Jeyachelvi, K., Juwita, S., & Norwati, D. (2016). Human Papillomavirus Infection and its Vaccines: Knowledge and Attitudes of Primary Health Clinic Nurses in Kelantan, Malaysia. *Asian Pacific journal of cancer prevention : APJCP*, 17(8), 3983–3988.

Johnson, R. R., Cox, de A., Deupree, J. (2022). Assessment of health literacy in college-age females to reduce barriers to human papilloma virus vaccination. *The Journal for Nurse Practitioners*, 18(7), 715-718.e1. doi:<https://doi.org/10.1016/j.nurpra.2022.04.021>

Jones-Berry, S. (2020). Cervical cancer and screening: advice for nurses. *Cancer Nursing Practice*, 19(5), 11. <https://doi-org.ezproxy.jamk.fi:2443/10.7748/cnp.19.5.11.s8>

Karafillakis, E., Simas, C., Jarrett, C., Verger, P., Peretti-Watel, P., Dib, F., De Angelis, S., Takacs, J., Ali, K. A., Pastore Celentano, L., & Larson, H. (2019). HPV vaccination in a context of public mistrust and uncertainty: a systematic literature review of determinants of HPV vaccine hesitancy in Europe. *Human vaccines & immunotherapeutics*, 15(7-8), 1615–1627. <https://doi.org/10.1080/21645515.2018.1564436>

Keim, M. J., Mitchell, E. M., Sun, E., & Kennedy, C. (2017). Using Twitter to Understand Public Perceptions Regarding the # HPV Vaccine: Opportunities for Public Health Nurses to Engage in

Social Marketing. *Public Health Nursing*, 34(4), 316–323. <https://doi-org.ezproxy.jamk.fi:2443/10.1111/phn.12318>

Khazaee-Pool, M., Yargholi, F., Jafari, F., & Ponnet, K. (2018). Exploring Iranian women's perceptions and experiences regarding cervical cancer-preventive behaviors. *BMC Women's Health*, 18(1), N.PAG. <https://doi-org.ezproxy.jamk.fi:2443/10.1186/s12905-018-0635-8>

King, E. M., & Busolo, D. S. (2022). The role of primary care Nurse Practitioners in reducing barriers to cervical cancer screening: A literature review. *Canadian Oncology Nursing Journal*, 32(2), 233–257. <https://doi-org.ezproxy.jamk.fi:2443/10.5737/23688076322233244>

Leite, D. F. B., Padilha, M. A. S., & Cecatti, J. G. (2019). Approaching literature review for academic purposes: The Literature Review Checklist. *Clinics (Sao Paulo, Brazil)*, 74, e1403. <https://doi.org/10.6061/clinics/2019/e1403>

Li, C., Liu, Y., Xue, D., & Chan, C. W. H. (2020). Effects of nurse-led interventions on early detection of cancer: A systematic review and meta-analysis. *International journal of nursing studies*, 110, 103684. <https://doi.org/10.1016/j.ijnurstu.2020.103684>

Liebermann, E. J., VanDevanter, N., Shirazian, T., Frías Gúzman, N., Niles, M., Heaton, C., & Ompad, D. (2020). Barriers to Cervical Cancer Screening and Treatment in the Dominican Republic: Perspectives of Focus Group Participants in the Santo Domingo Area. *Journal of Transcultural Nursing*, 31(2), 121–127. <https://doi-org.ezproxy.jamk.fi:2443/10.1177/1043659619846247>

Lindgren, B. M., Lundman, B., & Graneheim, U. H. (2020). Abstraction and interpretation during the qualitative content analysis process. *International journal of nursing studies*, 108, 103632. <https://doi.org/10.1016/j.ijnurstu.2020.103632>

Liu, Z. C., Liu, W. D., Liu, Y. H., Ye, X. H., & Chen, S. D. (2015). Multiple Sexual Partners as a Potential Independent Risk Factor for Cervical Cancer: a Meta-analysis of Epidemiological Studies. *Asian Pacific journal of cancer prevention : APJCP*, 16(9), 3893–3900. <https://doi.org/10.7314/apjcp.2015.16.9.3893>

Loke, A. Y., Chan, A. C. O., & Wong, Y. T. (2017). Facilitators and barriers to the acceptance of human papillomavirus (HPV) vaccination among adolescent girls: a comparison between mothers and their adolescent daughters in Hong Kong. *BMC research notes*, 10(1), 390. <https://doi.org/10.1186/s13104-017-2734-2>

Maharjan, M., Thapa, N., Panthi, D., Maharjan, N., Petrini, M. A., & Jiong, Y. (2020). Health beliefs and practices regarding cervical cancer screening among women in Nepal: A descriptive cross-sectional study. *Nursing & Health Sciences*, 22(4), 1084–1093. <https://doi-org.ezproxy.jamk.fi:2443/10.1111/nhs.12775>

Matsuo, K., Machida, H., Mandelbaum, R. S., Konishi, I., & Mikami, M. (2019). Validation of the 2018 FIGO cervical cancer staging system. *Gynecologic oncology*, 152(1), 87-93.

Merriam-Webster Dictionary (2023). Awareness. In Merriam-Webster.com dictionary. Definition. Retrieved on March 5, 2023, from <https://www.merriam-webster.com/dictionary/awareness>

- Møen, K. A., Terragni, L., Kumar, B., & Diaz, E. (2018). Cervical cancer screening among immigrant women in Norway- The healthcare providers' perspectives. *Scandinavian journal of primary health care*, 36(4), 415–422. <https://doi.org/10.1080/02813432.2018.1523986>
- Mugassa, A. M., & Frumence, G. (2019). Factors influencing the uptake of cervical cancer screening services in Tanzania: A health system perspective from national and district levels. *Nursing open*, 7(1), 345–354. <https://doi.org/10.1002/nop2.395>
- Muhaidat, N., Alshrouf, M. A., Alshajrawi, R. N., Miqdadi, Z. R., Amro, R., Rabab'ah, A. O., Qatawneh, S. A., Albandi, A. M., & Fram, K. (2022). Cervical Cancer Screening among Female Refugees in Jordan: A Cross-Sectional Study. *Healthcare (2227-9032)*, 10(7), 1343. <https://doi-org.ezproxy.iamk.fi:2443/10.3390/healthcare10071343>
- Mwaka, A. D., Orach, C. G., Were, E. M., Lyratzopoulos, G., Wabinga, H., & Roland, M. (2016). Awareness of cervical cancer risk factors and symptoms: a cross-sectional community survey in post-conflict northern Uganda. *Health Expectations*, 19(4), 854-867.
- Ntanasis-Stathopoulos, I., Kyriazoglou, A., Lontos, M., A Dimopoulos, M., & Gavriatopoulou, M. (2020). Current trends in the management and prevention of human papillomavirus (HPV) infection. *Journal of B.U.ON. : official journal of the Balkan Union of Oncology*, 25(3), 1281–1285.
- Neibart, S. S., Smith, T. A., Fang, J. H., Anderson, T., Kulkarni, A., Tsui, J., Hudson, S. V., Peck, G. L., Hanna, J. S., Beer, N. L., & Einstein, M. H. (2021). Assessment of Cervical Cancer Prevention and Treatment Infrastructure in Belize. *JCO global oncology*, 7, 1251–1259. <https://doi.org/10.1200/GO.21.00138>
- Neill, C. (2017). Writing & Research. Writing a Literature Review. *Radiation Therapist*, 26(1), 89–91.
- Nega, A. D., Woldetsadik, M. A., & Gelagay, A. A. (2018). Low uptake of cervical cancer screening among HIV positive women in Gondar University referral hospital, Northwest Ethiopia: cross-sectional study design. *BMC Women's Health*, 18(1), N.PAG. <https://doi-org.ezproxy.iamk.fi:2443/10.1186/s12905-018-0579-z>
- O'Connor, M., McSherry, L. A., Dombrowski, S. U., Francis, J. J., Martin, C. M., O'Leary, J. J., & Sharp, L. (2021). Identifying ways to maximize cervical screening uptake: a qualitative study of GPs' and practice nurses' cervical cancer screening-related behaviours. *HRB open research*, 4, 44. <https://doi.org/10.12688/hrbopenres.13246.1>
- Odunyemi, F. T., Ndikom, C. M., & Oluwatosin, O. A. (2018). Effect of Nursing Intervention on Mothers' Knowledge of Cervical Cancer and Acceptance of Human Papillomavirus Vaccination for their Adolescent Daughters in Abuja - Nigeria. *Asia-Pacific journal of oncology nursing*, 5(2), 223–230. https://doi.org/10.4103/apjon.apjon_75_17
- Okunade K. S. (2020). Human papillomavirus and cervical cancer. *Journal of obstetrics and gynaecology : the journal of the Institute of Obstetrics and Gynaecology*, 40(5), 602–608. <https://doi.org/10.1080/01443615.2019.1634030>

Özdemir, E., & Kısa, S. (2016). Validation of the Turkish Cervical Cancer and Human Papilloma Virus Awareness Questionnaire. *International Nursing Review*, 63(3), 465–472. <https://doi-org.ezproxy.jamk.fi:2443/10.1111/inr.12299>

Pakai, A., Mihály-Vajda, R., Horváthné, Z. K., Gabara, K. S., Bogdáné, E. B., Oláh, A., Zrínyi, M., & Újváriné, A. S. (2022). Predicting cervical screening and HPV vaccination attendance of Roma women in Hungary: community nurse contribution is key. *BMC Nursing*, 21(1), 1–8. <https://doi-org.ezproxy.jamk.fi:2443/10.1186/s12912-022-00813-5>

Patel, H., Austin-Smith, K., Sherman, S. M., Tincello, D., & Moss, E. L. (2017). Knowledge, attitudes and awareness of the human papillomavirus amongst primary care practice nurses: an evaluation of current training in England. *Journal of Public Health*, 39(3), 601–608. <https://doi-org.ezproxy.jamk.fi:2443/10.1093/pubmed/fdw063>

Pearce, L. (2021). Cervical cancer: how nurses can help reverse the fall in screening uptake: Nurses need to allay people’s fears about screening – and in doing so could save lives. *Cancer Nursing Practice*, 20(2), 14–16. <https://doi-org.ezproxy.jamk.fi:2443/10.7748/cnp.20.2.14.s9>

Pu, J., He, M., Pu, Y., Liu, Z., Le, L., Wang, H., & Du, X. (2020). Knowledge about Human Papillomavirus and Cervical Cancer Prevention among Intern Nurses. *Asia-Pacific journal of oncology nursing*, 8(1), 46–50. https://doi.org/10.4103/apjon.apjon_45_20

Rasheed, S. P., Younas, A., & Sundus, A. (2019). Self-awareness in nursing: A scoping review. *Journal of clinical nursing*, 28(5-6), 762–774. <https://doi.org/10.1111/jocn.14708>

Sarwitree Pornsinsiriruck, Manee Arpanantikul, Bualuang Sumdaengrit, Arb-aroon Lertkhachonsuk, & Grube, W. D. (2022). Perceptions and Needs of Women with Low--grade Squamous Intraepithelial Lesion on Cervical Cytology: A Qualitative Descriptive Study. *Pacific Rim International Journal of Nursing Research*, 26(4), 642–657.

Sprinks, J. (2018). RCN calls for nurses to boost cervical screening awareness: One in four women in the UK missing appointments. *Cancer Nursing Practice*, 17(4), 6. <https://doi-org.ezproxy.jamk.fi:2443/10.7748/cnp.17.4.6.s2>

Su, B., Qin, W., Xue, F., Wei, X., Guan, Q., Jiang, W., Wang, S., Xu, M., & Yu, S. (2018). The relation of passive smoking with cervical cancer: A systematic review and meta-analysis. *Medicine*, 97(46), e13061. <https://doi.org/10.1097/MD.00000000000013061>

Tucker, J., Sarsfield, E., Choi, K. Y., & Goyal, N. (2021). Educating School Nurses about Human Papillomavirus (HPV) Associated Cancers and the Importance of HPV Vaccination. *Journal of Community Health Nursing*, 38(4), 201–208. <https://doi-org.ezproxy.jamk.fi:2443/10.1080/07370016.2021.1972244>

Urasa, M., & Darj, E. (2011). Knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania. *African health sciences*, 11(1).

Virtanen, M. J., & Salmivaara, S. (2021). From knowledge to a gendered event and trustful ties: HPV vaccine framings of eligible Finnish girls and school nurses. *Sociology of Health & Illness*, 43(5), 1221–1236. <https://doi-org.ezproxy.jamk.fi:2443/10.1111/1467-9566.13287>

Wakimizu, R., Nishigaki, K., Fujioka, H., Maehara, K., Kuroki, H., Saito, T., & Uduki, K. (2015). How adolescent Japanese girls arrive at human papilloma virus vaccination: A semistructured interview study. *Nursing & Health Sciences*, 17(1), 15–25. <https://doi-org.ezproxy.jamk.fi:2443/10.1111/nhs.12123>

Wood, B., Russell, V. L., El-Khatib, Z., McFaul, S., Taljaard, M., Little, J., & Graham, I. D. (2018). “They Should Be Asking Us”: A Qualitative Decisional Needs Assessment for Women Considering Cervical Cancer Screening. *Global Qualitative Nursing Research*, 5, 1. <https://doi-org.ezproxy.jamk.fi:2443/10.1177/2333393618783632>

World Health Organization. (2020). Global strategy to accelerate the elimination of cervical cancer as a public health problem.

World Health Organization. (2021). Cervical cancer profile. Finland. Retrieved on April 22, 2022, from https://cdn.who.int/media/docs/default-source/country-profiles/cervical-cancer/cervical-cancer-fin-2021-country-profile-en.pdf?sfvrsn=3eb9787d_36&download=true

World Health Organization. (2022). Cervical Cancer. Overview. Retrieved on April 20, 2022, from https://www.who.int/health-topics/cervical-cancer#tab=tab_1

World Health Organization. (2022). Cervical cancer key facts. Overview. Retrieved on April 22, 2022, from <https://www.who.int/news-room/fact-sheets/detail/cervical-cancer>

World Health Organization. (2023). Cervical cancer elimination initiative. Retrieved on August 13, 2023, from <https://www.who.int/initiatives/cervical-cancer-elimination-initiative>

Yip, C., Han, N. R., & Sng, B. L. (2016). Legal and ethical issues in research. *Indian journal of anaesthesia*, 60(9), 684–688. <https://doi.org/10.4103/0019-5049.190627>

Yörük, S., Açıkgöz, A., Türkmen, H., & Ergör, G. (2019). Risk factors and relationship between screening periodicity and risk of cervical cancer among nurses and midwives. A cross-sectional study. *Sao Paulo medical journal = Revista paulista de medicina*, 137(2), 119–125. <https://doi.org/10.1590/1516-3180.2018.0244230119>

Appendices

Appendix 1. Critical appraisal of articles (Hawker et al. 2002)

Author	Abstract/title	Introduction and aims	Methods and data	Sampling	Data analysis	Ethics and bias	Results	Transferability /generalizability	Implications and usefulness	Total
Carnahan et al. (2021)	3	3	4	3	4	4	4	3	3	31
Altinel and Akin (2022)	4	4	4	4	3	4	4	3	4	34
Patel et al. (2017)	4	4	3	4	3	3	4	4	4	33
Tucker et al. (2021)	3	4	4	3	2	2	3	3	3	27
Odunyemi et al. (2018)	4	4	4	4	4	4	4	4	4	36
Gutiérrez-Enríquez et al. (2017)	4	4	4	3	2	4	3	3	3	30

Appendix 2. Article assessment (Hawker et al., 2002)

Authors, (Year), Country	Title of article	Purpose and Aims of the Study	Research Methods or Instrument	Sample (n)	Validity/ reliability	Main results
1. Carnahan, Leslie R., Randa Abdelrahim, Carol E. Ferrans, Genevieve R. Rizzo, Yamilé Molina, and Arden Handler, (2021), USA	Rural Cancer Disparities: Understanding implications for breast and cervical cancer diagnosis	To identify structural community and individual barriers that the rural population and to understand the role of nurses in the rural community that is working in the rural community for breast and cervical cancer diagnostic and screenings.	qualitative interview	The study sample contains 15 public health nurses that serve in the rural community	Participants have provided verbal agreement and this study has given a standard resolution for quality improvement authority from the research policy of the University of Illinois Chicago.	The topics presented to underline the community structure and the personal level which can hinder the rural population that needs care about breast and cervical cancer show the sequence of the important role of the rural community nurses to uplift the needed cancer care and bring forth the discrepancy and become the bridge to the rural population for some collaborations to the other healthcare professionals.
2. B. Altinel, B. Akin,	The effect of multiple	To investigate the effect of several	Controlled trial	134 women in the age	The study was approved by the Ethics	In this study, the participants are divided into two groups, experimental and control groups, and 14 weeks of sessions and training. Both

(2022), Turkey	interventions for women at risk for cervical cancer on their health responsibility, beliefs regarding cervical cancer and having screening: a randomized controlled trial	integrations on beliefs about cervical cancer, screening uptake, and health commitments		group of 40-55	Committee. Although this study is voluntary, all participants have given their consent by signing the consent forms.	groups showed significantly high in the prior test. Motivation is high compared to the previous test. After they were given group training, the effect of multiple interventions was sufficiently imposing after nursing interventions such as counseling, group training, delivery materials, and phone calls as reminders considering the health promotion models were legitimately productive in increasing the pap smear uptake.
3. H. Patel, K. Austin-Smith, S. M. Sherman, D. Tincello, E. L. Moss, (2017), United Kingdom	Knowledge, attitudes, and awareness of the human papillomavirus amongst primary care practice nurses: an evaluation of current training in England	To assess the professional development of practice nurses and to emphasize their standard expertise in HPV	web-based survey	147 practice nurses	This study was executed in compliance with the local clinical administration, service evaluation guidelines, and audit, and in collaboration with the local screening and immunization facilitator and management	The main findings of this study are backing that Practice Nurses have sufficient knowledge about HPV information, they answered 86% correctly in the survey but despite that, a few failed to determine that HPV can cause cervical cancer and a quarter of the amount of the participants did not distinguish that sexual intercourse at an early age is one of the risk factors of HPV infection. With this discrepancy, practice nurses believed that additional training and the required persistent HPV education, and regular updates of the guidelines are needed to soothe the patients' health concerns about HPV and cervical cancer.
4. Jacqueline Tucker, Erin Sarsfield, Karen Y. Choi, Neerav	Educating School Nurses about Human Papillomavirus (HPV)	To evaluate and upgrade the school nurse expertise in	In the regional conference for nurses that was held in 2019, presentation an	The study had 39 participants that were nurses	This study was set to be exempted by the	After the conference, nurses who responded to the survey during the event, have point out the strategies, skills, and information, that they gained about cervical cancer and that they can

Goya, (2021), USA	Associated Cancers and the Importance of HPV Vaccination	HPV-related cancers	education conference was presented during the event. A voluntary audience was formed during the conference. Pre- and post-surveys were conducted by the attendees of the nurses' conference via the poll-everywhere website.	participating at the conference and that responded to the survey voluntarily.	Institutional Review Board.	use to enhance their knowledge to spread awareness about the disease.
5. Funmilola T. Odunyemi, Chizoma M. Ndikom, O Abimbola Oluwatosin, (2018), Nigeria	Effect of Nursing intervention on mothers' knowledge of Cervical Cancer and acceptance of Human Papilloma vaccination for their adolescent daughters in Abuja - Nigeria	To assess the effectiveness of the nursing intervention on mothers' perception of cervical cancer and the integration of HPV vaccine for their respective daughters	Quasi-experimental research. Pre- and post-testing. Structured interview.	146 women ages around 35-41.	The study has been approved by the Federal Health Research Ethics Committee. Written and verbal consent was acquired from the partakers.	Despite the lack of knowledge about cervical cancer and HPV vaccination and its risk, the participant's willingness to give consent to their daughters to receive the HPV Vaccine is quite remarkable. In this study, it is recommended that health personnel, specifically nurses must use their availability to educate mothers, especially in the clinics for them to have sufficient knowledge about cervical cancer and HPV vaccination.
6. Sandra Olimpia Gutiérrez Enríquez, Luis	Impact of Applying a Learning Strategy to Improve the Sample Quality in	To evaluate the efficacy of utilizing the nursing students'	Quasi-experiment.	23 intern nurses	This study was constructed based on the Andromache model that was	Prior to the theoretical pedagogy and practical skill while the nursing interns are in training, the results of this study, the participant's ability has been improving compared to the previous. The quality of samples was validated by the

<p>Fernando Méndez Donjuan, Yolanda Terán Figueroa, Darío Gaytán Hernández, Cuauhtémoc Oros Ovalle, Aracely Díaz Oviedo, (2017), Mexico</p>	<p>Cervical Screening in Nursing Staff in Social Service</p>	<p>learning approach to optimize the quality of sample collection of cervical cancer screening.</p>			<p>intended for teaching innovation that was registered in the National Copyright Institute under the control of the Mexican Secretary of Public Education.</p>	<p>Department of Pathology at the Hospital Central of Dr. Ignacio Morones Prieto. During the final assessment, the participant's skill in obtaining the sample is specifically positive which give them a positive impact of getting more confidence in taking sample during the cervical cancer screening. This result shows that progressive and continuous training of intern and practice nurses, nurses is quite effective to improve the skills of interpretation of the cytology samples.</p>
---------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------	-----------------------------------------------------------------------------------------------------	--	--	-----------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Appendix 3. The process of content analysis

Sources	Meaning unit	Sub-categories	Main categories
<p>Patel et al., 2017</p> <p>Patel et al., 2017</p> <p>Patel et al., 2017</p> <p>Patel et al., 2017</p> <p>Patel et al., 2017</p>	<ul style="list-style-type: none"> •The median number of years that the PNs had been performing cervical smears was 10.5 years (range < 1 to 36 years). •Practice nurses' attitudes toward the HPV vaccine •Self-perceived adequacy of HPV knowledge •Confidently able to answer all questions asked by service users <p>Factors influencing the level of HPV knowledge PN's (practice</p>	<p>Reflect on skills and competences related to cervical cancer care</p>	<p>Upkeep the nursing skills and competences in cervical cancer prevention and care</p>

	nurses) age and the number of years of experience		
Carnahan et al., 2021	<ul style="list-style-type: none"> •Experiences of care across the cancer continuum 	Training and education received by nurses	Upkeep the nursing skills and competences in cervical cancer and care
Patel et al., 2017	<ul style="list-style-type: none"> •Adequately informed about HPV 		
Oduyemi et al., 2018	Adequate and sufficient information regarding the the vaccine is given		
Patel et al., 2017	<ul style="list-style-type: none"> •Improving training It emerged from the free text that PNs felt that the delivery of HPV training could be improved. 		
Gutiérrez Enriquez et al, 2017	<ul style="list-style-type: none"> •practical skills measured during four sessions of the intervention 		

<p>Patel et al., 2017</p>	<p>HPV triage and TOC (transition of care)</p>		
<p>Carnahan et al., 2021</p> <p>Carnahan et al., 2021</p> <p>Xxxxxx</p> <p>Carnahan et al., 2021</p> <p>Carnahan et al., 2021</p>	<ul style="list-style-type: none"> •Address disparities related to cancer care. •Established relationships with local physicians and patients, which helped facilitate care. •Change in screening and prevention practices. •Charity care programs to cover costs. •Services and connecting patients to survivorship groups and resources. 	<p>Managing collaboration with other healthcare and community professionals to promote awareness</p>	<p>Multi-professional and patient-centered interventions to promote health and cervical cancer awareness</p>

Patel et al., 2017	<ul style="list-style-type: none"> •HPV testing post-treatment. 		
Altinel and Akin, 2022	<ul style="list-style-type: none"> •Multiple interventions 		
Altinel and Akin, 2022	Necessary guidance was provided, and the follow-up were performed	Promote cervical cancer awareness as a part of the treatment plan	Multi-professional and patient-centered-interventions to promote health and cervical cancer awareness
Oduyemi et al., 2018	Post/pre-intervention		
Gutiérrez Enríquez et al., 2017	Pre-intervention		
Patel et al., 2017	<ul style="list-style-type: none"> •Annual follow-up for ten years s was still required despite a negative (TOC) result. 		
Tucker et al., 2021	<ul style="list-style-type: none"> •Modifying the treatment plan 		

<p>Carnahan et al., 2021</p> <p>Carnahan et al., 2021</p> <p>Carnahan et al., 2021</p>	<p>Engaged in extensive clinical navigation and case management for patients' screening and diagnostic and treatment procedures.</p> <ul style="list-style-type: none"> •Engagement in screenings presented several challenges during the diagnosis. •Provide informational and tangible support like arranging transportation to and from appointments and obtaining translation. 		
<p>Carnahan et al., 2021</p> <p>Carnahan et al., 2021</p>	<ul style="list-style-type: none"> •Psychological support •Psychosocial support 	<p>Patient support and promotion of patient's mental well-being</p>	<p>Creating an approach on how to deal with patient's challenges</p>

<p>Carnahan et al., 2021</p> <p>Tucker et al., 2021</p>	<ul style="list-style-type: none"> •Discusses several community-level factors that affected rural populations in need of breast and cervical cancer screening/diagnostic services. •Changing how they communicate with patients, families, and healthcare teams. 	<p>Assisting the patient insuring communication and care coordination in the community and their family members</p>	<p>Creating an approach on how to deal with patient's challenges</p>
<p>Patel et al., 2017</p> <p>Patel et al., 2017</p> <p>Patel et al., 2017</p>	<ul style="list-style-type: none"> •Acknowledged the need for continued cervical screening post-vaccination. •Would recommend the HPV vaccine, the vaccine should be offered to boys as well. •Requirement for continued HPV education, with the provision of regular updates 	<p>Primary source of knowledge and information about cervical cancer and HPV</p>	<p>General patient education regarding the importance of cervical cancer screening and the HPV vaccine</p>

Patel et al., 2017	<ul style="list-style-type: none"> •Development of an online training program 		
Patel et al., 2017	<ul style="list-style-type: none"> •Education session 		
Patel et al., 2017	Practices that involve group		
Altinel and Akin, 2022	training, brochures, and motivational messages		
Tucker et al., 2021	Education session		
Tucker et al., 2021	<ul style="list-style-type: none"> •Evaluation of the overall continuing education course 		
Oduyemi et al., 2018	<ul style="list-style-type: none"> •Respondents have heard about cervical cancer through the nurses. 		
XXXXXXXXXX	<ul style="list-style-type: none"> •Adequate information regarding the vaccine 		

Carnahan et al., 2021	<ul style="list-style-type: none"> •Outreach, and Advocacy 		
Carnahan et al., 2021	<ul style="list-style-type: none"> •Community education and outreach about the importance of cancer screenings and guidelines. 	Organizing the cervical cancer screening process and reaching out the vulnerable group in the society	General patient education regarding the importance of cervical cancer screening and the HPV vaccine
Carnahan et al., 2021	<ul style="list-style-type: none"> •Outreach efforts included linking people to screening resources and sharing information with local employers. 		
Oduyemi et al., 2018	<ul style="list-style-type: none"> •School-based vaccination 		
Carnahan et al., 2021	Support rural populations across the cancer continuum		
Tucker et al., 2021	<ul style="list-style-type: none"> •Preventative measures against HPV infection 		

Odunyemi et al., 2018	• Exposure to nursing intervention.		
-----------------------	-------------------------------------	--	--