

Review

Analysis of community-based researches related to knowledge, awareness, attitude and behaviors towards HPV and HPV vaccine published in Turkey: A systematic review

Özdemir et al. HPV and HPV vaccine

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Abstract

HPV vaccine is a proven method for preventing HPV related cancers and genital warts, especially preventing cervical cancer. It is aimed to systematically review and synthesize conclusions in detail from the community-based researches published in Turkey between 2009 and 2019, which evaluate the knowledge, awareness, attitude and behaviors of individuals towards HPV and HPV. The systematic review is conducted based on PRISMA reporting method and includes community based, descriptive-cross sectional and cross sectional studies published between 2009 and 2019 years. In this systematic review, 5132 studies from six databases were scanned in total. It is determined that there are 23 studies which meet the eligibility criteria for this systematic review. In the reviewed studies it was determined that the rate of "Hearing of HPV before" was 3.8% at the lowest and 57.0 at the highest and the rate of "Hearing of HPV vaccine before" was 2.2% at the lowest and 74.7% at the highest. In the reviewed studies, it was reported that while parents' willingness to have their daughters vaccinated with HPV vaccine varied between 14.4% and 68.0%, their willingness to have their sons vaccinated with HPV vaccine varied between 11.0% and 62.0%. In addition, it was reported that the lowest rate of vaccination with HPV vaccine among participants was 0.3% at the lowest and 6.0% at the highest. Consequently, it is considered that carrying out common, systematic and continuous health education programs aimed at both genders and including both parents, which will increase knowledge and awareness on HPV and vaccine, would provide positive attitude, will be effective in protecting from HPV related cancers.

Keywords: Human papilloma virus, HPV vaccine, knowledge, awareness, attitude, public health

Introduction

Human Papilloma Virus (HPV) infection which is sexually transmitted to both male and female is a global epidemic (1-3). Approximately 75% of the sexually active individuals encounter HPV in some part of their lives (4). Thirteen known carcinogenic types of HPV, which have approximately 200 diagnosed types, may become cancerous by causing chronic and progressive infection (5). HPV related cancers are listed as cervical, vulvar, vaginal, anal, rectal, penile and oropharyngeal cancers (5,6). According to the data from surveillance program carried out by Centers for Disease Control and Prevention in the United States of America between 2008-2012; it is reported that 38.793 people on average were diagnosed with HPV related cancer and 59% of the people diagnosed with cancer were female and 41% were male (6). In the last five years in Turkey, the reported prevalences of cervical cancer, vulvar cancer, anal cancer and penile cancer were 16.09%, 1.82%, 1.09% and 0.16%, respectively (7).

HPV vaccine is a proven method for preventing HPV related cancers and genital warts, especially preventing cervical cancer (8,9). It is reported that vaccines containing HPV16-18 types prevent 63% of all HPV related cancers; vaccines containing nine types of HPV (HPV6-11-16-18-31-33-45-52-58) provides protection from cervical, vulvar, vaginal and anal cancers by 90% (6,10). Throughout the world and in Turkey, HPV vaccines are recommended to individuals from both genders between 9-26 years of age and before first sexual experience (11,12). HPV vaccine safety of which is verified by European Medicines Agency (13) is included in national vaccination program in many countries, while it is not included in Turkey's national vaccination schedule (13-15).

Objectives

The literature reported that negative attitude and behaviors of individuals and parents such as lack of knowledge and low awareness about mode of transmission, protection and early diagnosis methods of HPV infection, cost of HPV vaccine, potential side effects and suspecting vaccine safety and negative news on all vaccines prevent generalization of HPV vaccination (16-18). In the current study, it is aimed that community-based researches which evaluate the knowledge, awareness, attitude and behaviors of individuals towards HPV and HPV vaccine published in Turkey between 2009 and 2019 are reviewed systematically and available conclusions are synthesized in detail.

Method

Protocol and registration

This systematic review was registered on International Prospective Register of Systematic Reviews (PROSPERO) system with protocol number: 128435. The systematic review is conducted based on PRISMA reporting method and includes community based, descriptive-cross sectional and cross sectional studies published between 2009 and 2019 years.

Eligibility criteria

The investigated studies were protection methods from cervical cancer in Turkey in the last 10 years were focused on individuals' knowledge, awareness, attitude and behaviors on HPV and HPV vaccine. In the literature, no systematical national research report was found on individuals' knowledge, awareness, attitude and behaviors on HPV and HPV vaccine (2). In this systematic review, it was decided that synthesizing community based studies would be appropriate by anticipating that they would reflect the current status of the community at risk in terms of HPV infection in Turkey. In this respect, eligibility criteria were based on the literature which were; 1) in descriptive-cross sectional and cross sectional research design published on a national or international peer-reviewed journal; 2) conducted within the borders of the Republic of Turkey; 3) published between 2009 and 2019 years; 4) had a sample consisting of healthy/sick individuals. Review articles, letters to editor, qualitative studies, case control studies, congress proceedings and thesis were excluded from the systematic review.

Information sources

Studies included in the systematic review were obtained as a result of comprehensive review of EBSCO, Google Scholar, Proquest, PubMed, Springer, TR index databases between 01 and 04 March 2019.

Search

Keywords in English used in the review were "Turkey", "HPV", "Human Papilloma Virus", "HPV vaccine", "knowledge", "awareness", "attitudes", "behavior"; and "Türkiye", "İnsan Papilloma Virüsü", "Human Papilloma Virüsü", "HPV aşısı", "bilgi", "farkındalık", "tutum" and "davranış" words were used in the Turkish database.

Study selection

In this systematic review, as a result of comprehensive scanning of the databases, 118 research reports were identified according to title and abstract which met the eligibility criteria. It was observed that there were 43 recurring researches among those researches. In the assessment according to title and abstract after the recurring researches were identified; studies conducted by healthcare professionals/students (n=47), intervention studies (n=3), scale validity reliability studies (n=2), study conducted on immigrant Turks (n=1) were eliminated as they did not fit in the purpose of the systematic review. After this stage, full texts of the studies were reviewed (n=25). Studies for which full text was not available were excluded from the systematic review (n=2). Following the assessments, it was determined that there were 23 studies which met the eligibility criteria for this systematic review (Figure 1. Systematic Review Flow Diagram).

Data collection process

Evidence centers such as Cochrane Library and Joanna Briggs Institute (JBI) recommend that the studies addressed in systematic reviews are assessed with standardized critical instruments to determine their scientific value and bias risk according to their objectives, design and method properties (19). It is reported that valid and reliable instruments which determine the reporting quality of cross sectional researches are limited (20). To assess reporting quality and properties of 23 studies included in this systematic review, "JBI-Critical Appraisal Checklist for Analytical Cross Sectional Studies" consisting of eight questions, which was developed by JBI, was used (21). In the check list, quality of the studies was assessed with each question as "1=Yes", "2=No", "3=Unclear", "4=Not Applicable" (Table 1.).

A data collection form developed by the researchers based on the literature was used to collect the data of the scanned studies included in the systematic review. Data collection form includes the author, year, subject, location, sample size and properties, method, main findings, conclusion and suggestions titles of the study. Researchers reviewed the full texts of 23 studies in detail and recorded in the data collection form in titles independently from each other. Data collection forms of each research were reviewed by all researchers and the data of the systematic review was established.

Data items

Collected data was merged under the titles of “Author”, “Year”, “Location of the Research”, “Range of Age”, “Health Center”, “Number of Participants”, “Properties of Sample”, “Hearing of HPV”, “Hearing of HPV vaccine”, “Vaccination Rate”, “Willingness to Vaccination for Own Self”, “Willingness to Vaccination for Daughter”, “Willingness to Vaccination for Son”, “Barriers of HPV Vaccine”, “Source of HPV Knowledge”, “Willingness to have Education about HPV”, “Factors in relation to HPV and Vaccine Knowledge” and “Suggestions” (Table 2., Table 3.).

Results

Study selection

In this systematic review, 5132 studies from six databases were scanned in total. It was determined that there were 43 recurring studies out of 118 studies identified according to title and abstract. Number of identified studies was determined as 78. Fifty four studies which were determined to be out of the purpose of the systematic review according to title and abstract were eliminated. Out of 25 studies full texts of which were assessed for eligibility, two studies for which full texts were not available were excluded from the review. Full texts of 23 studies meeting eligibility criteria were included in the scope of the systematic review (Figure 1. Systematic Review Flow Diagram).

Reporting characteristics of studies

In the assessment of the studies according to the “JBI-Critical Appraisal Checklist for Analytical Cross Sectional Studies”; it was determined that eligibility criteria were defined clearly in the sample in 95.6% (n=22) of the studies and study subject and methods were explained in detail in 56.5% (n=13) of the studies. It was observed that the researched case was measured in a valid and reliable manner in only 4.3% (n=1) of the studies included in the systematic review, but all of the studies (n=23) used objective criteria for measuring the researched case. It was determined that confounding factors were not identified in 82.6% (n=19) of the studies, and also strategies for coping with confounding factors were not specified. It was assessed that results of all studies (n=23) were assessed using objective criteria and suitable statistical analyses were conducted (Table 1.).

Study characteristics

It was determined that 56.5% (n=13) of the studies included in the systematic review were published between 2009 and 2013 years and 56.5% (n=13) were published on international indexed journals. In the studies which were assessed, the range of age of the participants varies between 13 and 87. Number of participants in the studies was between 229 and 1808. Sixty-five percent (n=15) of the studies addressed only adult women; 21.7% (n=5) addressed adult men and women; 8.6% (n=2) addressed female adolescents and young females; 4.3% (n=1) addressed only male and 4.3% (n=1) addressed female adolescents and their mothers. In terms of the location of the studies, it was observed that 65.2 (n=15) of the studies were conducted at tertiary healthcare institutions. Studies were conducted in 13 different provinces in total (Table 2.).

In the studies it was determined that the rate of “Hearing of HPV before” was 3.8% at the lowest and 57.0 at the highest and the rate of “Hearing of HPV vaccine before” was 2.2% at the lowest and 74.7% at the highest. In the assessed studies, it was reported that while parents’ willingness to have their daughters vaccinated with HPV vaccine varied between 14.4% and 68.0%, their willingness to have their sons vaccinated with HPV vaccine varied between 11.0% and 62.0%. In addition, it was reported that the lowest rate of vaccination with HPV vaccine among participants was 0.3% at the lowest and 6.0% at the highest (Table 2). Two of the reviewed studies investigated the willingness to have education about HPV and the vaccine and it was reported that 69.2% and 95% of the participants are willingness to have health education (Table 3).

In nine studies which included in HPV vaccine barriers (43.4%), it was reported that the first three barriers identified were lack of knowledge about HPV and vaccine (40.9% to 76.6%), adverse effect concern (0.9% to 64.5%) and price of HPV vaccine (0.2% to 49.5%) respectively. According to the data obtained from studies, it was observed that the information source of the participants about HPV and vaccine was healthcare personnel at the rate of 12.3% to 72.2% and media (TV, internet, newspapers, etc.) at the rate of 23.5% to 88.8% (Table 3). In the studies included in the systematic review, it was reported that awareness, knowledge and positive attitudes on HPV and vaccine increased as the woman’s/mother’s education level increased in studies which investigate the factors in relation to knowledge on HPV and vaccine (60.8%, n=14). In addition, in 17.3% of the studies (n=4), it was reported that awareness, knowledge and positive attitudes on HPV and vaccine increased in the woman/mother who worked and have high economic level. In this review, it was stated that 82.6% of the studies (n=19) recommend health education, 21.7% (n=5) recommend more comprehensive and in-depth researches should be conducted in, and 26.0% (n=6) recommend that policies are made about vaccine prices and strengthening of primary health care services (PHCS) (Table 3).

Discussion

Summary of evidence

When the reporting properties of 23 cross sectional studies included in this systematic review were assessed; it was observed that most of them explained the eligibility criteria in the sample (95.6%) and objective measurements were done with appropriate statistical analyses and results were reported objectively in all of

them. Taking confounding factors under control was quite important in terms of reliability of the results in cross sectional studies (22,23). In most of the addressed studies (82.6%), not taking confounding factors under control was considered as a significant limitation in the cross sectional research design. In addition, using standardized measurement instruments takes an important place in increasing the quality of results obtained in cross sectional studies (24). In most of the studies reviewed in this study (95.6%), it was determined that standardized valid and reliable measurement instruments were not used. Two valid and reliable scales which assess knowledge, attitude and beliefs on HPV and vaccine and which were adapted to Turkish were published in 2016 (25,26). It takes time to publish and announce measurement instruments which are adapted to the culture of a society and use them commonly (27). It was considered that there was a limitation in the studies in terms of using standardized measurement instruments as there were no available standardized measurement instruments until the publication date of valid and reliable HPV and vaccine scales in Turkish and measurement instruments were published relatively recently.

In information and awareness studies on HPV and vaccine which were conducted in developed countries; it was reported that HPV knowledge and awareness were on low to moderate level and vaccination rates (26%-55%) were not on desired levels although the willingness for vaccination was high (17,31-37). In the studies conducted in developing countries, it was reported that HPV knowledge and awareness and willingness for vaccination were on low to moderate level and HPV vaccination rates were quite low (13.3%-16.1%) (30,38-43). In parallel with the literature, it is considered that awareness and knowledge level on HPV and HPV vaccine (3.8%-57.0%) and willingness for vaccination (6.3%-69.0%) and vaccination rates (0.3%-0.6%) are quite low in this systematic review which addresses community based studies in Turkey. It was reported that offering consultancy services on HPV carried out by healthcare professionals promotes positive attitudes in these countries by increasing awareness and knowledge on HPV (28,29,30). In Turkey, it is anticipated that the fact that HPV has limited coverage in education programs carried out by healthcare professionals cause that awareness and knowledge on HPV and vaccine and therefore vaccination rates are not on desired levels.

Although HPV immunization willingness was high, various barriers made it difficult to raise vaccination rates to desired level. HPV vaccination barriers in developed countries were listed as doubts about vaccine safety and efficiency, side effect concerns, lack or inconsistency of information about HPV and vaccine and price of HPV vaccine (32,35,37). In developing countries, HPV vaccine barriers were unawareness of the vaccine, doubting the safety and efficiency of the vaccine, finding it embarrassing to buy the vaccine for sexually transmitted infections and the thought of not being at HPV related risk (38,40,43). In parallel with this, it was determined that the mostly reported HPV vaccine barriers in studies included in the systematic review were lack of information (40.9% to 76.6%), concerns about potential side effects of the vaccine (0.9% to 64.5%) and price of the vaccine (0.2% to 49.5%). It was reported that the fact that HPV vaccine was included in the national vaccination schedule in many countries contributes in HPV vaccination in those countries (28). The low HPV vaccination rate obtained in this systematic review could be explained by the fact that HPV vaccine is not included in the national vaccination schedule in Turkey and the vaccine prices are not affordable for the majority of the society. In addition to that, it is anticipated that the fact that healthcare professionals' level of knowledge and awareness is low, common and continuous health educations on HPV are not carried out cause lack of information about HPV vaccination and therefore quite low vaccination levels in Turkey.

The most frequent source of healthcare information in developed countries was healthcare professionals and media (TV, internet, newspaper) at a lower rate (17). In developing countries, it was reported that the most frequent source of healthcare information was media and healthcare professionals at a lower level (30,39). Similarly, while the most frequently preferred source of healthcare information was media in the studies included in the systematic review, it was determined that healthcare professionals were preferred at a lower rate. In the studies addressed in this review, it was determined that the society was willing and ready at a high rate to obtain information on HPV and vaccine (69.2%, 95%). Correct and reliable healthcare information could be transferred to the society only by specialized healthcare professionals (32,44,45). The misinformation sources and broadcasts against vaccination on the media could prevent that the society obtains true and reliable information about HPV vaccine (46). For that reason, it is anticipated that healthcare professionals, who are the reliable sources of information on HPV vaccine, can form positive attitudes and behaviors in the society and encourage the society towards vaccination with continuous and common health educations.

In the literature, it was reported that level of knowledge on HPV vaccine increases as the education level and income level increase (31,33,38,40-42,47). In parallel with the literature, it was determined that level of knowledge on HPV vaccine increases as the education level and income level increase in the studies addressed in this systematic review. In that respect, it was suggested that groups with lower education and income levels were addressed primarily in the programs to be carried out in relation to HPV and vaccine. In parallel with the literature, it was determined that most of the studies addressed in this review recommend health education for increasing knowledge, awareness and positive behaviors towards HPV and vaccine (48). Systematic, common and continuous health education to be carried out by professionals in accordance with the culture of the society are the most effective method for creating healthy behaviors (48).

Conclusions

Consequently, it is considered that carrying out common, systematic and continuous health education programs aimed at both genders and including both parents, which would increase knowledge and awareness on HPV and vaccine, provide positive attitude, will be effective in protecting from HPV related cancers (17,30,34,36,37,39). In addition, it will be an important initiative for protection of public health that healthcare authorities include HPV vaccine in their immunization programs and that policies are encouraging for acceptance of the vaccine in the society in countries where HPV vaccine is not included in national vaccination schedule. In addition, there is a need for researches with methodologically strong designs which test the methods that will provide positive attitude towards HPV vaccine in society (30,37,39).

Limitations

The systematic review was limited to the studies published in EBSCO, Google Scholar, Proquest, PubMed, Springer, TR index databases and the full texts could be accessed. There were two studies were not accessible for full texts.

Conflict of Interest

The authors declare that there is no conflict of interest

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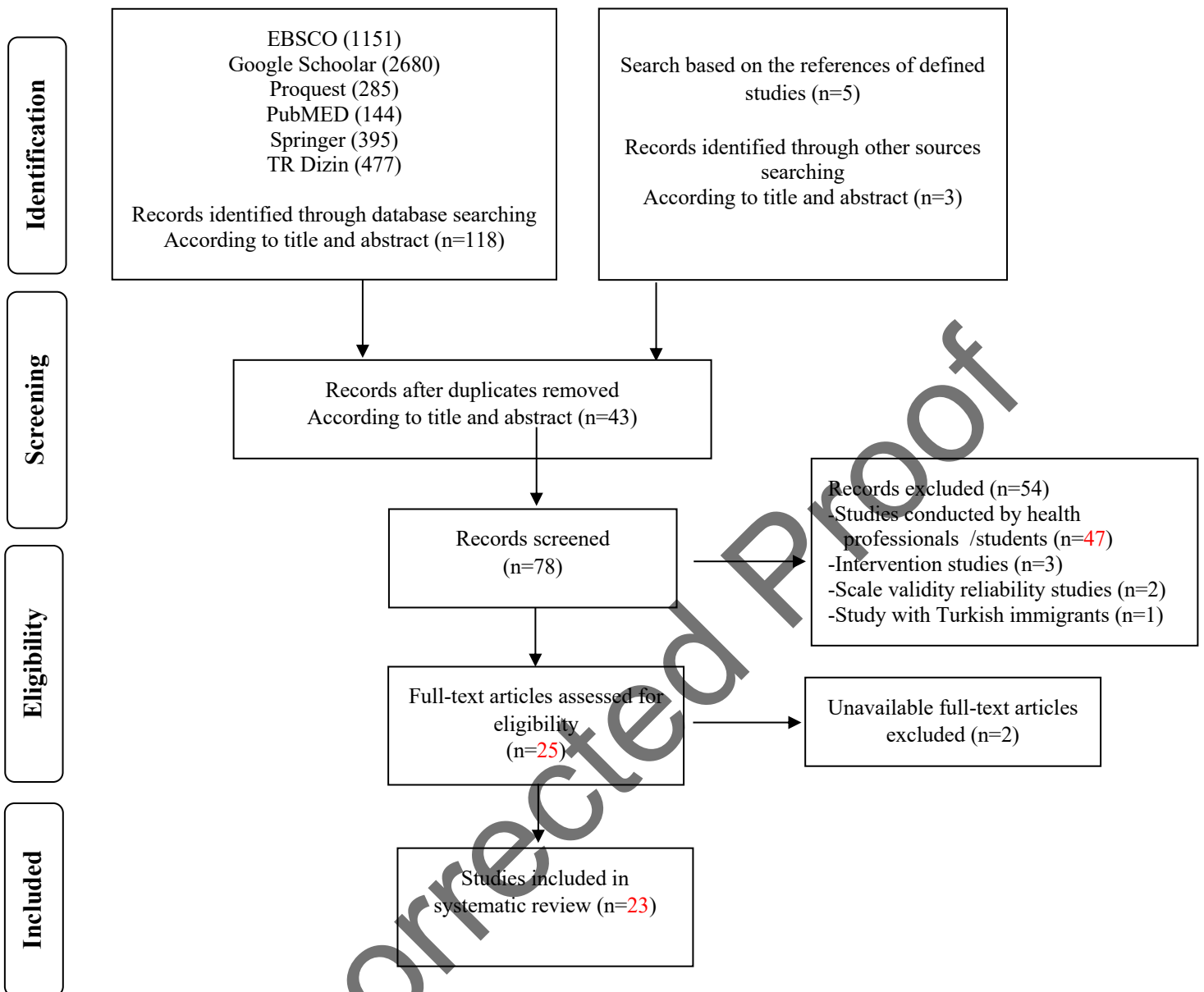


Figure1. PRISMA flow diagram of the systematic review

Table 1. JBI-Critical Appraisal Checklist for Analytical Cross Sectional Studies (n=23)

| | Yes | | No | | Unclear | | Not Applicable | |
|---|-----|------|----|------|---------|-----|----------------|---|
| | n | % | n | % | n | % | n | % |
| 1. Were the criteria for inclusion in the sample clearly defined? | 22 | 95.6 | 1 | 4.3 | - | - | - | - |
| 2. Were the study subjects and the setting described in detail? | 13 | 56.5 | 9 | 39.1 | 1 | 4.3 | - | - |
| 3. Was the exposure measured in a valid and reliable way? | 1 | 4.3 | 22 | 95.6 | - | - | - | - |
| 4. Were objective, standard criteria used for measurement of the condition? | 23 | 100 | - | - | - | - | - | - |
| 5. Were confounding factors identified | 4 | 17.3 | 19 | 82.6 | - | - | - | - |
| 6. Were strategies to deal with confounding factors stated? | 4 | 17.6 | 19 | 82.6 | - | - | - | - |
| 7. Were the outcomes measured in a valid and reliable way? | 23 | 100 | - | - | - | - | - | - |
| 8. Was appropriate statistical analysis used? | 23 | 100 | - | - | - | - | - | - |

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Table 2. Distribution of community based cross-sectional studies according to some characteristics (n=23)

| Author | Year | Location of the research | Rage of Age | Health institutions | Number of Participant | Properties of Sample | Hearing of HPV (%) | Hearing of HPV vaccine (%) | Vaccination rate (%) | Willingness to vaccination for | | | |
|---------------|-----------|---------------------------------|-------------|---------------------|-----------------------|---|------------------------------|----------------------------|----------------------|--------------------------------|------------------------------|---|----|
| | | | | | | | | | | Own self (%) | Daughter (%) | Son (%) | |
| Adıgüzel (49) | 2016 | Adana | 18-65 | Tertiary | 426 | Females | 39.4 | 33.1 | -* | 42.7 | | 43.7 | |
| Akyüz (29) | 2011 | Ankara | 20-59 | Tertiary | 229 | HPV negative (-) and HPV positive (+) females | HPV(-):14.7 HPV(+):43.0 | HPV(-):70.7 HPV(+):74.7 | -* | -* | -* | -* | -* |
| Bebis (50) | 2013 | Ankara | 20-36 | Military based | 787 | Young adult men | 29.2 | -* | -* | -* | -* | -* | |
| Bülbül (51) | 2013 | Ankara, Kırıkkale, Gaziantep | 16-60 | Tertiary | 1405 | Mothers with children of ≤15 years old | -* | 46.3 | -* | -* | | If free of charge: 23.4 Even if paid: 76.6 | |
| Cetin (16) | 2014 | İstanbul Ankara, | 13-18 | Tertiary | 501 | Female adolescents | 22.2 | 11.7 | 0.9 | 6.3 | -* | -* | |
| Dursun (52) | 2009 a | Adana, Alanya, Konya Ankara, | 17-80 | Tertiary | 1427 | Females | 45.0 | -* | -* | 70.0 | 64.0 | 54.0 | |
| Dursun (53) | 2009 b | Adana, Alanya, Konya | 21-56 | Tertiary | 618 | Mothers with 10-15 year olds children | 45.0 | -* | -* | 69.0 | 68.0 | 62.0 | |
| Ersan (54) | 2012 | İzmir | 18 yaş ≥ | Sex business | 239 | Sex workers | 33.0 | 19.2 | -* | -* | -* | -* | |
| Kose (55) | 2014 | Sakarya | 18-55 | Tertiary | 799 | Mothers with children of ≤18 years old | 11.9 | 16.5 | 0.7 | -* | -* | -* | |
| Kürtüncü (12) | 2018 | Zonguldak | 25 yaş ≥ | Tertiary | 100 | Mothers with 10-15 years old daughters | 57.0 | 67.0 | -* | -* | 59.0 | 11.0 | |
| Onan (56) | 2009 | Ankara | 15-87 | Primary | 1808 | Females | 24.8 | 24.3 | - | 17.0 | 51.1 | 43.6 | |
| Oz (68) | 2018 | Ankara | 18-30 | School based | 1160 | Females and males | 43.7 | 26.6 | 1.0 | 45.1 | -* | -* | |
| Ozan (57) | 2011 | Bursa | 18 yaş ≥ | Tertiary | 336 | Females | 33.6 | 44.6 | -* | -* | 42.2 | 22.4 | |
| Ozyer (58) | 2013 | Ankara | 9-24 | Tertiary | 408 | Female adolescents and young Females | 41.6 | -* | -* | 11.2 | -* | -* | |
| Önder (59) | 2015 | Ankara | 15-49 | Primary | 294 | Females | 24.5 | 28.2 | -* | -* | -* | -* | |
| Pınar (60) | 2010 | Ankara | 19-65 | Tertiary | 471 | Females | 53.5 | 57.7 | -* | -* | -* | -* | |
| Saylam (61) | 2016 | Konya | 18 yaş ≥ | Tertiary | 500 | Females | 16.6 | 32.0 | 2.6 | -* | 32.0 | -* | |
| Seven (62) | 2015 | Ankara | 24-58 | School based | 368 | Parents with 10-years old children | Mother: 26.9 Father: 25.0 | -* | -* | -* | Mother: 14.4 Father: 15.5 | Mother: 21.6 Father: 22.4 | |

| | | | | | | | | | | | | |
|-------------|------|----------|----------|----------|------|--|----------------------------|---------------------------|-----|----------------------------|------|------|
| Tas (63) | 2016 | İstanbul | 18≥-65 | Tertiary | 273 | Males and females with anogenital wart lesions | Females :8.9 Males :3.8 | Females:2.2 Males :2.2 | _* | Females:66.7 Males:48.1 | _* | _* |
| Tonguç (64) | 2012 | Elazığ | 18-66 | Tertiary | 945 | Females | 26.0 | 21.6 | 6.0 | 40.6 | 36.3 | 26.0 |
| Turhan (65) | 2017 | Hatay | 18 yaş ≥ | Tertiary | 1087 | Females and males | 27.0 | 23.2 | 2.7 | _* | | 23.5 |
| Türkol (66) | 2009 | Malatya | 15-49 | Primary | 417 | Females | _* | 46.5 | _* | 52.4 | 47.0 | _* |
| Uzuner (67) | 2018 | İstanbul | 18 yaş ≥ | Primary | 318 | Females and males | _* | 49.6 | 0.3 | _* | _* | _* |

* Data on the relevant area were not found.

Table 3. Distribution of community based cross-sectional studies according to some characteristics (n=23)

| Author, Publication year | Barriers of HPV vaccine | | | Source of HPV knowledge | | Willingness to have Education about HPV (%) | Factors in relation to HPV and vaccine knowledge | | | Suggestions | | | |
|--------------------------------|-------------------------|--------------------|-----------|------------------------------|-------------------------------------|---|---|------------------------|-----------|-------------|------------------|------------------------|--------------|
| | Lack of knowledge (%) | Adverse effect (%) | Price (%) | Healthcare Personnel (%) | Media (TV, internet, newspaper) (%) | | Education level | Working/Economic Level | Education | Research | Policy | | |
| Adıgüzel, 2016 (49) | _* | _* | _* | 40.4 | 39.1 | _* | As the level of education increases, knowledge and awareness level increase (p<0.001) | | | _* | Health Education | _* | _* |
| Akyüz, 2011 (29) | _* | _* | _* | HPV(-): 12.3 HPV(+): 32.2 | HPV(-): 86.8 HPV(+): 62.7 | _* | _* | | | _* | Health Education | _* | _* |
| Bebis, 2013 (50) | _* | _* | _* | _* | _* | _* | As the level of education increases, knowledge level increases (p<0.001) | | | _* | _* | Comprehensive research | _* |
| Bülbül, 2013 (51) | _* | _* | 44.4 | _* | _* | _* | As the level of education increases, knowledge level increases (p<0.001) | | | _* | Health Education | Comprehensive research | Wages policy |
| Çetin, 2014 (16) | 40.9 | 16.4 | 26.4 | 17.1 | 59.4 | _* | As mothers' education level increases, knowledge level increases (p<0.001) | | | _* | Health Education | Comprehensive research | _* |
| Dursun, 2009a | _* | _* | _* | _* | _* | _* | As mothers' education level | | | _* | Health | Comprehensive | Vaccination |

| | | | | | | | | | | | |
|---------------------|------|------|------|------|------|------|--|---|------------------|-------------------------|------------------------------------|
| (52) | | | | | | | increases, knowledge level increases (p<0.001) | | Education | nsive research | n policy |
| Dursun, 2009b (53) | _* | _* | _* | _* | _* | _* | _* | _* | _* | Comprehe nsive research | _* |
| Ersan, 2012 (54) | _* | _* | _* | _* | _* | _* | There is no relation between HPV knowledge and education level (p>0.001) | _* | Health Education | _* | _* |
| Kose, 2014 (55) | _* | _* | _* | 27.1 | 61.2 | _* | As mothers' education level increases, knowledge level increases (p<0.001) | As the level of economic status increases, awareness level increase (p<0.001) | Health Education | _* | _* |
| Kürtüncü, 2018 (12) | 66.0 | _* | 26.0 | _* | _* | 95.0 | As the level of education increases, knowledge level increases (p<0.001) | There is relation to work status and level of knowledge (p<0.001) | Health Education | _* | Strengthening of PHCS ⁺ |
| Onan, 2009 (56) | _* | 1.5 | _* | _* | _* | _* | _* | _* | Health Education | _* | _* |
| Oz 2018 (68) | 76.6 | 32.3 | _* | 14.0 | 61.0 | _* | _* | _* | Health Education | _* | _* |
| Ozan, 2011 (57) | _* | _* | _* | _* | _* | _* | As the level of education increases, knowledge level increases (p<0.001) | There is relation to work status and level of knowledge (p<0.001) | Health Education | _* | _* |
| Ozyer, 2013 (58) | _* | 0.9 | 0.2 | 25.9 | 23.5 | _* | _* | _* | Health Education | _* | _* |
| Önder, 2015 (59) | _* | _* | _* | 72.2 | 88.8 | _* | As the level of education increases, knowledge level increases (p<0.001) | _* | _* | _* | Strengthening of PHCS ⁺ |
| Pınar, 2010 (60) | _* | _* | _* | 25.7 | 42.9 | _* | As the level of education increases, knowledge level increases (p<0.001) | _* | Health Education | _* | _* |
| Saylam, 2016 (61) | _* | _* | _* | 50 | 25.6 | 69.2 | _* | _* | Health Education | _* | _* |
| Seven, 2015 (62) | 67.2 | 64.5 | 6.4 | _* | _* | _* | _* | _* | Health Education | _* | _* |
| Tas, 2016 (63) | _* | _* | _* | _* | _* | _* | _* | _* | _* | _* | _* |
| Tonguç, 2012 (64) | _* | _* | 49.5 | _* | _* | _* | As the level of education increases, knowledge level increases (p<0.001) | _* | Health Education | _* | Wages policy |
| Turhan, 2017 (65) | _* | 5.9 | _* | _* | _* | _* | As the level of education increases, knowledge level increases (p<0.001) | _* | Health Education | _* | _* |
| Türköl, 2009 (66) | _* | _* | _* | _* | 63.6 | _* | As the level of education increases, knowledge level increases (p<0.001) | As the level of economic status | Health Education | _* | _* |

| | | | | | | | | | | | | |
|----------------------|------|-----|----|------|------|----|---|---|----|---------------------|----|---|
| Uzuner, 2018 (67) | 47.1 | 3.1 | -* | 55.0 | 64.0 | -* | As the level of education increases, knowledge level increases (p<0.001) | increases, awareness level increase (p<0.001) | -* | Health Education | -* | Strengthen ing of PHCS ⁺ |
|----------------------|------|-----|----|------|------|----|---|---|----|---------------------|----|---|

* Data on the relevant area were not found.

⁺ PHCS primary healthcare services

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