

Chapter 1 Knowledge of health personnel about HPV screening tests: a systematic review

Capítulo 1 Conocimiento del personal de salud sobre pruebas de detección de VPH: una revisión sistemática

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Abstract

Objective: to describe the scientific production published between 2009-2019, on the knowledge of health personnel about HPV detection tests.

Methodology: A systematic review based on the PRISMA methodology was developed using three databases selecting studies in english and spanish that were published in indexed journals. Out of a total of 2,611 articles, 1,711 written in english and 6 in spanish were included in the research. After the analysis of the articles, it was observed that they reflect little knowledge about HPV detection tests by the health personnel involved in the Cervical Cancer Timely Detection Program.

Contribution: The development of molecular tests for HPV detection represents a valuable tool, therefore, it is essential to investigate what knowledge the health personnel in charge of the Cervical Cancer Timely Detection program have in relation to these. This work reaffirms the need for continuous educational programs for health personnel so that they can provide correct information on the prevention of HPV infection and cervical cancer to their patients.

Systematic review, Evidence-based medicine, Knowledge

Resumen

Objetivo: describir la producción científica publicada entre 2009- 2019, referente al conocimiento del personal de salud sobre pruebas de detección de VPH.

Metodología: Se desarrolló una revisión sistemática basada en la metodología PRISMA utilizando tres bases de datos seleccionando estudios en idioma inglés y español que estuvieran publicados en revistas indexadas. De un total de 2,611 artículos, se incluyeron a la investigación 1,711 escritos en inglés y 6 en español. Después del análisis de los artículos se observó que reflejan poco conocimiento sobre pruebas de detección de VPH por parte del personal de salud involucrado en el Programa de Detección Oportuna de Cáncer Cervicouterino.

Contribución: El desarrollo de pruebas moleculares para la detección del VPH representa una herramienta de gran valor, por lo que es esencial investigar qué conocimiento tiene el personal de salud a cargo del programa de Detección Oportuna de Cáncer Cervicouterino en relación con estas. Con este trabajo se reafirma la necesidad de programas educativos continuos para el personal de salud con el fin de que puedan proporcionar información correcta sobre la prevención de la infección por VPH y cáncer cervicouterino a sus pacientes.

Revisión sistemática, Medicina basada en la evidencia, Conocimiento

1.1 Introduction

Cervical cancer (CC) it is the fourth most prevalent in women worldwide, with an estimated 570 thousand new cases in 2018 (Antoni *et al.*, 2016). The International Agency for Research on Cancer (IARC) reports that the global incidence was 13.1 per 100,000 women of all ages (Antoni *et al.*, 2016; Almonte *et al.*, 2019). CC is associated with Human Papillomavirus infection, especially subtypes 16 and 18, and becoming today a major public health problem (Pinho Silveira *et al.*, 2016), it is one of the main causes of death among women in Latin America, a region where most countries have not been successful in implementing cytology-based screening programs at the population level (Health Secretary, 2018).

In recent years, from the development of DNA-based screening tests for Human Papillomavirus (VPH) renewed enthusiasm arose in the scientific community about the possibility of having a technology that overcomes the limitations of cervical cytology and that, in conjunction with HPV vaccination, make something that always seemed like a utopia come true: eliminate CC (Castle, 2012). The development of molecular tests therefore represents a tool of great value, since its contribution to primary screening has been proven, reason why its incorporation is part of the current international guidelines (World Health Organization, 2015; Herrera y Sánchez, 2015).

The Pan American Health Organization (PAHO) in its guide to incorporating human papillomavirus testing into CC prevention programs mentions that one of the critical elements in cancer screening programs is the knowledge of health personnel about the technical and operational characteristics of the available tests (Pan American Health Organization / World Health Organization, 2016). Previous work has pointed out the importance of promoting continuing education among health personnel, so that they increase their knowledge and skills regarding CC screening (Gutiérrez-Enríquez *et al.*, 2017; Gutiérrez-Enríquez *et al.*, 2014) and become enablers of it.

Thus, the present work aims to know what the current status is related to the knowledge that health personnel have about the currently available HPV tests through a systematic review. (SR), with the understanding that these are scientific investigations in which the unit of analysis is the original primary studies, in addition to being an essential tool to synthesize the information proven by serious studies, available on a specific topic, increase the validity of the conclusions of individual studies and allow the identification of areas of uncertainty where research is necessary (Ferreira González, 2011).

The guiding research question for conducting this systematic review was: Based on the reported evidence What knowledge does the health personnel who implement the Cervical Cancer Early Detection Program (CCEDP) have in relation to HPV detection tests?

1.2 Methodology

The systematic review process was based on the PRISMA methodology (Shamseer *et al.*, 2015), Three databases were selected to search for original articles: PubMed, SCOPUS and Scielo. The period for obtaining the articles was from December 2018 to February 2019. Keywords were used in english and spanish: Human Papilloma Virus Detection Tests, Human Papillomavirus Infection, Hybrid Capture, Polymerase Chain Reaction, Early Detection of Cancer, Knowledge of Health Personnel and Health Assessment.

Supported by the Boolean operators “and” and “or”, the following algorithms were used for the search: (Human Papilloma Virus Detection Tests) or (Human Papilloma Virus Infection [MeSH Terms]) or (Hybrid Capture) or (Polymerase Chain Reaction) or (Early Detection of Cancer [MeSH Terms]) and (Knowledge of Health Personnel [MeSH Terms]) or Health Assessment). In addition to searching the previous databases, the authors' personal files were reviewed to ensure the capture of all relevant material. Duplicate references were removed before the abstracts of the articles were reviewed.

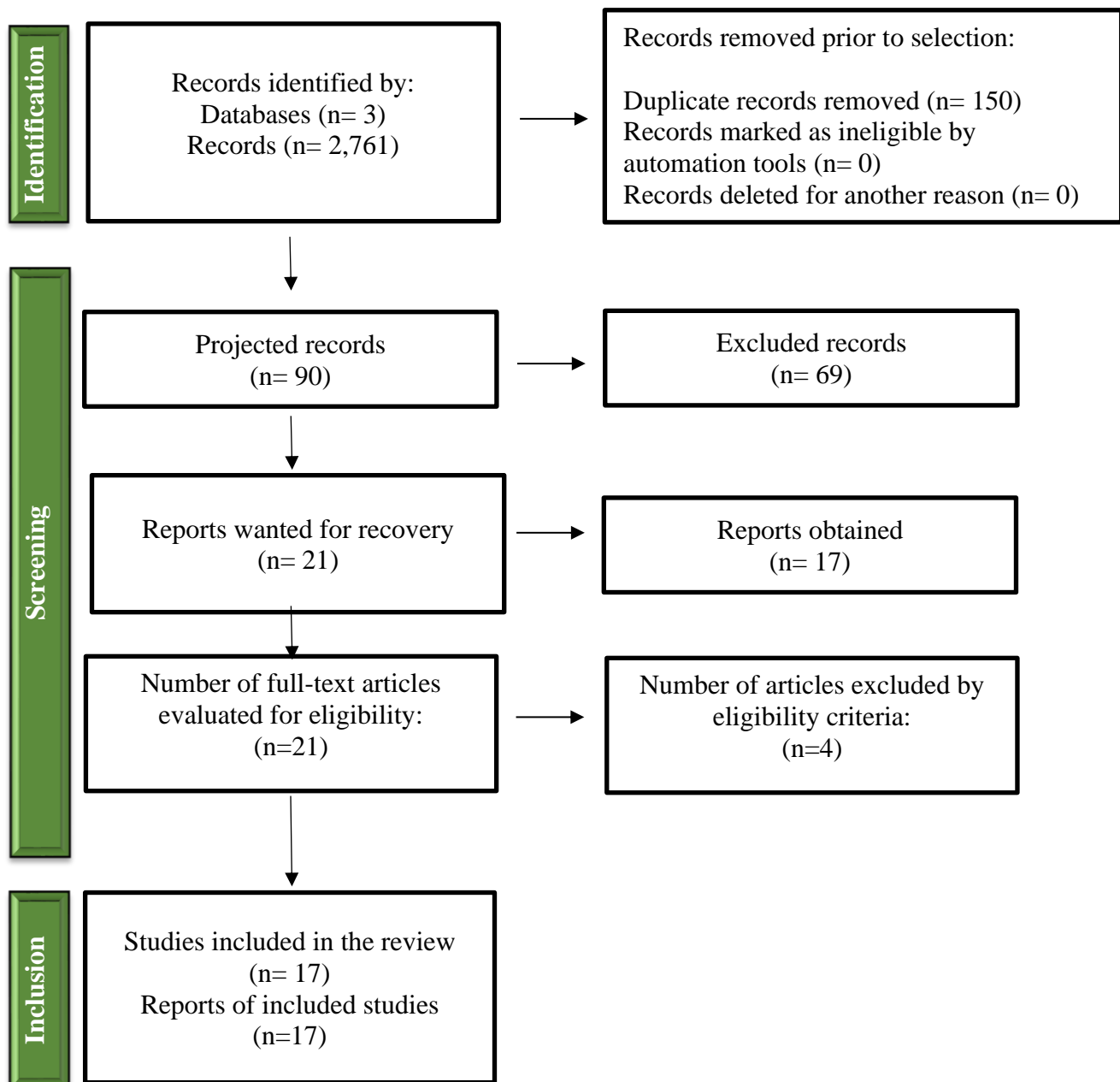
The inclusion criteria considered were articles published in two languages: english and spanish, publications corresponding to the period from January 2009 to December 2019, studies that in their content address the prevention of infection and detection of Human Papillomavirus through the implementation of HPV detection tests, original and/or theoretical research; those publications that describe the knowledge of health personnel about HPV testing. Articles that did not meet the following criteria were excluded: full text access, mention of other methods of prevention of HPV infection such as vaccines, and dissemination on non-scientific internet sites.

The search was carried out by two research analysts, who reviewed the titles and abstracts found, one of them marked papers for recovery, the second analyst audited the search results to verify quality. All marked articles were retrieved in full text, then compliance with the established inclusion criteria was determined. A total of 17 articles were selected in full agreement between the two analysts. The methods and results of each included study were summarized in evidence tables by the first research analyst, who identified and classified potential sources of bias or uncertainty in the studies, writing them in a comment column. The second analyst checked the summary data and assessment of bias for all included studies.

1.3 Results

The initial search gave 2,761 documents in the databases, after the elimination of duplicate references, 2,611 remained. By review of titles and abstracts, 69 references were discarded, of which, when applying the eligibility criteria, 4 articles were excluded, to finally include 17 papers in the systematic review. The PRISMA diagram shown in Figure 1.1 shows the number of items that are being considered at each step of the process.

Figure 1.1 PRISMA flow chart for systematic reviews. Compilation process of the articles included in the systematic review



Source: The PRISMA 2020 statement: an updated guideline for reporting systematic reviews

Twelve articles with a quantitative approach, three with a qualitative approach, and two review articles were included in the research, 59% of the documents were obtained from the PubMed search platform, the year in which the greatest scientific production was obtained was 2017 with 23%, the American Continent was where most of the primary investigations were carried out. These bibliometric data can be seen in Table 1.1.

Table 1.1 Distribution of publications by database, year of publication, origin and journal

Papers	n	%	References
	21	100	
<i>Database</i>			
Scielo	6	35	13, 14, 15, 16, 17, 29
Scopus	1	6	18
Pubmed	10	59	19, 20, 21, 22, 23, 24, 25, 26, 27, 28
<i>Years of publication</i>			
2011	3	18	19, 20, 21
2013	1	6	24
2014	3	18	13, 16, 28
2015	1	6	27
2016	2	11	22, 29
2017	4	23	14, 17, 18, 23

2018	3	18	15, 25, 26
<i>Country of origin of the study</i>			
Mexico	2	11	13, 17
USA	2	11	24, 28
Chile	2	11	15, 16
Argentina	1	6	18
Brazil	1	6	21
Colombia	1	6	29
Cameroon	1	6	19
Tanzania	1	6	20
Greece	1	6	22
Ireland	1	6	26
Italy	1	6	23
New Zealand	1	6	25
Australia	1	6	27
South America	1	6	14
<i>Journal</i>			
Salud pública de México	2	11	13, 15
Salud colectiva	1	6	17
Revista Médica Chile	1	6	16
Cadernos de saúde pública	1	6	18
Revista Salud Pública	1	6	29
Colombiana de obstetricia y ginecología	1	6	14
BMC Women´s Health	1	6	19
African Health Sciences	1	6	20
Aust Fam PHISYCIAN	1	6	27
Prevention Medicine	1	6	24
PLOS One	2	11	25, 26
European Journal of Cancer Prevention	2	11	22, 23
Asian Pacific Journal Cancer Prevent	1	6	21
The Oncologist	1	6	28

Source: Own elaboration

Scientific evidence shows an area of opportunity in the training of personnel who implement the CCEDP, due to the need to increase knowledge in: HPV counseling, testing, HPV infection, its link to CC, the usefulness of the HPV test in screening, as well as the new guidelines of the program. A summary of these needs is found in Table 1.2.

Table 1.2 Articles referring to the knowledge of the health personnel that implement the CCEDP

Reference	Objective	Resulted
León Maldonado L, Allen Leigh B, Lazcano Ponce E. Counseling in the detection of HPV as a cervical cancer screening test: a qualitative study on the needs of women in Michoacán, Mexico. 2014.	Explore the information and counseling needs of a group of Mexican women when using the human papillomavirus test.	The personnel that implement the program for the timely detection and control of CC urgently need training and support materials regarding HPV counseling and testing, on its etiology and link with the CC, as well as on the usefulness of the HPV test within the screening and the new guidelines of the program.
Maya-Salazar JJ, Rojas-Zumaran VA. Human papillomavirus research trends in Latin American compared to high income countries. 2017	Reflect on trends in Human Papillomavirus research in Latin America compared to high-income countries.	HPV prevention techniques and strategies are changing over time, and health professionals involved in prevention programs for CC should increase their knowledge related to these new technologies and interventions. For educational objectives to be successful, a teaching character is required by health personnel.
Ferreccio C. New strategies for the prevention and control of cervical cancer in Chile. 2018	Discuss cervical cancer, HPV, the CC control program and propose alternatives for Chile	The main challenge is resistance to innovation by those responsible for public health, who are called to lead this process.

Léniz Martelli J, Van de Wyngard V, Lagos M, Barriga MI, Puschel Illanes K, Ferreccio Read C. Early detection of cervical cancer in Chile: time for change. 2014	Review the situation of the CC in Chile considering new prevention strategies and national and international evidence, to propose innovations in the national prevention strategy.	Updating providers and the population regarding this disease are key aspects to achieve a modification of the program. To minimize adverse reactions, HPV testing should be accompanied by education on the natural history of the disease and the high prevalence of infection in the population.
Mendoza González Z. Screening program for cervical cancer: public policies and experiences of actors who implement the program in the state of Veracruz, Mexico. 2017	Analyze how the Program for the Detection of Cervical Cancer in a dysplasia clinic and some health centers in the state of Veracruz, Mexico	In health centers, the program is run by nurses, and many are not trained, take shots outside the proper zone. It is essential to have sensitive personnel capable of carrying out their practice with cultural relevance, only by knowing the explanatory models of the different actors will it be possible to try to establish bridges between them.
Curotto M, Borletta P, Paolino M, Arrossi S. Health agents' perspective on the incorporation of self-collected samples in HPV screening programs. 2017	Analyze the perception that health agents have about offering the self-take of HPV test to women and the degree of agreement of the agents to incorporate it into their daily tasks.	Health workers who received special training to explain to women how to perform self-taking, less frequently indicated the existence of problems in the offer due to lack of training.
McCarey C, Pirek D, Marie Tebeu P, Boulvain M, Sama Doh A, Petignat P. Awareness of HPV and cervical cancer prevention among Cameroonian healthcare workers. 2011	To assess knowledge and awareness of cervical cancer prevention among health workers in Cameroon.	Knowledge about the etiology and detection of CC was lower among nurses/midwives. For successful screening programs, all healthcare workers should understand the causal relationship between HPV and CC, as well as the importance of detection as a preventive measure.
Urasana M, Darj E. Knowledge of cervical cancer and screening practices of nurses at a regional hospital in Tanzania. 2011	Determining nurses' awareness of cervical cancer and their own screening practices in a hospital in Tanzania.	The need for additional education regarding the CC is reflected in the dissatisfaction of the nurses with its knowledge. The need for additional education regarding the CC is reflected in the dissatisfaction of the nurses with its knowledge.
Melo Villar L, Dutra Rabello A, Salet de Paula V. Evaluating Knowledge about Human Papillomavirus Infection among Brazilian Health Professionals. 2011	To assess the knowledge about HPV among seventy-nine professionals who completed a questionnaire on diagnosis, transmission, symptoms, prevention, and general information.	General knowledge about HPV was high, as most of them recognized that it is sexually transmitted, the disease may be asymptomatic, or warts may be present on the genitals. However, many professionals did not know that there are variants of HPV and that not all are oncogenic. These data show that more educational programs are needed, especially on the prevention of HPV infection in Brazil.
Farazi PA Hadji P, Roupa Z. Awareness of human papilloma virus and cervical cancer prevention among Greek female healthcare workers Gynecologists and human papillomavirus DNA testing: exploring knowledge, attitudes, and practice in Italy. 2017	To assess the level of awareness and attitudes of Greek health workers on cervical cancer and HPV prevention.	The results show that there are gaps in women's knowledge on this topic, especially in terms of the latest information on CC prevention through HPV testing and vaccination. In fact, only 80% of the women surveyed knew about the existence of HPV tests.
Caglioti C, Pileggi C, Nobile CGA, Pavia M. Gynecologists and human papillomavirus DNA testing: exploring knowledge, attitudes, and practice in Italy. 2017	To examine the knowledge, attitudes, and behavior of gynecologists in terms of human papillomavirus (HPV) DNA testing as a primary screening tool for cervical cancer.	Although the use of the HPV DNA test is widespread among Italian gynecologists who test for CC, there is a lack of standardization of practices according to current guidelines.
Rolanda KB, Benard VB, Greek A, Hawkins NA, Manninen D, Saraiya M. Primary care provider practices and beliefs related to cervical cancer screening with the HPV test in Federally Qualified Health Centers. 2013	Assess primary care provider practices, beliefs, enablers, and barriers to using pooled testing and extending screening intervals among low-income women.	Most primary care providers believe that the joint test is good and beneficial, yet in practice, less than half routinely used the HPV test for screening. The literature has long reported barriers to the implementation of preventive health services evidence-based and cancer screening at the patient, provider, clinic, and health system level.

Sherman SM, Bartholomew K, Denison HJ, Patel H, Moss EL, Douwes J, et al. Knowledge, attitudes and awareness of the human papillomavirus among health professionals in New Zealand. 2018	Compare what nurses and smear takers understand about HPV, if they feel well-informed and assess any training needs, they may identify.	The need for education indicated by knowledge scores was reinforced by the fact that more than a third of respondents disagreed that they felt adequately informed about HPV and that being adequately informed and feeling confident in answering patients' questions were associated with knowledge. Some of the respondents made suggestions for training.
McSherry LA, O'Leary E, Dombrowski SU, Francis JJ, Martin CM, O'Leary JJ, et al. Which primary care practitioners have poor human papillomavirus (HPV) knowledge? A step towards informing the development of professional education initiatives. 2018	Investigate knowledge of HPV and associated factors, among general practitioners and nurse practitioners.	The percentage of correct answers to a similar question in the current study was higher, but a third of the professionals did not answer correctly. The similarities in the findings of these studies suggest that the professionals in many settings may be unclear about these aspects of HPV.
Munro A, Codde J, Semmens J, Leung Y, Spilsbury K, Williams V, et al. Utilization of co-testing (human papillomavirus DNA testing and cervical cytology) after treatment of CIN: a survey of -GPs' awareness and knowledge. 2015	Understand if the joint test (human papillomavirus DNA test and cervical cytology) is fully used by general practitioners.	Study results and qualitative comments suggest that there is a clear need for further education and promoting the use of high-risk HPV DNA testing as a management pathway for doctors.
Townsend JS, Stormo AR, Roland KB, Buenconsejo Lum L, White S, Saraiya M. Current Cervical Cancer Screening Knowledge, Awareness, and Practices Among U.S. Affiliated Pacific Island Providers: Opportunities and Challenges. 2014	Assess knowledge, beliefs, practices, and perceived barriers regarding routine cervical cancer screening.	Although screening for CC is a priority in clinical practice, beliefs about annual screening, associated costs and different levels of support for alternative screening tests raises barriers for providers. Further exploration of the use of sustainable, low-cost, and evidence-based screening technologies is warranted, as well as emphasizing timely follow-up of all positive cases.
Rodríguez Feria P, Hernández Flores LJ, Rodríguez Feria D. Knowledge, attitudes and practices of prevention for cervical cancer and breast cancer among medical students. 2016	Evaluate the knowledge, attitudes, and practices of medical students to prevention of breast neoplasia and cervical neoplasia, likewise, the study will provide recommendations to improve the curriculum of public health classes.	In order to perform early detection in cancer, skills must be improved, knowledge and training regarding induced demand, active community and institutional search and reduction of lost opportunities related to public health. Additionally, it is important to improve clinical practice related to Pap smears and training on clinical guidelines and protocols for these types of cancer.

Source: Secondary

1.4 Discussion

Since its introduction, HPV detection tests have been the subject of multiple articles of scientific dissemination, currently most of this production is in developing countries because the incidence and mortality from CC continue to occupy the first places in women (World Health Organization, 2015). In Latin America, most countries have not been successful in implementing cytology-based screening programs at the population level (Jeronimo et al., 2016; Secretaría de Salud, 2018). In Mexico, most of the research is concentrated due to the increase in HPV infections in women, which impacts an incidence of CC of 23.3 for each 100 000 inhabitants per year (Flores Miramontes *et al.*, 2015; Martínez Portilla et al., 2016).

Despite the advantages of using molecular HPV detection tests, for example, that they are automated, have high reproducibility and allow handling of large volumes of samples at the same time (Torné Bladé *et al.*, 2014), the success in reducing the cases of CC consists in the training that health personnel have around these.

This systematic and integrative review of the literature synthesized the information and observed the need for training of the personnel that implements the CCEDP, as shown by a study carried out in 2013 by Mojahed and Karimi Zarchi, they found that the minority of nurses surveyed were aware of HPV infection and how it can cause abnormal Pap test results (Mojahed *et al.*, 2013). Hernández and Salinas in 2018 in the same way, they mention as a conclusion in their study carried out on the perception of health personnel about the CCEDP, the felt need to reinforce career plans and programs in both nursing and doctors (Hernández y Salinas, 2018), in order to develop skills and competencies based on scientific knowledge for the use of medical terms, search for information and interest in the continuous updating of future workers in the health area.

In Mexico there is a legislature for this, as established by the Official Mexican Standard 014 for the prevention, detection, diagnosis, treatment, control and epidemiological surveillance of cervical cancer that indicates the training and updating of professional health personnel, to guarantee a quality service, with the periodicity that each institution determines, adapting the assignment of activities to the professional and technical characteristics, as well as to their level of responsibility (Official Journal of the Federation, 2007).

However, as the scientific literature shows, currently, the health personnel who implement the CCEDP is lacking in knowledge for the implementation of HPV testing. This is undoubtedly of the utmost importance because, the lack of preparation in health personnel is reflected in the level of knowledge about HPV in the population, This is shown by studies carried out in adolescents and young university students, who found low knowledge in general regarding HPV, which contributes to poor health (Contreras Gonzáles *et al.*, 2017; Perrotte *et-al.*, 2012) promoting in this way that the objectives of the CCEDP are not fulfilled.

1.5 Conclusions

What this systematic review as scientific evidence sign is that the personnel evaluated when measuring their knowledge about HPV prevention usually show low levels, despite being health professionals, where most passed subjects during their careers such as viral infections and malignancies. Given the above, the need for continuous educational programs is reaffirmed, in order to allow health personnel to be trained to provide correct information on HPV prevention to their patients.

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