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Original Article

Knowledge and attitudes of Mexican mothers in the non-acceptance of the human papillomavirus vaccine

Conocimientos y actitudes de madres mexicanas en la no aceptación de la vacuna del virus del papiloma humano

Conhecimento e atitudes de mães mexicanas sobre a não aceitação da vacina contra o papilomavírus humano

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GIMF. Initiated the study from conceptualization. Was responsible for setting up the resources. Wrote the original draft, conducted a revision of the article and performed the formal analysis of the data; VNN. Was responsible for establishing the methodology. Served as supervisor in planning and execution and provided original writing and revision of the manuscript; CAFR. Was responsible for the revision of the article, the execution and evaluation of the data analysis and the overall revision of the manuscript; FJBH. Conducted the validation, research and supervision of the manuscript; JAMA. Responsible for establishing the manuscript's resources, validation and research; AMN. Conducted the validation, research and supervision of the manuscript.

ABSTRACT

Introduction. The human papillomavirus has a prevalence of 11.7% among women, and vaccination is the most effective prevention strategy; however, in Mexico it is only applied to 14.4% of all girls between 9 and 12 years of age. **Objective.** To identify the knowledge and attitudes of Mexican mothers in the non-acceptance of the human papillomavirus vaccine for their daughters. **Methodology.** Qualitative hermeneutic phenomenological study, with interviews with six Mexican mothers who did not accept the vaccine for their daughters. Purposive sampling, a guide based on the literature review was applied in 2021 with online format, transcription, thematic analysis and processing in MAXQDA software version 18.2.0. **Results.** Interviews were conducted with mothers between 30 and 40 years of age, most of whom had a bachelor's degree, were Catholic and were employed by government institutions. Three core categories were obtained: 1) meaning of human papillomavirus; 2) human papillomavirus vaccine; and 3) prevention and health promotion for human papillomavirus vaccine, with 9 subcategories addressing: knowledge, beliefs, misinformation, benefits, motivation, and lack of acceptance of the vaccine. **Discussion.** Studies show that lack of information leads to non-acceptance of the human papillomavirus vaccine, which limits timely immunization of girls, coinciding with the results found. **Conclusion.** Limited knowledge and lack of reliable information affect the negative attitudes of mothers who refuse the human papillomavirus vaccine for their daughters. Nursing interventions with relevant and impactful information will contribute to healthy individual and family behaviors.

Keywords:
Health Knowledge, Attitudes, and Practices; Papillomavirus Vaccines; Vaccination Refusal; Qualitative Research; Health Promotion

RESUMEN

Introducción. El virus del papiloma humano tiene una prevalencia del 11.7% en mujeres, siendo la vacunación la estrategia de prevención más efectiva; sin embargo, en México solo se aplica al 14.4% del total de las niñas de 9 a 12 años. **Objetivo.** Identificar los conocimientos y actitudes de madres de familia en la no aceptación de la vacuna del virus del papiloma humano para sus hijas. **Metodología.** Estudio cualitativo fenomenológico hermenéutico, con entrevista a seis madres mexicanas quienes no aceptaron la vacuna para sus hijas. Muestreo intencional, se aplicó en el 2021 una guía fundamentada en la revisión de literatura con formato en línea, con transcripción, análisis temático y procesamiento en el software MAXQDA versión 18.2.0. **Resultados.** Se realizaron entrevistas a madres de entre 30 a 40 años, la mayoría con licenciatura, religión católica y empleadas de institución gubernamental. Se obtuvieron tres categorías centrales: 1) significado del virus del papiloma humano; 2) vacuna del virus del papiloma humano y 3) prevención y promoción de la salud para la vacuna del virus del papiloma humano, con 9 subcategorías que abordan: conocimiento, creencias, desinformación, beneficios, motivación y falta de aceptación de la vacuna. **Discusión.** Estudios evidencian que la falta de información provoca la no aceptación de la vacuna del virus del papiloma humano, lo que limita la inmunización oportuna en las niñas, coincidiendo con los resultados encontrados. **Conclusión.** El bajo conocimiento y falta de información confiable afecta a que las madres presenten actitudes negativas de no aceptación de la vacuna del virus del papiloma humano para sus hijas. Las intervenciones de enfermería con información pertinente y de impacto aportarán a un comportamiento saludable individual y familiar.

Palabras clave:
Conocimientos, Actitudes y Prácticas Sanitarias; Vacunas contra Papillomavirus; Negativa a la Vacunación; Investigación Cualitativa; Promoción de la Salud

RESUMO

Introdução. O papilomavírus humano tem uma prevalência de 11.7% em mulheres, sendo a vacinação a estratégia de prevenção mais eficaz; no entanto, no México, apenas 14.4% do total de meninas de 9 a 12 anos são vacinadas. **Objetivo.** Identificar o conhecimento e as atitudes das mães quanto à não aceitação da vacina contra o papilomavírus humano por suas filhas. **Metodologia.** Estudo hermenêutica fenomenológico qualitativo, com entrevistas com seis mães mexicanas que não aceitaram a vacina para suas filhas. Amostragem intencional, foi aplicado em 2021 um guia baseado na revisão de literatura em formato online, com transcrição, análise temática e processamento no software

MAXQDA versão 18.2.0. **Resultados.** Foram realizadas entrevistas com mães entre 30 e 40 anos, a maioria com graduação, religião católica e funcionárias de instituição governamental. Foram obtidas três categorias centrais: 1) significado do papilomavírus humano; 2) vacina contra o papilomavírus humano e 3) prevenção e promoção da saúde para a vacina contra o papilomavírus humano, com 9 subcategorias que abordam: conhecimento, crenças, desinformação, benefícios, motivação e falta de aceitação da vacina. **Discussão.** Estudos mostram que a falta de informação leva à não aceitação da vacina contra o papilomavírus humano, o que limita a imunização oportuna nas meninas, coincidindo com os resultados encontrados. **Conclusão.** O baixo conhecimento e a falta de informações confiáveis afetam as atitudes negativas das mães em relação à não aceitação da vacina contra o papilomavírus humano para suas filhas. Intervenções de enfermagem com informações relevantes e impactantes contribuirão para um comportamento saudável individual e familiar.

Palavras-chave:
Conhecimentos, Atitudes e Prática em Saúde; Vacinas contra Papillomavirus; Recusa de Vacinação; Pesquisa Qualitativa; Promoção da Saúde.

Introduction

Human Papillomavirus (HPV) is a major health problem worldwide, with a prevalence of 11.7%, being the most frequent Sexually Transmitted Infection (STI) in sexually active women. Moreover, Latin America has the second highest prevalence in the world, at 16.1% (1,2), with Mexico being the most affected country, reporting 2,882 cases per year, without taking into account the asymptomatic population (3). In this regard, there are more than 200 HPV types that are classified into low-risk genotypes responsible for 90% of anogenital warts and high-risk genotypes found in 98.8% of Cervical Uterine Cancer (CUC), which had an annual age-standardized mortality rate of 13.3/100,000 in 2020 (4-7).

Accordingly, the World Health Organization (WHO) (5) proposes a prevention and control approach for CUC, with the HPV vaccine being the safest and most efficient way to prevent infection, precancerous lesions and invasive cancer. This vaccine was artificially developed from recombinant deoxyribonucleic acid (DNA) technology and purified viral capsid L1 proteins and has been marketed since 2006 (4). It is divided into bivalent, tetravalent and nonavalent vaccines, which protect against the main types of HPV (8).

They are 90 to 100% effective if applied to the priority population, which is girls between 9 and 14 years of age before the onset of sexual activity (8). Since 2012, bivalent and tetravalent vaccines have been administered free of charge in Mexico to girls aged 9 to 12 years, in two doses with an interval of six months (9), and the nonavalent vaccine is marketed in the private sector. Similarly, after the age of 15 years or once sexual activity has begun, the vaccine can be applied up to 45 years of age in women and men; however, the efficacy decreases by 40 to 80% due to the possible exposure that may occur prior to starting the vaccination schedule (1,8).

In this regard, the Universidad Nacional Autónoma de México (National Autonomous University of Mexico) (9) states that for a population of more than 125 million Mexicans, of which 5.7% are girls between 9 and 14 years of age, only 1.8 million doses are administered per year. This may be due to the lack of information about the infection, in addition to the advantages and disadvantages (myths and prejudices) about the vaccine, which causes rejection at the family level, since the family exerts a strong influence on the decision of mothers, fathers and/or guardians regarding immunization in girls (9-13). As a result, non-acceptance of the HPV vaccine may be due to various individual and social factors such as erroneous beliefs about vaccination (encouragement of early sexual activity, events supposedly attributable to vaccination, religious convictions and the vaccine as an experiment), misinformation (confusing information in the media), limited knowledge regarding HPV and the vaccine (signs, symptoms, risk factors, effectiveness and safety of the vaccine) (10-14). In addition, there are structural factors such as lack of promotion of the vaccine, lack of financing, lack of biologicals in health institutions, and health services provided in inaccessible places (9-13).

On the other hand, there are individual factors associated with vaccine acceptance such as positive beliefs (perception of prevention against HPV and CUC, effectiveness and efficacy of the vaccine) and adequate knowledge regarding the infection and the vaccine (11-13). Therefore, it is important to take into account the factors that influence non-acceptance, such as beliefs, interpersonal influences, barriers, perceived benefits, as well as knowledge about the vaccine, because they are both positively and negatively associated with acceptance of the immunization (13,15).

These factors have been analyzed with a quantitative approach that allows for a primary analysis (15); however, it is important to identify what Mexican mothers know about HPV vaccination through a qualitative methodology with a phenomenological orientation, since this provides

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an understanding of prior knowledge (16-18), in this case, the mothers' knowledge regarding the refusal of vaccination of their daughters, in order to reconstruct meanings through subjective narration (19), as well as attitudes, understood as behaviors that are determined by the positive or negative beliefs of the participants (20).

Thus, the Health Promotion Model (HPM) of Pender et al. (21), provides a theoretical basis for studying the way in which people make decisions based on their own care, making it a relevant tool for understanding the complexity of the non-acceptance of the HPV vaccine among mothers, since it exposes the factors involved in behavior, attitudes, beliefs and motivations, which, by facilitating the nursing professional's understanding of this phenomenon, will allow him/her to develop prevention and health promotion programs for mothers and their daughters. In view of the foregoing, the objective was to identify the knowledge and attitudes of Mexican mothers in the non-acceptance of the human papillomavirus vaccine for their daughters.

Methodology

A qualitative study was carried out with a phenomenological approach (17,18), in which the four phases proposed by Fuster-Guillen (22) were applied (Figure 1). For the development of the first phase, the authors used reflexivity as a tool to address any pre-conceived information and perspectives (23). Participants were selected through a purposive sampling, consolidated by the number of people investigated who met the selection criteria until reaching the possible saturation of data (24-26), thus obtaining a total domain with data collection and replication (26). In this manner, six research subjects from the state of Guerrero, Mexico, were selected with characteristics that represent different discourses considering illiteracy, low coverage of health services and the presence of reported cases of HPV (3). Inclusion criteria were: 1) have a daughter between the ages of 9 and 12, enrolled in an educational institution; 2) who had not accepted any doses of the HPV vaccine; 3) who lived in the urban area; and 4) who had a mobile device such as a cell phone, tablet or computer with internet connection.

In the second phase, participant data were obtained (22); in this way, contact was made through a primary liaison within an educational institution, where an invitation was extended, and contact information was provided. Interested participants contacted the lead researcher via telephone calls, and the dynamics of participation were then explained, and informed consent was provided indicating that the sessions would be audio and video recorded. Once they agreed to participate, an initial online session was scheduled during which it was identified whether they met the inclusion criteria, agreements were established for the following sessions, sociodemographic data were collected, and concerns were clarified (27).

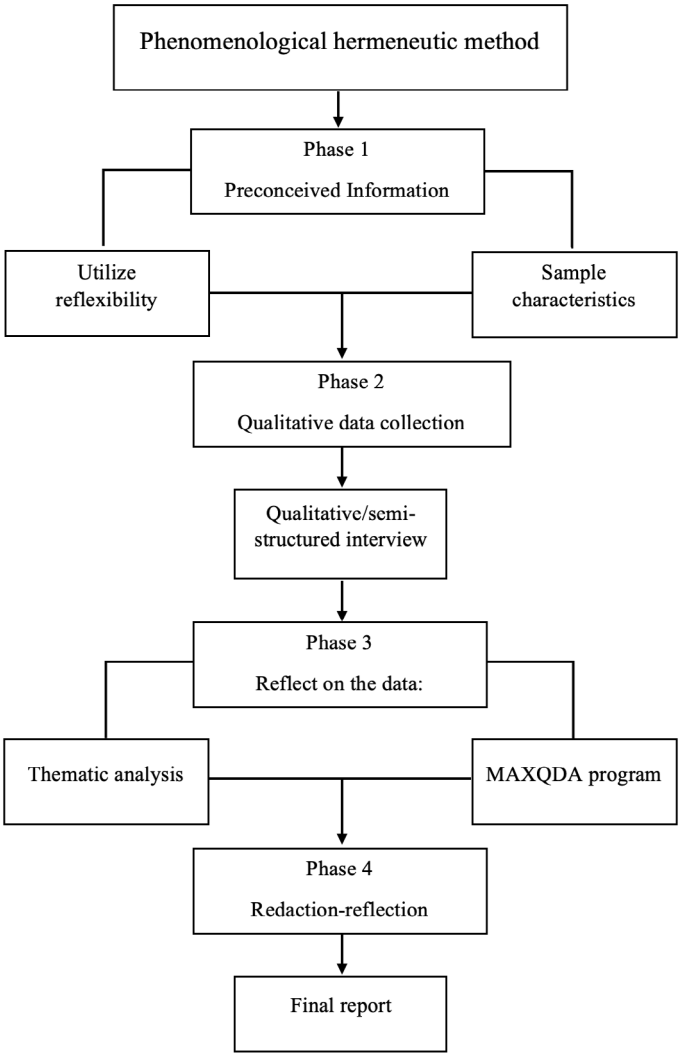

Figure 1. Methodology phases
Source: prepared by authors.

For the second session, qualitative/semi-structured interviews were conducted, which allowed for an intimate, manageable and flexible approach with the participants, through an online format of video interviews via the Google Meet platform, at a favorable time. This ensured a comfortable and trusting environment and elicited and explored the narratives regarding the non-acceptance of HPV vaccination in their daughters, without putting the health of the participants at risk, due to the pandemic situation of COVID-19 (27-29).

The interviews were conducted from July to October of 2021, based on a guide comprised of three sections. The

first contained general questions aimed at establishing a bond of trust *(rapport)*; the second contained questions based on the literature review that addressed previous knowledge and meanings regarding the vaccine, which allowed for a deeper understanding of the topic; finally, the last section contained closing and farewell questions (29). Each interview lasted approximately 40 minutes and concluded with words of thanks for the participants. Data were treated confidentially and will be kept in encrypted digital storage by the principal researcher for a period of two years and deleted at the end of this time.

The third phase is intended to reflect on the knowledge and attitudes found in the narratives (22), using the thematic analysis proposed by Braun and Clarke (30), which consists of six stages: 1) data familiarization, by transcribing the interviews into the Microsoft Office Word 2010 program, in which a list of general, interesting and possibly relevant ideas was generated; 2) generation of initial codes, with the use of the MAXQDA version 18.2.0 program, where initial codes were developed and coded and named as potentially important; 3) search for topics, in which various codes were classified and the relationship between them was evaluated in order to obtain topics and sub-topics; 4) review of the topics, where the codes obtained were analyzed and internal homogeneity and external heterogeneity were obtained; 5) definition and denomination of the topics, in which the codes that allow each topic to be adequately defined were identified and determined, linking them to the variables of the Health Promotion Model (MPM) (21). Finally, for the fourth phase proposed by Fuster (22) and for stage 6 of the thematic analysis, a report structured in a concise, coherent and logical manner was prepared, containing a detailed description of the findings obtained from the participants' narratives (28,30).

The research was approved by the Research and Graduate Studies Committee of the School of Nursing-BUAP, with registration number SIEP/045/2021. Furthermore, the study adhered to the Regulations of the General Health Law on Research, which establish the criteria of respect, protection and dignity, as well as the principles of confidentiality, voluntary participation and the signing of informed consent (31). It was also governed under the code of ethics for nurses in Mexico, complying with the principles of beneficence, nonmaleficence, justice and autonomy (32).

Finally, consideration was given to the quality criteria proposed by Piza et al. (28), which are: 1) credibility, by collecting and transcribing the interviews verbatim, as well as using the researcher's triangulation, in addition to consistency in the data analysis; 2) transferability, with the use of selection criteria that frame the characteristics of the participants and the description of the context in which they were conducted, and 3) reliability, with flexible but systematized data analysis with a computer program and the use of reflexivity by the researchers.

Results

Six qualitative/semi-structured interviews were conducted with mothers of girls aged 9 to 12 years old in the state of Guerrero, Mexico, aged between 30 and 40 years old (Table 1). The analysis of the data yielded three central categories from which nine subcategories with their respective live codes were derived (Figure 2):

Table 1. Sociodemographic data of the participating mothers

Sheet	Age	Marital status	Level of education	Religion	Profession	Occupation
M1	32 years	Married	High school	Catholic	Stylist	Housewife
M2	40 years	Married	Bachelor's Degree	Catholic	Accounting	Employed at government institution
M3	39 years	Married	Bachelor's Degree	Catholic	Chemistry	Housewife
M4	39 years	Married	Master's	Católica	Administración	Employed at government institution
M5	37 years	Divorced	Bachelor's Degree	Catholic	Dentistry	Employed at government institution
M6	37 years	Married	Bachelor's Degree	Christian	Marketing	Employed at government institution

Source: prepared by authors.

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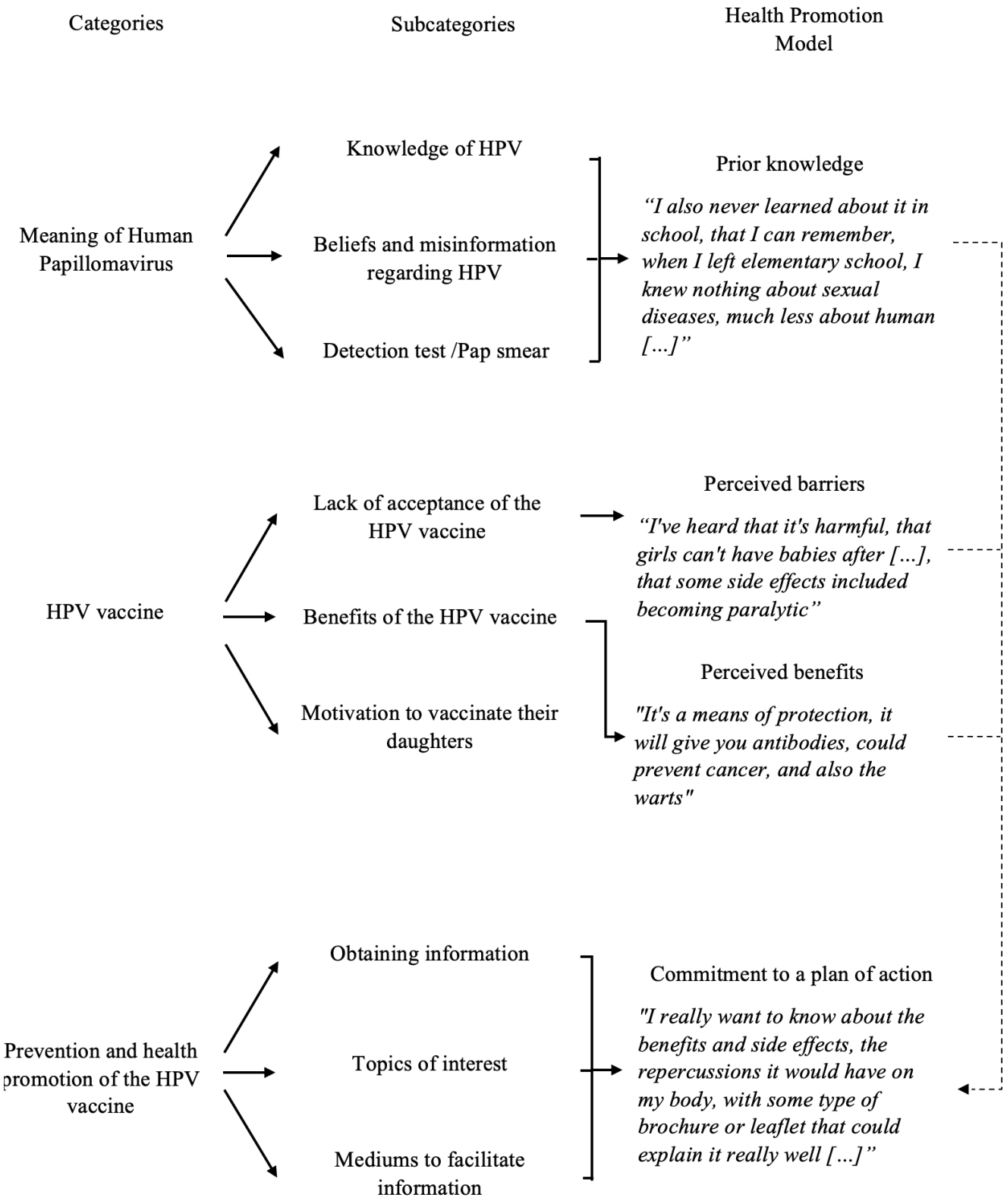

Figure 2. Results linked to the Health Promotion Model.
Source: prepared by authors.

Category I. *Meaning of the human papillomavirus,* refers to the characteristics and perceptions of the persons surveyed about HPV, as well as the test for its detection. According to the narratives, three sub-categories were obtained:

1) Knowledge of HPV

Refers to the knowledge they have of how the HPV is transmitted: *"it is a virus that is transmitted by sexual contact in the genitals"* (M1); signs and symptoms include genital warts: *"they are like little pimples, little warts, like a rash that appears in the genital area"* (M3); complications such as developing CUC: "*in women, it can cause cervical uterine cancer, very dangerous"* (M2); infection sites: *"it can also develop on the throat […], in moist areas like the cervix and also the anus"* (M3); risk factors such as having multiple sexual partners: *"having sexual relations with several people"* (M4); prevention methods such as using a condom: *"of course, the condom is not just for papilloma, there are many other diseases that can be prevented with it […]"*; (M5) and getting the HPV vaccine: *"you know you get the vaccine to keep from getting sick"* (M4).

2) Beliefs and misinformation regarding HPV

Addresses the knowledge and beliefs the participants have regarding HPV infection and lack of information. We learned that they believe HPV can be transmitted in public bathrooms: *"Maybe in a public bathroom, some place that is not so clean, I think"* (M1); they also stated that it is not necessary to use a condom when you have a steady partner: *"I don't take precautions, because I'm with my husband, and I say, if something happens, he and I will work it out"* (M4), and they don't know if the condom can protect them: *"I don't know if the condom can prevent it"* (M4); in this sense, they display a lack of knowledge related to the little information that was provided to them at home during childhood: "*My mom never talked to me about sex […]*" (M1), and in school: *"I also never learned about it in school, that I can remember, when I left elementary school, I knew nothing about sexual diseases, much less about human papilloma ...]"* (M6), as well as little information transmitted over the media: *"unfortunately I know very little, I feel that there's not enough information on the subject"* (M6), and lack of interest in being informed: *"I also didn't try to find out much about the topic, I guess I had no need to"* (M4).

3) Detection test /Pap smear

Reports what it means for the participants to get the pap smear. We found that they knew they had to do the test with trained staff *"I go to my gynecologist to get my checkup […]"* (M2); they also expressed negative feelings about getting the pap smear: *"being scared, not knowing, saying oh no, I'd rather not go, it's embarrassing for them to see me […], basically they scare you and tell you that you have to get it done every so often"* (M6).

Category II. *HPV vaccine* addresses the benefits understood as positive beliefs, lack of information about the HPV vaccine, and motivation to give it to their daughters. From the narratives, three sub-categories were obtained:

1) Lack of acceptance of the HPV vaccine

Includes the barriers that influenced the participants to not vaccinate their daughters. The main concern was possible adverse reactions: *"I've heard that it's harmful for women […]"* (M4), *"that the girls can't have babies […], that some side effects included becoming paralytic […]"* (M6); also, feelings of insecurity and fear get in the way: *"the truth is I was very scared and that's why I didn't get her the vaccine […]"* (M5), as well as doubts about its effectiveness and efficiency: *"I don't think that vaccine will help you prevent that virus […]"* (M5).

2) Benefits of the HPV vaccine

Addresses the benefits resulting from immunization; in this regard, they expressed that one of the benefits was the protection it provided against HPV infection.: *"It is a means of protection that provides you with antibodies […]"* (M4), as well as for the signs and symptoms derived from the virus: *"Of course it could keep you from getting cancer and also the warts […]"* (M3). They also felt that the HPV vaccine does not cause their daughters to initiate sex at an earlier age: *"it doesn't mean that it promotes or encourages them to start their sexual lives earlier, I definitely don't believe that […]"* (M3).

3) Motivation to vaccinate their daughters

Interprets the willing intent of the participants to vaccine their daughters for the HPV. They claim that in order to decide whether or not to vaccinate, it is important to consider the existing information: *"now that there's more information I would definitely give it to her […]"* (M5), *"the information would trigger the decision whether or not to vaccinate my daughter […]"* (M2), *"I do intend to get her vaccinated, having the information and knowing where"* (M6); they also stated that their daughters' sexual education is an important factor for prevention: *"what better that having some expert explain it and then you're clear on the purpose of the vaccine […]"* (M2), *"it's informing them as well, not just the parents, and then in the future they can be protected […]"* (M6).

Category III. *Prevention and health promotion of the HPV vaccine* contains information on the mediums, people and topics of interest that contribute to the acceptance of

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HPV immunization by the persons in the survey. From the narratives, three sub-categories were obtained:

1) Obtaining information

Refers to the places, mediums and materials where they obtained information about the HPV vaccine. Billboards and posters were the main medium: *"there's nothing like billboards where they explain everything […]"* (M1), *"you see informational posters with drawings and colors and they get your attention […]"* (M4); Another medium were the people in their close circle, since they are the ones who provide them with the most extensive information on the subject: *"I heard it from some of my friends who suffered from this virus […]"* (M2), *"I asked a gynecologist, and the topic came up"* (M4); the places were mostly healthcare centers: *"so I went to a healthcare center and saw information about it in the waiting room"* (M1) and media: *"This I heard on TV, in the news, on social media […]"* (M4).

2) Topics of interest

Includes topics of interest. We found that they wanted to learn more about HPV and the vaccine: *"now I want to know what it is, […] and if there are other ways besides sexual relations that it could be transmitted"* (M5), as well as the benefits, adverse effects and/or complications: *"I really want to know about the benefits and side effects, the repercussions it would have on my body […]"* (M6).

3) Mediums to facilitate information

Comprises the materials, mediums and people that they consider should be included to provide complete and attractive information; in this sense, it was found that the materials that stand out the most for transmitting information are brochures/leaflets: *"some leaflet or brochure that explains it really well […]"* (M2) and educational videos *"maybe a video that could explain everything, I love that method […]"* (M1). On the other hand, we observed that the most requested medium for transmitting information was online, mostly social media: *"it would be good to have the information online so it would be available at any time […]"* (M2), *"now that Facebook is popular, something with images, concise and practical […]"* (M6).

As far as the personnel required to transmit the information, two were identified: 1) through healthcare professionals, who are considered trained and experienced on the topic: *"the health sector, definitely, trained personnel familiar with the subject, someone you know who knows about the subject and can inform you. […]"* (M4) y 2); experiences of other mothers who have already had their daughters vaccinated: *"information from someone who tells you I have already vaccinated her I did this with my daughter, and this may or may not happen to her. […]"* (M2), *"a mother would talk about it in a normal way without medical terms and so it is easier to transmit the information […]"* (M3).

Discussion

The purpose of the study was to identify the knowledge and attitudes of mothers who refuse the HPV vaccine. In this sense, the first category addressed the meaning of HPV, finding that the people surveyed had a basic knowledge of the infection related to the lack of information provided in childhood, as well as from the media, which is consistent with Galbraith-Gyan et al. (12) and Grandahl et al. (16). It showed a lack of knowledge on signs and symptoms, risk factors and means of prevention. Previous knowledge influenced decision-making, thus, they propose that it is necessary to increase reliable and concrete information regarding immunization, so that positive decisions can be made in the vaccination of girls. This makes it possible to determine that prior knowledge influences the acceptance or rejection of the HPV vaccine, and the HPM (21) describes that this knowledge is predictive for the development of healthy behaviors.

For the second category, called the HPV vaccine, it was found that some of the barriers to immunization include the lack of information related to the vaccine in terms of adverse effects, reliability, effectiveness and safety for girls, which is consistent with the findings of Viveros et al. (10), Aquino et al. (11), and Galbraith-Gyan et al. (12), who report the presence of attitudes, negative beliefs and fear in the population regarding HPV vaccination, which becomes an obstacle when making decisions to vaccinate the girls, directly affecting their intention to engage in behaviors that promote their daughters' sexual health (21). The above shows that the lack of information should be remedied by providing reliable, valid and extensive information on the topics previously identified in order to attain the acceptance of immunization by the population.

Likewise, it was found that benefits were perceived with respect to the vaccine such as the feeling of protection against HPV symptoms, as well as for the main complication which is the development of CUC, which is related to what was exposed by Galbraith et al. (12), Degarege et al. (33) and Grandahl et al. (16). These authors report that the population has positive beliefs towards vaccination because they have information on safety and efficacy, which motivates them to vaccinate their daughters. Notwithstanding, the study found that this perception of benefits was not sufficient to elicit health-promoting behavior and acceptance of the vaccine for girls, indicating that barriers are more influential in participants' decision making.

Finally, the third category addressed prevention and health promotion for the HPV vaccine, in which it was found that the most accepted medium for the population was the online format, with the support of educational materials such as brochures and videos, and that information from health professionals was more valuable and trustworthy. Thus, the use of technology through digital media and social networks is a medium that facilitates rapprochement with the population. Health professionals play an important role in decision making, which is in agreement with Benavides et al. (34), who argue that the use of technology is a strategic ally to implement informative interventions and that the recommendations made by the health care provider as an important factor for the acceptance of immunization in the population.

It is necessary to take into account the individual preferences of the population with respect to the information that should be provided about HPV and the vaccine, which will allow them to commit to a plan of action, supported by nursing actions or interventions that aim to promote acceptance and implementation of the HPV vaccine for their daughters (21). Mothers can consider prior knowledge and their attitudes towards immunization, which will have a positive impact on girls' sexual health.

It is important, however, to emphasize the need for general and cost-free HPV vaccine coverage that is available to the entire population, involving children and adults who exceed the application threshold, due to the high prevalence rates of CUC in Mexico (3). It is necessary to call for the modification of public policy in order to protect the health of all people, since access to health care is a universal right which encompasses actions aimed at the prevention of 100% preventable diseases such as HPV, and consequently, the development of cancer.

Conclusions

The data obtained from the narratives of mothers of girls aged 9 to 12 years expose the poor knowledge they have regarding vaccination, derived from the lack of information provided in reliable media, which causes them to have negative attitudes towards immunization in their daughters, causing them to not accept the HPV vaccine. However, they also outline the methods necessary to increase motivation to vaccinate their daughters and the information needed to make a decision regarding girls' sexual health. This is necessary to implement nursing interventions that are targeted to the needs of the population, which will result in healthy behaviors at the individual and family level.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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Ethical responsibilities

This study was approved by the Research and Ethics Committee of the School of Nursing at Benemérita Universidad Autónoma de Puebla (Meritorious Autonomous University of Puebla), with registration number SIEP/045/2021. In addition to adhering to the stipulations of the Regulations of the General Health Law on Research, supported by the Ministry of Health of Mexico.

Protection of people: This study is considered risk-free due to its nature. It was approved by the Institutional Ethics Committee, with registration number SIEP/045/2021

Confidentiality of data: The authors declare that they have followed their work center's protocols on the publication of patient data and have adhered to the Regulations of the General Health Law on Research.

Right to privacy and informed consent: The authors have obtained the informed consent of patients and/or subjects mentioned in the article. This document is in the possession of the corresponding author referred to in the article.

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