Tampere University of Applied Sciences

Nursing Methods In The Prevention Of Cervical Cancer

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BACHELOR'S THESIS
October 2024

Bachelor's Degree Programme in Nursing
Medical-Surgical Nursing

ABSTRACT

Tampereen ammattikorkeakoulu
Tampere University of Applied Sciences
Bachelor's Degree of Nursing
Medical-Surgical Nursing

BRAND LINDA, KALLIOINEN ERIKA & LINDSTRÖM MIISA:
Nursing methods in the prevention of cervical cancer
An Examination of Effective Nursing Interventions

Bachelor's thesis 48 pages, appendices 11 pages
October 2024

The aim of this study is to prioritize the prevention of HPV, as untreated infections can lead to the development of cervical cancer. Health care professionals play a crucial role in reducing the impact of human papilloma virus through various means, ranging from education to physical examinations. Specifically, health care professionals can initiate the prevention process by providing accurate and informative sexual health education at an early age, emphasizing the importance of protection during sexual activities. Early prevention can also include educating individuals about the availability of HPV vaccination prior to sexual activity. Beyond education, regular sexual health screenings are available in later stages of life. The frequency of these screenings varies by country, but typically, individuals are invited for examination between the ages 25 and 30. During these examinations, medical professionals perform a PAP smear to detect any cellular changes that could indicate the development of cancer.

The research question guiding this study is: What are the nursing methods in the prevention of cervical cancer? This study includes a literature review of 10 articles addressing cervical cancer, screening, treatment, HPV infection, and global prevalence. The findings suggest that preventing human papilloma virus infection is key to preventing cervical cancer and emphasize the importance of health promotion and awareness among health care professionals.

Key words: cervical cancer, nurse, health care professional, prevention

CONTENTS

GLOSSARY

TAMK	Tampere University of Applied Sciences
HPV	Human papillomavirus
WHO	World Health Organization
PAP	Screening test for cervical cancer, named after Georgios Papanikolaou
BT	Bachelor's Thesis
HIV	Human immunodeficiency virus
CT	Computed tomography
MRI	Medical resonance imaging
FIGO	The International Federation of Gynecology and Obstetrics
THL	Terveyden ja hyvinvoinnin laitos (Finnish Institute for Health and Welfare)
TUVA	Tutkintoon valmentava koulutus (preparing education for the degree)
TELMA	Työhön ja itsenäiseen elämään valmentava koulutus (Preparing education for a job and independent living)
TAYS	Tampereen yliopistollinen sairaala (University Hospital of Tampere)
IUD	Intrauterine device
YLE	Yleisradio (The Finnish Broadcasting Company)
BMI	Body Mass Index

1 INTRODUCTION

Nurses among the other health care professionals such as public health nurses and midwives play a significant role when it comes to prevention of cervical cancer since they spread the awareness about it to both male and females. Nurses in general have the knowledge to be a source of information about the importance of participating in cervical cancer screening such as PAP-smears and getting an HPV vaccination. (O'Connor et al. 2021).

Cervical cancer is a cancer caused by infection that again is caused most commonly by human papillomavirus (HPV) and it is the fourth most common cancer among women globally (WHO 2023). In Finland there is still 170 new cases every year even though it has become rarer because of good and thorough screening that includes PAP-smear (Kaikki Syövästä 2023).

Human papilloma virus (HPV) is a small commonly sexually transmitted virus that can affect skin, genital area, and throat. HPV has more than 100 known genotypes from which at least 13 can cause cervical cancer and those again are associated with other anogenital cancers such as anal or penile cancers. Cervical cancer is also known to be associated with cancers of the head and neck. (Tapanainen, Heikinheimo & Mäkikallio 2019.) According to World Health Organization (2024) human papilloma virus is highly communicable, with peak incidence soon after the onset of sexual activity and most people get infection at some point in their lives.

In this thesis we are focusing on human papilloma virus, cervical cancer caused by it and specially on the prevention methods that health care professionals such as nurses can use in their work.

2 PURPOSE, TASK & OBJECTIVES

The purpose of the thesis is to conduct a literature review with thematic analysis to find out what are the nursing methods in the prevention of cervical cancer and therefore the research question for the thesis is: “What are the nursing methods in the prevention of cervical cancer?” This thesis will be written from a nurse’s point of view.

The objective of the thesis is to provide more information about nursing methods in prevention of cervical cancer for health care professionals including nurses, midwives, public health nurses but also for everyone who is studying to become health care professional. These earlier mentioned health care professionals may provide information and acknowledge gotten from this thesis to their patients, use it in their everyday working life and help to prevent cervical cancer.

As we write our thesis, we want to find out what are the preventions in cervical cancer and how does nursing methods help in the process. In our thesis we will also focus on the ethical perspective concerning our topic since we are talking about vaccines and naturally those are controversial topic. More controversiality comes when people who are getting HPV vaccinations are minors.

3 THEORETICAL STARTING POINT

Cervical cancer is a cancer caused by an infection that again is most commonly caused by human papilloma virus (HPV) and According to National Cancer Insitute (2023), almost everyone are infected by HPV at some point on their lives while being sexual active. Cervical cancer appears in cervix, which is the lower, narrow end of the uterus where the cancer starts to develop in the cells. Before cancer appears in the cervix, the cells go through changes known as dysplasia meaning abnormal cells begin to appear in the cervical tissue. If not destroyed or removed, over time the cells might grow into cancer cells and spread wider area causing metastasis. Almost all cervical cancers are caused by long-lasting HPV infection which again is caused by a human papilloma virus which is a small commonly sexually transmitted virus that can affect skin, genital area, and throat. Human papilloma virus is the name of a group of 200 known viruses and has more than 100 known genotypes from which at least 13 can cause cervical cancer. Human papilloma virus types 16 and 18 causes even 70% of all cervical cancers but there are other risk factors as well, such as starting to have sexual intercourses in early age, multiple sex partners, other gynaecological infections, and smoking and obesity. There is a possibility to prevent a cervical cancer such as HPV vaccination and different lifestyle habits and screening. (Tapanainen et al 2019.) Nine out of ten HPV infections in human will disappear eventually by itself within two years (Center for Disease Control 2024).

In the most cases cervical cancer causes symptoms, and typical early symptom is abnormal bloody vaginal discharge, especially after sexual intercourse. In the later stages in cervical cancer symptoms may include pain in lower abdomen, pain in lumbar region and different kind of abnormalities concerning urine and urination. In early stage of cervical cancer, it is usually found in routine PAP-smear and in later stages cervical cancer may be found during gynaecological examination as a tumour that has grown into the vagina or as ulcer or canker in the cervix. (Makkonen & Pankakoski 2019.)

When a suspicion of cervical cancer has occurred, gynaecological examination and PAP-smear are the first physical examinations, and these are performed by

a gynaecologist. After gynaecological examination and PAP-smear, colposcopy and biopsy taken during it ensures the diagnosis. Colposcopy is an examination to take a closer look of cervix, vagina and vulva with a certain type of microscope. The urgency of colposcopy is defined by PAP-smear results and if there is a suspicion of cancer the examination will be done as urgent. If the changes in the cells are mild, colposcopy will be done in 4-6 months. During the coloscopy there is a possibility to remove early cell changes or other changes in tissue with a LOOP treatment which utilises laser or electricity. When in suspicion of possible metastasis ultrasound, CT-scan and MRI of pelvis are implemented. (Tapanainen et al 2019.)

Treatment of cervical cancer and patient's prognosis (table 1.) are depending on tumour's distribution which is pointed out with FIGO-grade (table 2.) or TNM-grade (table 3). In TNM-grading T represents how tumour is growing into surroundings, N is representing how nodes are distributing into lymph nodes close by and M represents possible metastasis. (Kaikki Syövästä 2023.) Surgery is a crucial in the treatment of cervical cancer and the extent of it is depending on the FIGO- and TNM-grade of the cancer. It is usual that the entire womb needs to be removed but in case of the patient being a young woman it is possible to leave ovaries in place. In exceptional cases where the cancer is local and possibility of conceiving a child is needed to maintain, a trachelectomy is considered. Trachelectomy is a surgery where only the cervix is removed and after this kind of surgery the follow up of the treatment becomes even more crucial. In later stages of cervical cancer, the surgical treatment is supported by radiotherapy and chemotherapy. (Mäenpää & Wigren 2014.)

TABLE 1. Patient's Prognosis

Stage at the moment of diagnosis	Prognosis after 5 years
Local only in the womb	90% alive
Distributed into local lymph nodes	65-70% alive
Metastasized	20-30% alive

TABLE 2. FIGO Grade

FIGO grade	Description
1	5% or less of tumour tissue is solid tumour growth. The cancer cells are well-differentiated.
2	6%-50% of tissue is solid tumour growth. The cancer cells are moderately differentiated.
3	More than 50% of tissue is solid tumour growth. The cancer cells are poorly differentiated.

TABLE 3. TNM Grade

TNM grade	Description
T	Representing how the tumour is growing into surroundings
N	Representing how nodes are distributing into lymph nodes close by
M	Representing possible metastasis

Cervical cancer is very common, being the fourth most common cancer among women globally (WHO 2023). Only in Finland there is still 170 new cases every year even though it has become rarer because of good and thorough screening that includes PAP-smear. In Finland cervical cancer is nowadays the most common among women who are in their fertile age which means approximately 30-44 years old and over a one third of all cases the diagnosis take place during these years of age. Among under 25 years olds in Finland cervical cancer is extremely rare. (Makkonen & Pankakoski 2019.)

World Health Organization (WHO) has announced January as Cervical Cancer Awareness Month and it aims WHO and its' partners to raise awareness not only about cervical cancer but also about vaccination against human papilloma virus. In 2024 Cervical Cancer Awareness Month's goal was to highlight the importance of increasing access to HPV vaccines, regular screening, and state-of-the-art treatment for cervical cancer in its' early stages. With this Cervical Cancer Awareness Month WHO aims to reduce occurrence of cervical cancer by 2030 and to eliminate cervical cancer as a public health problem by 2120. Word Health Organization encourage people to educate themselves about cervical cancer and HPV, to get regular screenings that can detect any cervical changes and to get vaccinated (WHO 2024).

4 PREVENTION

The prevention of cervical cancer requires cooperation between social and health care professionals and individuals. Although cervical cancer is very common, and no one can say in advance who will get it, it is important for everyone to know how each individual can prevent cervical cancer. Some of the methods of prevention are completely part of everyday life such as the way of life, and some require the help of professional, such as vaccinations. The HPV virus is a significant factor in the development of cervical cancer. Cervical cancer screening studies have effectively reduced the occurrence of cervical cancer. Cervical cancer screening with PAP-smear and an HPV test. Coloscopy and the samples taken in connection with it confirm the diagnosis. (Makkonen & Pankakoski 2019.)

4.1 HPV Vaccination and national vaccination programme

HPV vaccine protects against diseases such as cervical cancer caused by human papilloma virus and it is shown that HPV vaccine decreases significantly cervical cancer and its' early stages. HPV vaccine can also protect against other cancers in the genital area such as vagina and vulva but also cancers in rectum, anus, penis, and oropharynx meaning mouth and throat area. Unfortunately, the HPV vaccines in modern medicine cannot cure possible human papilloma virus infection, changes in cells or tissue or cancer caused by these. (Lei et al. 2020.)

At the moment there is two vaccines available, Cervarix® and Gardasil®. Even 70% of all cervical cancer cases are caused by human papilloma virus types 16 and 18 and therefore the effect of both vaccines is directed against those types of HPV. Vaccines don't contain alive pathogens so they can not cause the HPV infections, and they work by stimulating your immune system to produce antibodies that fights human papilloma virus. (Lei et al. 2020.)

Ministry of Social Affairs and Health, the HPV vaccine has been included in the national vaccination program (STM regulation 410/2013) in the fall of 2023 in school health care regularly. Initially, only girls were vaccinated from, 2020 boys

have been included in the vaccination program. In the national vaccination program 10-12-years-olds, meaning 5th and 6th graders gets the vaccine free of charge. In addition, in the school years 2020-2021 and 2021-2022, boys in the 7th-9th grades will also be vaccinated with so-called catch-up vaccinations. The Cervarix® vaccination series offered in the vaccination program includes two shots. If vaccinations are started after the adolescence has turned 15, a total of three doses should be given. (Terveyskirjasto 2022.)

Those who are not eligible to receive the HPV vaccine as part of the national vaccination program can purchase the vaccine with prescription from pharmacy. Gardasil® 9 vaccine is available in pharmacies and the vaccine is intended for age of 9 and above. Since people are exposed to sexually transmitted viruses at slightly different times in their youth, even those older than the vaccination age of the national program can benefit from the vaccine. For example, HPV vaccination is recommended for people aged 9-26 who have received a stem cell transplant. Good treatment practice includes that the nursing party in charge of the care takes also care of vaccinations. For people over 30 years of age, there isn't enough benefit from the vaccine anymore since they have had the majority of HPV infections already. (Lei et al. 2020.)

4.2 Implementation

HPV vaccination is given by a nurse or a public health nurse as intramuscular injection into upper arm. When two doses are given the time between vaccinations is at least five months and if three doses are needed, the minimum schedule is 0, 1 and 6 months. The time between the doses should not be shortened but it may be a little longer than scheduled. There is not reliable information about how long the protection from the vaccine lasts but because antibodies have not decreased in follow up research during the first decade from the first vaccine shot, it can be assumed that the protection is long-term meaning several decades. At the moment it is unknown if there is a need for boosting dose of vaccine. (THL 2024.)

The need of vaccination is good to check on every grade. A possible need for human papilloma virus is also needed to check from the students who are

TUVA or TELMA (table 4) students and high school or other second-degree students who are minors. Protection is important to be checked already during the first year of studies when students are having their yearly check up with public health nurse. If the protection against human papilloma virus is incomplete or entirely missing, it will be completed. (THL 2024).

TABLE 4. TUVA and TELMA

	Description in Finnish	Description in English
TUVA	Tutkintoon valmentava koulutus	Preparing education for the degree
TELMA	Työhön ja itsenäiseen elämään valmentava koulutus	Preparing education for a job and independent living

4.3 Advantages and disadvantages of the vaccination

There hasn't been found any serious side effects in the vaccine studies. Before the vaccine enters the national vaccination program, a lot of research is done one the vaccine preparation, its use, efficacy, and safety. Tens of millions of doses of the vaccine have been administered worldwide. Serious side effects have been very rare, and there is no evidence that the HPV vaccine causes any serious illness. HPV vaccines do not increase the risk of miscarriage or pregnancy problems. (Lei et al. 2020.)

HPV vaccinations most typical observed side effects are local injection symptoms such as pain, redness and swelling. Muscle or joint pain has also been reported in about one in five, but actual hypersensitivity reactions are rare. Fainting after any injection event is not uncommon. The symptoms described above are not serious. (Terveyskirjasto 2022.) More than a quarter have had nausea, vomiting, diarrhea, or stomach pain. Fever or chills have occurred in about 15 percent. (THL 2024.)

4.3.1 Advantages of the vaccine

Some of the cancers caused by papillomaviruses are such that they cannot be detected in time. Even if the cancer precursor is detected in time, the treatments for the precursors are also associated with risks. That is why vaccination well in advance of infection is the best way to prevent getting sick and unpleasant and heavy treatments. Because of HPV vaccinations, even fewer people must be monitored and treated for the precursors of cervical cancer. The HPV vaccine effectively prevents cervical cancer. (Lei et al. 2020.)

HPV vaccination is shown to prevent even 95% of serious early stages of cervical cancer caused by human papilloma virus types 16 and 18. When the evaluation of the vaccine also considers those women who have already been diagnosed with papillomavirus infection, the protective effect regarding cancer precursors is much smaller. The vaccination is therefore most effective when it is given before the person starts their sexual life. (Lei et al. 2020.)

Before the HPV vaccine was taken into use, about eight out of ten people got a papillomavirus infection that predisposes them to serious diseases at some point in their lives. HPV vaccinations effectively prevent the spread of vaccine-preventable papillomavirus types. High vaccination coverage improves the benefit of HPV vaccination. Since infections with cancer-causing papillomaviruses are often asymptomatic the carrier of the virus may unknowingly spread to others. This is why preventing even one infection, protects many from many different harms. (Lei et al. 2020.)

4.4 Contraceptives

The use of contraceptive pills may lead to abandoning the use of barrier methods that protect against HPV infection and to increased exposure to the virus. In the IARC study, human papilloma virus DNA was not found more frequently in PAP-samples taken from those who are using contraceptive pills (Moreno et al. 2002.) It is possible that the hormonal changes associated with contraceptive pills, pregnancy and childbirth potentiate the carcinogenic effects of HPV (Skegg 2002). Furthermore, birth canal traumas may expose the cervix to cell

changes. According to the current knowledge, almost all cervical cancers are related to papilloma virus or HPV infection and in that way to sexual behavior. According to a Danish study, unprotected intercourse for nine years increased the risk of strong squamous typic of the cervix by 3.3 times. (Krüger-Kjaer et al. 1998.)

Tablet contraception is a well-studied and widely used birth control method in Finland, the benefits of which at the population level very likely exceed the possible harms. The correct information given to users about the benefits and risks of contraceptive pills, as well as PAP-smears taken at regular intervals during follow-up, are important. The importance of using contraceptive methods in young and new relationships should not be forgotten either. (Duodecim 2003.)

International meta-analysis shows that the intrauterine device (IUD) decreases the risk of cervical cancer by half. According to the study published in the The Lancet Oncology journal when having the IUD less than a year the risk decreases but also the risk stays low with female who has had it over years. In the earlier studies it has been established that the IUD reduces endometrial cancer. (Lautala 2011.)

Regarding cervical cancer, the research results have been contradictory, and the studies have not considered the carrier of human papilloma virus, which significantly increases the risk of cancer. In the analysis, individual data from two previous large-scale studies were considered. In the second, 10 controlled studies were combined, which included a total of 2 205 female with cervical cancer and 2 214 healthy controls. The second had analyzed the results of 16 HPV follow-up studies. They included 15 272 females, of which 2 556 were HPV positive. A history of IUD use was found in 13 percent of females with cervical cancer and 22.5 percent of healthy female. (Lautala 2011.)

Using IUD was found to neither increase nor decrease the rate of HPV infections, and the female’s personal history of cytology did not influence the reduction of IUD-related cancer risk. The IUD may slow down the progression of HPV infection to cancer by causing mild chronic inflammation and an associated immune defense reaction in the endometrium and cervix. (Lautala 2011.)

4.5 Nordic study

In the fall of 2013, a large Nordic study was published in which no serious side effects related to HPV vaccination were observed. Almost a million girls participated in the study in which almost 300 000 girls received the human papilloma virus vaccination. This study specifically looked for serious harms, such as the occurrence of autoimmune diseases, neurological symptoms, or venous blood clots after vaccinations. In June 2013, the WHO Committee on Vaccine Safety published a report, according to which the experience of more than 175 million distributed vaccine doses provides indisputable evidence for the safety HPV vaccines. Follow-up reports were published in February 2014 and January 2016. In 2018, a Finnish research group published a study in which girls aged 11-15 years who received the HPV vaccine did not have an increased risk of developing autoimmune diseases. (Terveyskirjasto 2022.)

4.6 Tampere University study

Approximately 32 000 children from 250 middle schools in 33 locations participated in the HPV vaccination study implemented by the University of Tampere, which started in 2007. In a third of the communities, more than 20 percent of the boys and 45 percent of the girls received the HPV vaccination, in a third, about half of the girls received the HPV vaccination, and in a third, both girls and boys received the hepatitis B vaccination. (THL 2020.)

According to THL specialist researcher Simopekka Vänskä, the vaccination program for girls alone usually fails in eradicating the HPV type that causes the highest burden of disease, i.e., human papilloma type 16, from the population no matter how long the program is run. If both girls and boys are vaccinated with a coverage equivalent to the current Finnish program, then the first vaccinated cohorts will still get HPV type 16 infections, but the cohorts that are vaccinated 10 years after the start of the program will no longer get HPV type 16 practically at all during their lifetime. For other types of HPV that are dangerous for cancer, even less than 10 years is enough. (THL 2020.)

The WHO has set the goal of eliminating cervical cancer. Because of the Finnish study, it is known that the goal can be reached if both girls and boys receive the HPV vaccine. At the same time, other cancers caused by human papilloma virus can also be prevented. (THL 2020.)

4.7 HPV screening

In Finland the screening is implemented to 30-65 years old females by inviting them for screening every five years. In some wellbeing services counties, they already start to invite females to the screenings when turning 25 years, but the screening regulation is set for 30-65 years old. In Finland screening for human papilloma virus is free of charge and the result from the screening is sent via mail by Fimlab. (Fimlab 2024.)

According to Suomen Syöpärekisteri in 2021 there was 284 000 females that were invited to free screening and 72% meaning 205 000 were screened and it was shown that specially 30–35-year-olds didn't take part of the screening. In 2021 approximately 60% of all severe early stages of cervical cancer were detected in the screenings and little less than a quarter of cervical cancers were detected in the screenings. (Suomen Syöpärekisteri 2024.)

In May 2024 Fimlab and women's disease department in University Hospital in Tampere (TAYS) initiated research in which the goal is to find out if the home test for human papilloma virus is suitable for screening and if it could increase the number of females taking the screening. According to researcher in charge and a professor of women's diseases in TAYS, Karolina Louvanto, last year 2023 almost a half of all cervical cancer diagnosis were detected among females who had not taking part of the human papilloma virus screening. (Yleisradio 2024.)

The so-called human papilloma virus home test is not offered for anyone but only for the females who has not taken a part of the screening even though they have been invited to. There are differences between cervical cancer screening home test and the test taken in laboratory. When using the home test, the sample is taken from vagina, and it is studied only for high-risk human papilloma virus.

When the HPV sample is taken in laboratory by a professional, they are able to do PAP-smear from the same sample. The PAP-smear in which they look for abnormalities in cells that could change into cancer cells will be examined only if the human HPV test is positive. (Yle 2024.)

PAP-smear cannot be taken during menstruation and possible hormonal replacement therapy does not need to be paused before it, however if the female is using local hormonal replacement therapy such as intravaginal suppository, it is recommended to leave that uninstalled the day before and on the day of the PAP-smear. Normal pregnancy does not rule out the PAP-smear until the pregnancy week 35 but if the expecting mother is in a risk group for premature birth, they should discuss about giving the PAP-smear with their doctor. After giving birth, the PAP-smear can be taken when approximately 1 to 2 months have gone by. (Fimlab 2024.)

4.8 Way of living

The single most important background factor in the development of cervical cancer is prolonged inflammation caused by sexually transmitted HPV (Suomen Syöpärekisteri n.d.). Since HPV infections are mainly spread through sexual intercourse, and they clearly become more common after the start of sex life, the papilloma virus and the occurrence of the gynecological infections can be prevented by avoiding temporary sexual contact and by using condom. (Compass Oncology 2020.)

Sexually transmitted diseases, especially Chlamydia, increases the risk of human papilloma virus. HIV or a lowered immune system for other reasons also increases the risk because of the reduced immune system, the body cannot defend itself against HPV infection. (Kaikki syövästä 2024.) Because of this, the infection can spread and progress in the body and eventually cause cell changes. Some medicines may weaken the body’s defenses, also due to previous illnesses such as cancer, HPV infection already latent in the body, or surgery that has required for example transplanted surgery, may lower the body’s defenses. (NIH 2023.)

Healthy lifestyle habits, such as regular exercising and healthy and versatile diet can decrease the risk of cancers including cervical cancer even by a third. Physical activity during leisure and working hours have a connection in decreasing especially cervical and breast cancer and sedentary behaviour on the other hand is one factor alone that increase the risk for cancers. (Luoto 2017.)

4.8.1 Smoking

Smoking is an independent risk factor for cervical cancer and its precursors. Quitting smoking reduces the risk of developing a difficult pre-cancer or cervical cancer. (Suomen Gynekologiset Syöpäpotilaat ry n.d.) Smoking tobacco and the high risk of cancer associated with the burning of tobacco or tobacco smoke, because the most toxic and cancer-causing substances, carcinogens, are created precisely in connection with the combustion process. Tobacco causes various cancers, especially when smoked. Tobacco smoke also causes cancer in non-smokers if they are exposed to the smoke, as well as in children who's for example parents smoke. (International Agency for Research on Cancer 2016.) Cigarettes has over 5 000 harmful chemicals and up to 70 of those leads to cancer. When the chemicals enter the body, they damage the part in the DNA that protects the body from cancer. Some of these chemicals interfere with cells' ability to repair DNA. (NIH 2023.)

Prospective The European Prospective Investigation into Cancer and Nutrition study was implemented in 10 European countries between 1992 and 2000. There were 521 448 participants in the study, of which 367 993 were females, the majority aged between 35 and 70. 308 036 females were followed for 9 years, and 261 cervical cancers were found in the final analyses. Antibodies to HPV types 11, 16, 18, 31, 33, 35, 45, 52, and 58 were administered from the serum. Two controls were taken per case. 184 cervical cancers and 1 218 controls were included in the final analyses. Both HPV-seronegative and HPV-seropositive females had twice the risk of developing cervical cancer compared to females who had never smoked. The study also concluded that quitting smoking reduces the risk of cervical cancer. The longer the time is since quitting smoking, the lower the risk is of developing cervical cancer. (Palmroth 2016.)

Smoking increases the risks associated with both surgery and radiotherapy. Smoking worsens the prognosis after cervical cancer treatment and increases the risk of disease recurrence. (Suomen Gynekologiset syöpäpotilaat ry n.d.) Smoking prolongs HPV infection and slows down healing (Suomen Syöpärekisteri n.d.).

4.8.2 Obesity

As the Body mass index (BMI) increases, the risk of cancer increases depending on the type of cancer. The limit of obesity is measured with a body mass index calculator. When the body mass index exceeds the obesity limit (BMI > 30), the risk of cancer increases significantly (table 5), by about one-fifth, compared to a normal weight (BMI < 25). Severe obesity is associated with a more than 1.5 times greater risk of developing cancer. (Luoto et al. 2017.)

TABLE 5. BMI

Body Mass Index	A risk for cancer
BMI over 30 (obesity limit)	20% increased risk
BMI over 40 (severe obesity)	150% increased risk

Overweight and obesity cause cancer in many ways. The fat cells accumulated in the human body produce various hormones and growth factors, which spread around the body along with the blood circulation. These hormones and growth factors can cause various cancers to develop and accelerate the growth of cancer cells. Adipose tissue accumulated around the waist is harmful from the point of view of cancer because the function of the fat accumulated around the internal organs is more active than the fat in other parts of the body. (Luoto et al. 2017.)

Insulin is an important hormone that regulates sugar metabolism and how we get energy from food. Being overweight increases the levels of insulin and its derivatives in the blood. This can cause cells to divide uncontrollably and thus increase the risk of cancer. A large amount of adipose tissue causes a mild inflammation

in the body, which increases the risk of cancer. The inflammatory state contributes to harmful changes in the functioning of the cells. Obesity also weakens the functioning of the body's own defence mechanism, the immune system. (Luoto et al 2017.)

5 ETHICS

According to the Infectious Diseases Act (1227/2016), the national vaccination program is voluntary for the individual. The state council can separately decide on mandatory vaccinations to prevent the spread of infectious disease that could cause significant damage the population or any part of it. Mandatory vaccination can also be limited to a certain part of the population, group or age group. (Lääkäriliitto 2021.)

5.1 Hearing the child

A child can decide on his vaccination when a healthcare professional assesses that, based on their age and level of development, the child is capable of making the necessary decision (Laki potilaan asemasta ja oikeuksista 785/1992). The law does not recognize any age limit for decision-making capacity, but a professional always makes an assessment on a case-by-case basis. The decision-making ability of a child or young person who comes to the clinic alone should always be assessed. If the minor is found to be capable of deciding for themselves, contact with the guardians can only be made with their permission. (THL 2023) In all situations, the health care professional must hear the minor's thoughts about his care. Even though the youngest children are not yet able to decide on their care due to their age and development, their opinions should be heard when the child's level of development allows it. (THL 2024.)

When a child or young person is together with a parent at the reception, a professional must assess the child's ability to make decisions, especially when the parent and child disagree about treatment. Usually, it requires a conversation between the professional and the child, i.e., then the parent is asked to leave the reception room for a while. Treatment also refers to health care activities related to health promotion. If, for example, a minor says that they have tried or they are using intoxicants, one should always consider whether their health is at risk and whether the situation is such that the young person is able to handle the matter,

and whether the use of intoxicants affects their ability to decide on their treatment. (THL 2024.)

5.2 Minor's assessment

When a health care professional determines that a child or young person is not capable of handling their own case, the professional must always ensure access to treatment and support. Usually, it happens by being in contact with a parent or other guardian. if a non-decisive child justifiably, for example due to the threat of violence, opposes contact with the guardian, access to care and support is ensured in another way, for example by contacting child protection. The contact is always told to the minor as well. (THL 2024.)

With youngest children the ability to make decisions can be assessed from the calendar age and the related normal level of development. The older the children is, the more carefully the assessment should be made and the assessment should be made on a case-by-case basis and only based on personal contact. The level of development of children of the same age can be very different, and on other hand, different matters to be taken care of require different levels of maturity. (THL 2024.)

The assessment of maturity required for independent decision-making is not an objective assessment of the child's cognitive level. An assessment is an impression that arises in conversation and interaction. Therefore, it is dynamic and alive and can change as the matter progresses. The dialogue necessary to make the assessment is the responsibility of the health care professionals. (THL 2024.)

The assessment is based on the health care professional's ability to tell the child or young person about the situation and the possibilities for progress and treatment in such a way that the child will understand them. At the same time, the health care professional observes how the child or young person listens and thinks about what they hear by following their reactions and questions. This leads to its momentary assessment of the child's or young person's ability to handle

their situation. From patient documents, the health care professional can get information about how a minor has handled their healthcare affairs in the past. However, each assessment of decision-making ability is based on the current situation and considers the quality of the case. (THL 2024.)

5.3 Parent's awareness

It is important for parents or other guardians to get information about papillomaviruses and the HPV vaccine before the 5th grader's health inspection. It is also important to check and record the parent's position on the HPV vaccination during the 5th graders comprehensive health inspection. During the health check, the topic can be discussed further if necessary. it is important to let the parents know that they are allowed to ask questions and express their concern if there are any, and that the health care professionals will be there for them to answer to their questions. (THL 2023). In Finland THL has made a brochure for parents and children. The brochure gives information about the HPV vaccine, HPV infection and how it is transmitted and what its symptoms are. The brochure also mentions the risk of cancer and tells what other cancers the vaccine can protect against. (THL n.d.) Brochures are instructed to be distributed at school well in advance of the health inspection (THL 2023).

Mostly parents decline the vaccination due to ideology. But there is only about 1 % of all the parents who declines for every vaccination. Although hesitating is more common, if there is lot of news articles about the vaccinations, it may affect to the decision of getting the vaccination or not. (Lääkäriliitto 2021.)

The child's guardians may disagree about vaccinating the child. In this situation the ombudsman has considered (4640/4/09 & 5294/2/13) that the administration of the HPV vaccination is not a routine procedure for which only the consent of the other guardian would be sufficient. The patient act does not find a solution to a situation where the views of the guardians of a child who is unable to decide about their care differ from each other. (Lääkäriliitto 2021.)

6 METHODOLOGICAL STARTING POINT

The thesis is conducted as a literature review with the aim of studying already existing literature from the perspective of a specified research question, since it is fundamental for academic research to know what is already known of the topic and to determine the information gaps which still need to be explored (Xiao & Watson 2019, 93–95). The systematic process of this literature review is consisting of three phases which are planning, conducting, and reporting phases (Xiao & Watson 2019, 102).

The planning phase is consisted of two steps; formation of our research question since it is going to guide the whole literature review process (Xiao & Watson 2019, 103). As mentioned earlier in thesis' purpose, task, and objective part our research question is: What are the nursing methods in prevention of cervical cancer? The second step of the planning phase is to generate our review protocol by defining the purpose of the study, research question, search methods, inclusion, and exclusion criteria of the data and how results are reported and screened for quality. (Xiao, Watson 2019, 103.) Out of all databases the most search results came from EBSCO's CINAHL Complete and other databases did not add new results so therefore we ended to use only the CINAHL database. We decided to use two of our searches and the search word combinations are presented in Table 2.

TABLE 6. Search words

Database	Search Words
CINAHL Complete (EBSCO) (1st search)	((“Cervical cancer” OR “Cervical Cancer Prevention” OR “Cervical Cancer Prevention AND screening”) AND (“nurse” OR “nurses” OR “nursing”) AND (“Methods” OR “Nursing Methods”)

CINAHL Complete (EBSCO) (2nd search)	((“Cervical Cancer” OR “Cervical Cancer Screening”) AND (“Prevention”) AND (“nurse” OR “nurses” OR “nursing”) AND (“Methods” OR “Nursing Methods”)

In our searches we used inclusion and exclusion criteria (table 3.), and the focus became the most important factor when narrowing down the data from the searches. The original plan was to use only Finland, but it turned out to narrow our data too much, so we decided to use Europe instead as the inclusion area. As inclusion we also used English as written language and publication years after year 2014. As inclusion search results needed to be research articles, peer-reviewed and the abstract needed to answer our research question.

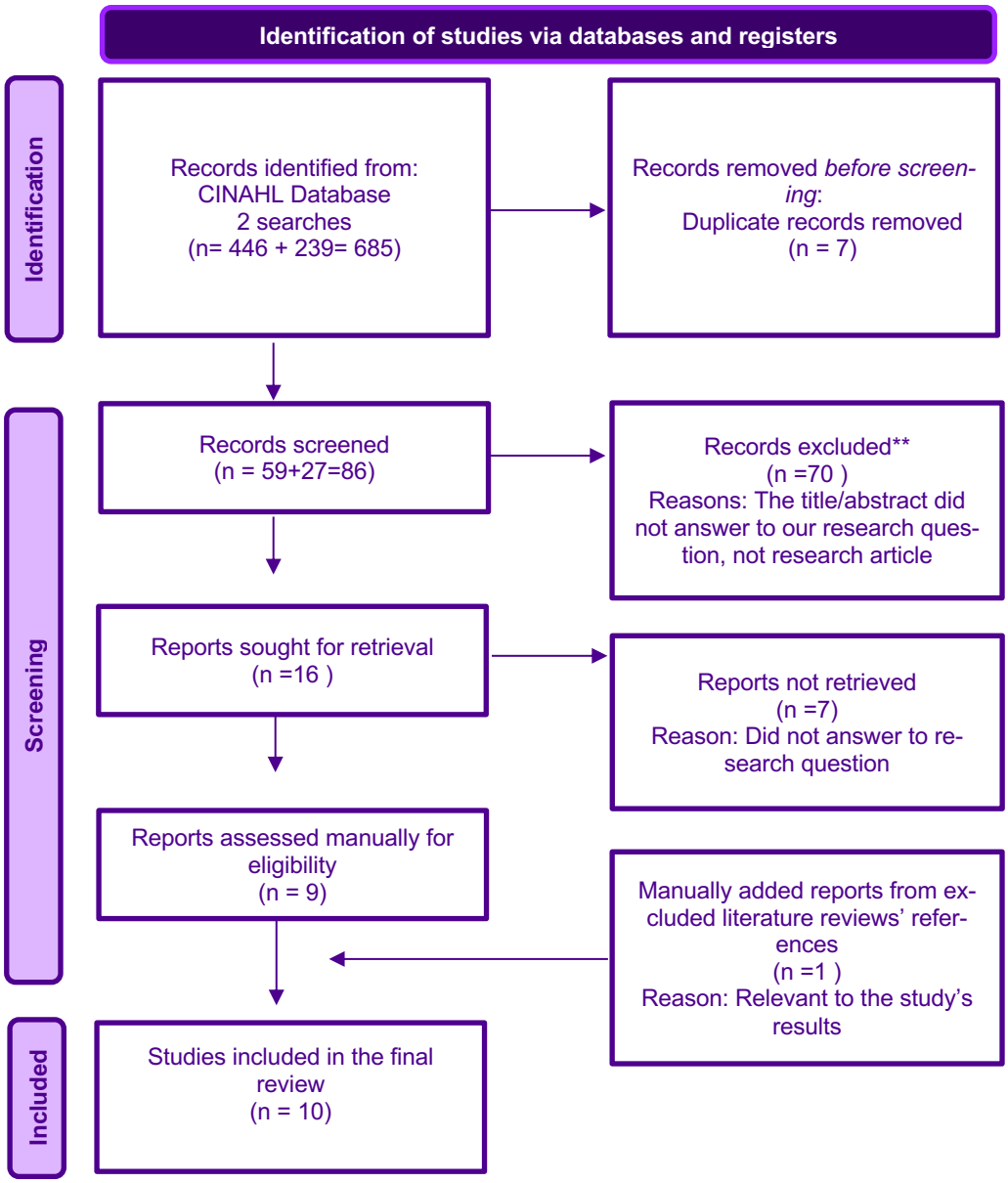
TABLE 7. Inclusion Criteria

Inclusion	Exclusion
Years 2014-2024	Publication before year 2014
Research article in English	Written language is not English
Research article	Not a research article
Peer-reviewed	Not peer reviewed
Abstract answers to our research question	Doesn’t answer to the research question

Searching, screening the literature, assessing its’ quality, extracting the data and analyzing it were the first steps in the thesis and its’ conducting phase. Two searches in CINAHL were done according to the plan and the results were combined for further scanning. The first search provided 446 results and the second 239, making it a total 685 results. Before screening 7 duplicates were removed making the actual number of articles for screening 678. From 678 articles 592 were removed because those were off topic leaving 86 articles. Individually 86 articles were manually screened, and 70 were excluded. Reason for exclusion were that not a research articles or as well as the title and the abstract did not answer the research question of this study. The entire data collection process is

shown in Figure 1 with the help of the Prisma Flow Chart, which explains the steps used in the study selection (Fain 2017, 65).

FIGURE 1. Flow chart of the study selection.



7 FINDINGS

Ten articles were included in the final review and are explained in Table 8 in Appendix 1. The included articles are published between 2014 and 2024, and studies were executed in United Kingdom, United States of America, Greece, Turkey, Ireland, Poland, Hungary, and New Zealand. Design and measures of the studies are also presented in Table 8 found in Appendix 1. Main themes from the articles which were knowledge and education, comprehensive training and skills, vaccine, and pap smear influenced the prevention of cervical cancer and the subthemes underneath them are presented in Figure 2.

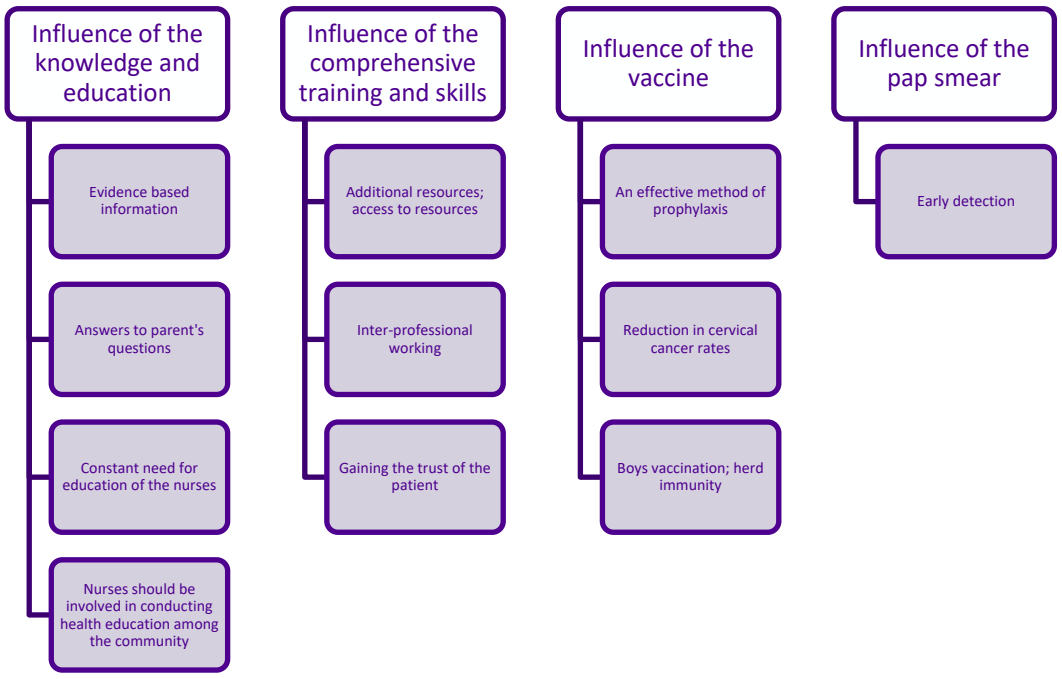


FIGURE 2. Factors influencing the nursing methods in the prevention of cervical cancer.

7.1 Influence of the knowledge and education

Data used (2, 3, 4, 5, 6, 7, 8, 10) pointed out the importance of nurse's knowledge, education, and training when it comes to the nursing methods in the prevention of cervical cancer. The knowledge is crucial to include not only the information about human papilloma virus itself but also the prevention of human papilloma virus infections and use of reliable sources of information. Because of the knowledge health care workers, such as nurses, have gained from current scientific reports, they should also be involved in conducting health education among the community, especially the adolescents and female. (2, 4, 6, 7, 8) Nurse's and other health care professional's ability to communicate with the patient, especially the adolescent one stood out from the data.

Data provided crucial observations into the future potential of nurses to allow and encourage individuals to take more responsibility for their own health, health promotion and lifestyle choices with adequate amount of support and information from the nurses with knowledge. In addition, for nurses and other health care workers it is important to acknowledge the importance of education in behavioural change; training and education have been showed to have a relation to changing attitudes and behaviours.

Primary care setting needs to provide good and adequate opportunities for cancer prevention activities for all members of the primary healthcare team, not only for nurses. (7, 8) It has been considered in the data (6, 7) that research in the future should also provide the evaluation of the outcomes of the cancer prevention interventions. Data used (6, 7, 8) pointed out that even though nurses most commonly have the sufficient knowledge and also preparation for the important role of a health educator, there is always need for grow, strengthen and improve their knowledge about human papilloma virus infections, cervical cancer caused by it and the prevention of it, including vaccines.

7.2 Influence of the comprehensive training and skills

Some of the data (7) indicated that majority, being over 95% of the nurses, believe that additional practice-based training with more collaborative and strategic inter-professional working could improve and deepen their cancer prevention role in health care but some of the data (8) indicated that clinical experience did not show connection with increased human papilloma virus or cervical cancer knowledge among the nurses. Although according to the data (6, 7, 8) the nurses have good knowledge about human papilloma virus, cervical cancer caused by it and the nursing methods to prevent cervical cancer, the provision of education and training needs to be priority and the current methods of training needs to be continuously re-evaluated. (8)

In addition to the training pointed out to the nurses, data (8) indicated that there is a need for online possibility to train and maintain skills to prevent cervical cancer. Now a days it is believed that online resources designed for training and maintaining nursing methods to prevent cervical cancer would be easier to access and therefore also increase participation.

In addition, the knowledge of the nurses is crucial in the prevention of cervical cancer, so is their ability to communicate with the patients. Adolescents and women seek to nurses for human papilloma virus related information and therefore it is crucial for nurses to able to provide patients and their parents clear and accurate information in non-judgmental way. (8)

At present, cervical screening sample takers receive initial training, with refreshers provided every three years. Since October 2017, an online refresher training module has been implemented in Wales and England, which is now mandatory in England. In Scotland and Northern Ireland, the refresher training is conducted in person. The training covers an overview of the screening program, the causes of cervical cancer, the role of HPV, and best practices for sample collection, along with duty of care and safeguarding principles. A prior survey conducted among nurses in Leicestershire revealed that while basic knowledge of HPV was sufficient, there were notable deficiencies; for instance, 62.8% incorrectly believed that HPV requires treatment. Additionally, there was uncertainty regarding the

role of the Test of Cure (TOC), and participants lacked current knowledge about the vaccine. (10)

7.3 Influence of the vaccine

Data showed that (8) 98.9% that equals 93 agreed that they would recommend the HPV vaccine, and 83 nurses thought that the vaccine should be offered to boys. The data (10) also pointed out the answers from individuals who did not agree or who were unsure with the boy's vaccination. The most common answer was that they need more information before they would be ready with the program extending to boys. Other concerns were cost effectiveness, if the males get the herd immunity already from the national vaccination program, are those men who are having sexual intercourse with other men getting the most benefits from the program. The data (8) also shows that those who are disagreeing with the boy's vaccination program are also those who need more information or that their HPV knowledge score is lower to those who agree. The main reasons why vaccination may not be taken according to the data (5) are the ignorance about the HPV and the lack of information and knowledge of the benefits of the vaccination, the age of the person, lack of confidence influences the decision making.

The data (8) points out that the vaccine reduces the disease burden. Bivalent and quadrivalent vaccines are the most used HPV vaccines and those protect against the HPV types 16 and 18. 70% of all cervical cancers are caused by those types.

According to the data (3, 5, 8, 10) it has been shown that positive attitude towards the vaccine, nurse's knowledge about human papilloma virus has been seen as a crucial factor. Lack of confidence and information about HPV, the ability to discuss with a school nurse or a nurse about the vaccination, the flexibility in the vaccination schedule are examples of the reasons which may influence on the decision making whether to take the vaccination or not. In the data (3) it has been indicated that school-based programs are more effective than general vaccination programs.

7.4 Influence of the PAP smear

In early detection of low-grade cytological abnormalities and therefore also cervical cancer it has been shown that human papilloma virus testing, and PAP smear are in crucial role and studies have pointed out significant decrease in cervical cancer cases among vaccinated women (1, 2, 8, 9). Data (1) indicated that the best way to prevent against cervical cancer is to have the HPV vaccination but also to attend the regular screening, such as PAP smear. The importance of the screening, such as PAP-smear is because the human papilloma virus vaccine does not protect against all types of HPV that causes cancer (1).

8 DISCUSSION

8.1 Ethics and reliability

During the thesis and research process, Tampere University of Applies Sciences' guideline for bachelor's thesis was observed and the data used was collected, analysed, and referred to in an ethical, honest and transparent way. The data search is presented in the Prisma flow chart in Figure 1 to show and interpret that the whole research process was made in a structured and reliable way. Work and research made by other researchers is referred to in a decent and respectful way and the citing of those publications are found both in-text and in the reference list.

8.2 Conclusion

The findings from the literature review bring out the nursing methods in the prevention of cervical cancer. Findings highlight the importance of the HPV vaccination, screenings such as PAP smear, educating the children and parents, and the importance of sexual education in schools. The research showed that more information about the human papilloma virus, infection caused by it and the HPV vaccine people have, the willingness to take HPV vaccine increases. Data also took into consideration that it is crucial to remember to take screenings even with having HPV vaccinations due to the small possibility to have a cell changes or even cervical cancer after all, because the vaccination protects only against type 16 and 18 of human papilloma virus.

As it is not possible to learn too much to provide the best medical care, an extensive knowledge of cervical cancer and human papilloma virus should be a requirement for future health care professional as they will be the first point of contact for seeking information and treatment. As nurses, public health nurses, and midwives among the other health care professionals are the ones who children, adolescents and adults reach out to for information, they must have the ability to communicate and share their knowledge in understandable and non-judgmental

way. Nurses are in important position when it comes to gaining children's, adolescents, and their parents' trust in case of talking about sensitive topics.

As the data pointed out, it is now and in the future crucial to make sure that nurses among the other health care professionals do have the adequate knowledge about human papilloma virus, infection caused by it, and cervical cancer itself when it comes to nursing methods in the prevention of cervical cancer. It has been suggested from the nurses that employers should have different kind of training methods, such as online options, when there is a constant need for securing the knowledge of the employees. Online option has been considered good option since the employee could take part of the training no matter where they are and that could increase the number of participants.

Currently, the Finnish vaccination program is also vaccinating boys. However, the vaccination of boys is a controversial topic, and more research should be done on whether it is necessary to vaccinate boys or if it is just a waste of money, as it is claimed. Sharing information with adolescence and adults about the HPV vaccine, human papilloma virus itself and what it means and that it can lead to cancer at worst is important. In schools, it would be good to add lessons where the topic would be HPV, vaccines and what causes it and how it is transmitted. The amount of sexual education should also be increased in school, so that the matter becomes natural among adolescence, and to let them know that there is no need to be ashamed of talking about it. The more natural the topic becomes, the easier it is for adolescents to talk about it with adults and nurses, and according to research, the enthusiasm for vaccines increases.

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APPENDICES

Appendix 1. Title

Appendix 1. Table 8. Description of eligible studies

Authors, year and country	Purpose	Design and Sample	Results
(1) Campbell, H.E., Gray, A.M., Watson, J., Jakcson, C., Moseley, C., Cruickshank, M.E., Kitchener, H.C. & Rivero-Arias, O. 2020. UK	To assess the preferences of non-attending young women for alternative ways of delivering cervical screening.	Postal discrete choice experiment (DCE), strategic. study of interventions. Responses were analysed using mix multinomial logit model. The predictive analysis identified the most preferable behaviours during strategic trial.	The Discrete Choice Experiment (DCE) achieved a response rate of 5.5%, with 222 respondents from a sample of 4,000. An impressive 94% of participants recognized the importance of cervical cancer screening. The analysis revealed significant preference heterogeneity, particularly regarding the location of testing. Among the options evaluated, unsolicited self-sampling kits for home use were deemed the most preferable compared to current screening

			methods. The STRATEGIC trial confirmed the effectiveness of self-sampling, although many women who used these kits still opted for conventional cytology screenings.
(2) Choma, K. & Mckeever, A.E. 2015. US.	To determine the effects of a Web-based continuing education (CEU) program on advanced practice nurses' knowledge of current cervical cancer screening evidence-based recommendations and their application in practice.	Web-based CEU program that is developed for APNs. For Advanced practice nurses. To test if APN's knowledge level of cervical cancer and its relationship with HPV can be improved with the web-based program.	New evidence-based recommendations for cervical cytology screening guidelines have been developed to address several key issues. These guidelines aim to reduce over-screening and the associated physiological and psychological burdens of HPV infection and cervical disease. Additionally, the recommendations seek to lower healthcare costs and minimize excessive follow-up procedures. Overall, these changes

			are designed to improve women's health outcomes while streamlining the screening process.
(3) Economou, F., Kalemikerakis, L., Drakopoulou, M, & Kavga-Paltoglou, A. 2022. Greece. Vaccination's Role in Prevention of Human Papillomavirus (HPV) Infection and the Contribution of Community Nurses.	Purpose is to investigate vaccination programs as a measure to prevent HPV and the role of the nurses in the success of these programs.	Journal article – research, systematic review, tables/ charts, PRISMA flow Chart. Articles that are published from 2012 to 2022 in Greek and English language in the online databases PubMed and Google Scholar with specified keywords. 203 articles were found, but 14 of those were evaluated.	The decision to receive HPV vaccination is influenced by multiple factors. Key barriers include the young age of students, lack of awareness about HPV's effects and the benefits of vaccination, mistrust in state and health workers, poor service delivery, and varying health or religious beliefs. However, information campaigns conducted in schools have been effective in enhancing adolescents' understanding of HPV prevention methods. Overall, these initiatives have the potential to improve

			vaccination uptake among young people.
(4) Ersin, F. & Bahar, Z. Turkey, 2017. Effects of Nursing Interventions Planned with the Health Promotion Models on the Breast and Cervical Cancer Early Detection Behaviors of the Women.	To study the perform of a early detection behavior of breast and cervical cancer of women over 40.	quasi-experimental study. Research sample was composed 100 women, 50 of whom constituted the experiment group and 50 of whom constituted the control group.	At the conclusion of nursing interventions using health promotion models, the experimental group demonstrated higher rates and improved perceptions regarding early detection behaviors for breast and cervical cancer compared to the control group. Additionally, there was a significant reduction in the perception of inhibiting factors among the experimental group. These findings suggest that health promotion strategies can effectively enhance awareness and encourage early detection behaviors in women.

(5) Foran, C. & Brennan, A. 2015. Uk.	Purpose is to explores the prevention and early detection of cervical cancer in the UK.	Literature review. Women under the age of 25 years who may develop cervical cancer. UK policy gap that might overlook these women who are benath the age for initial screening but exceed the age for vaccination.	Barriers to implementing change in sexual health education exist for nurses and health professionals, including a lack of confidence, feelings of embarrassment, and fear of upsetting service users. Additionally, there is often a lack of knowledge regarding HPV, coupled with conservative attitudes toward sexuality and anxiety in addressing sexual concerns. Nurses, who typically spend more time with patients, may find it particularly challenging to discuss sensitive topics due to cultural, societal, and religious taboos surrounding sexuality. Nevertheless, the literature emphasizes the

			need for safe, accessible, and effective sexual health education for young people, a stance supported by health policy across the UK, highlighting the necessity for further research in this area.
(6) Kalita-Kurzynska, K. & Duba-Zalewska, A. 2022. Poland.	An assessment of the knowledge about HPV infection prevention of female students from different degree courses at the Medical University of Warsaw	Author's questionnaire. Calculations were performed in Microsoft Excel and SPSS. Study was conducted among 181 female students who studied one of the three degree courses: nursing, midwifey and public health, using diagnostic survey, Medical University of Warsaw, Poland	All female students accurately defined the abbreviation "HPV." Midwifery students were more likely than their peers to identify HPV oncogenic types 16 and 18 as causes of cervical cancer. Additionally, nursing students demonstrated a greater understanding than midwifery and public health students regarding the fact that barrier contraception reduces the risk of infection, although

			it does not completely eliminate it. Notably, knowledge about HPV vaccine prophylaxis was consistent across all degree courses, showing no significant variation.
(7) Mcllfatrick, S., Keeney, S., Mckenna, H., McCarley, N. & Mcllwee, G. 2014. Ireland.	To investigate the actual and the PCN in the prevention of cancer.	Sequential confirmatory mixed methods. Questionnaire. Interviews. Postal questionnaires (n=500) were administered to PCNs (n=225 returns) followed by semi-structured interviews (n=15).	Nurses expressed that their role in cancer prevention could be enhanced through additional practice-based training and improved inter-professional collaboration. Although 128 surveys were completed, with 94 fully answered, overall awareness of basic HPV facts was adequate, yet detailed knowledge was lacking, as 9.6% failed to recognize that HPV can cause cervical cancer and 62.8% mistakenly be-

			lieved that HPV requires treatment. Furthermore, not all practice nurses felt sufficiently informed about HPV, highlighting a clear need for improved training provision.
(8) Patel, H., Austin-Smith, K., Sherman, S.M., Tincello, D. & Moss, E.L. 2017. UK.	The purpose is to evaluate the HPV training provided to practice nurses and determine their lecel of HPV knowledge.	A web-based survey. Survey was distributed to 147 general practice surgeries in the Leicester, Leicecstershire and Rutland regions between May and July 2015. Survey explored four broad areas: demographics/level of experience, HPV knowledge, attitudes towards the HPV vaccine and self-perceived adequacy of HPV knowledge. 128 completed surveys, with 94 complete responses. Universities in UK.	A total of 128 surveys were completed, yielding 94 fully answered responses. While overall awareness of basic HPV facts was adequate, there were gaps in detailed knowledge, with 9.6% failing to recognize that HPV can cause cervical cancer and 62.8% mistakenly believing that HPV requires treatment. Additionally, not all practice nurses felt adequately informed about HPV, indicating a

			clear need for improved training provisions.
(9) Pakai, A., Mihaly-Vajda, R., Horvathne, Z.K., Gabra, K.S., Bogdanne, E.B., Olah, A, Zrinyi, M. & Ujvarine, A.S.2022. Hungary.	To identify causes, concerning the quality of the patient-provided relationship, that predict past HPV screening and vaccination turnout of Roma women in Hungary.	Cross-sectional research, self-developed, culturally sensitive questionnaire. 368 participants were randomly selected from census register. Community nurses contacted participants and distributed surveys, which were mailed-in by participants.	In the total sample, 17.4% of women reported attending at least one cervical screening and receiving HPV vaccination in the past. Negative screening experiences were positively associated with perceptions of racially unfair behavior from physicians. Women who had no negative past experiences were 4.5 times more likely to attend screenings, while those screened or immunized by a community nurse were 3.3 times more likely to participate. Additionally, feeling no shame about attending screenings increased the likeli-

			hood of participation by 1.6 times. Factors such as evaluating the screening process as painful, being motivated solely by financial reasons, and the need for extensive travel decreased the odds of attendance by 50%, 40%, and 41%, respectively.
(10) Sherman, S.M, Cohen, C.R., Denison, H.J., Bromhead, C., Patel. H. 2020. UK & NZ.	To gather information and evaluate what healthcare professionals across the UK know about HPV.	Cross-sectional study. Total of 643 UK-based HCPs from primary and secondary care took part in an anonymous cross-sectional survey between March and April 2018. The survey measured general HPV knowledge; HPV triage and test of cure knowledge	Participants demonstrated a generally good understanding of HPV and the vaccination, but there were notable gaps in detailed knowledge regarding the National Health Service HPV testing processes and the health effects of HPV on males. Knowledge scores related to triage, test of cure, and vaccination were associated with

			the number of years since HPV training. Nurses and doctors working in colposcopy clinics showed significantly higher knowledge across all domains compared to those in other roles. While 76.2% of participants felt adequately informed about HPV, 35.6% suggested improvements in training, emphasizing a need for increased frequency and broader topics. Overall, the results indicate that additional training is essential for healthcare professionals to navigate the evolving landscape of HPV screening and vaccination in the UK.