Human papillomavirus vaccine acceptability among healthcare workers, parents, and adolescent pupils: a pilot study in public health centers of Bali, Indonesia

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Abstract

Introduction **Knowledge and acceptability of HPV vaccination should be identified for supporting the HPV vaccine program in public health centers. Qualitative research approach is one approach that can be developed for increasing the acceptance and use of HPV vaccines in the community. Perceptions of health workers, parents, teachers, and adolescents related to HPV immunization can be explored in depth. This study was performed to explore the perception and meaning of the HPV vaccine acceptability among healthcare professionals, parents, and adolescent pupils in Bali, Indonesia.**

Methods **A mixed method study was conducted among 176 elementary school children. In-depth interviews were performed with five of the parents and eight of the teachers. Then, four focus group discussions among 19 health professionals were performed for supporting data. A self-administered questionnaire was used to measure knowledge of HPV and acceptability of HPV vaccine among participants. An interview of standard guidelines was performed to identify the perception of the HPV vaccine.**

Results **The study identified that perception about HPV knowledge and HPV vaccine was low among adolescents and teachers for all of the questions. However, knowledge on HPV and HPV vaccine among parents and healthcare professionals were higher. Meanwhile, the acceptability of the HPV vaccine and the personal experience of women were more positive for the healthcare professionals.**

Conclusions **Knowledge and perception regarding HPV and HPV vaccination among adolescents and teachers in Indonesia, particularly in Denpasar, Bali, are still insufficient. However, the perception of vaccine administration is acceptance for parents and healthcare professionals. Therefore, socialization of HPV vaccine programs in school and community are needed to improve health promotion about the importance of the HPV vaccine.**

Keywords **Human papilloma virus, vaccination, acceptability, knowledge.**

Introduction

Human papillomavirus (HPV) is the main cause of cervical cancer in women, where 25,000 women worldwide die each year from cervical cancer.[1] Advances in biotechnology in the health sector have found that HPV vaccines can be used to prevent cervical cancer in women.[2] Based on the results of multiple studies, provision of HPV vaccine will be more effective if given when

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young women enter puberty or menstruation,[3] although for the implementation, there are still a lot of problems in accepting the use of HPV vaccine in adolescents, both families or parents, communities and young women themselves,[4] based on the socio-cultural perspective and in terms of its use in society as a preventive measure.[5] Therefore, knowledge of HPV vaccine should be explored in the perspective of a health professional, parents, teachers, and adolescent pupils for improved acceptability of HPV vaccine in the communities.

On the other hand, the use of the HPV vaccine still faces problems in adolescent girls,[6-8] such as the family acceptance[9] community perception[10] related to the use of vaccines as prevention of HPV infection and cervical cancer; these factors lead to less support in implementing programs in the community. Based on previous studies, women in Indonesia have received HPV vaccines. However, knowledge, perceptions related to cervical cancer, HPV vaccine administration and cervical cancer screening are still low.[11] Meanwhile, HPV vaccine acceptance by parents is high (96.1%), but knowledge about HPV and cervical cancer is low.[12] Then, the HPV vaccination was associated with higher knowledge and appropriately lower perception of HPV risk.[13] Meanwhile, previous studies mentioned that HPV vaccination is important and that parents supported this vaccine for their children,[14] but that HPV vaccination could not implemented because of lack of education, information, and financial resources.[15] This situation requires a special form of approach in analyzing the phenomenon through a study for identifying the knowledge regarding HPV vaccine and then a qualitative research approach could be used for exploring perceptions and meaning in the community related to knowledge and acceptance of HPV immunization in Indonesia.

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With higher use of health biotechnology products, supporting research from the social aspects of health is needed so that the community can receive the biotechnology health innovations. HPV vaccine programs in public health centers require the process of identifying knowledge and acceptance of HPV vaccines to support the vaccination process. The qualitative research approach is one method of extracting information related to the acceptance and use of HPV vaccines in the community, perceptions of health workers, parents, teachers, and adolescents. Therefore, this study aimed to explore the perception and meaning of the HPV vaccine acceptability among healthcare professionals, parents, and adolescent pupils in Bali, Indonesia. With the exploration of public acceptance of the HPV vaccine, it is expected that parents, health centers, schools, and health services can play a role in increasing the coverage of HPV vaccine immunization programs in early prevention of cervical cancer in the population of children.

Methods

Study area and design

This study used a mixed-method study design for measuring HPV vaccine acceptability among healthcare professionals and parents in two public health services in the west and south of Denpasar Bali. At the same time, we also recruited 5th-grade elementary school girls as participants in the west and south of Denpasar, Bali, Indonesia. Initially, the HPV vaccination program was planned as the first pilot project targeting the 5th-grade elementary school girls in 2018 – this program was implemented with limited funding from the Denpasar City Government. Denpasar city government has set a target that Denpasar in 2020 will be free of cervical cancer by giving HPV vaccine to 5th-grade pupils of elementary schools for free.

Sample and participants

We recruited 176 5th-grade pupils of elementary school in the west and south of Denpasar in Bali of Indonesia, with a convenience sample to participate in a quantitative study. On the other hand, qualitative

research was carried out between October and November 2018 by using purposive sampling techniques to recruit teachers, parents, and health professionals. We recruited eight teachers and five parents of 5th-grade pupils to participate in the in-depth interview process. We also recruited 19 health professionals from two public health services in Denpasar to participate in the focus group discussion (FGD) divided into four groups that discussed about the acceptability of HPV vaccines among the community.

Data collection

A self-administered questionnaire was used to measure demographics of participants, including age, gender, ethnicity, religion, education, occupation, and family income (for parents), type of healthcare professional and training in HPV vaccine (for healthcare professional).

For the quantitative study, a self-administered paper-based questionnaire was developed to measure the knowledge on HPV and acceptability of HPV vaccine among adolescents, parents, teachers, and healthcare professionals. The questionnaire for this study was adapted from knowledge and acceptance of HPV vaccine among adolescents, parents and health professionals.[16] The questionnaire in Bahasa Indonesia was tested for validation again in a similar population with the study sample. The final validated questionnaire was used in the study. The questionnaire was composed of 31 questions divided into six categories: 1) knowledge about HPV (7 questions); 2) knowledge about the HPV vaccine (11 questions); 3) vaccination barriers for HPV (3 questions); 4) acceptability of HPV vaccine (3 questions); 5) personal history related to HPV infection in female subjects (3 questions); 6) specific knowledge issues addressed to health professionals (4 questions).

For the qualitative study, in-depth interview and focus group discussions were held at two public health services in Denpasar, Bali. The study team adapted an existing interview guide from a previous study.[17,18] The major guideline of the interview included awareness and knowledge of cervical cancer, awareness, and knowledge of HPV and the HPV vaccine, and attitudes toward the HPV vaccine.[18]

Adolescent participants were recruited from 5th-grade pupils of elementary school in west and south of Denpasar, Bali, Indonesia. The study included adolescent participants aged 9-12 years and voluntarily attending this research based on allowed consent from their parents. Participants among teachers were recruited from two schools that the adolescents were attending. Then, potential participants among parents were approached at the public health services and were contacted by telephone and consent forms resent to those still interested in participating.

Interviews of parents were scheduled via telephone and conducted in public health services. The focus group discussion for healthcare professionals was conducted in public health services and the interview for teachers was conducted in schools.

Ethical consideration

The study was approved by the Ethical Committee Review Boards of Faculty Dentistry, University of Jember, Indonesia with No. 125/UN25.8/KEPK/DL/2018. Then, we obtained ethical and administrative approval from the Department of Political Unity of the Protection of the Public, the National Education District, and the school administration. Written consents of parents for children were received from the direction, written on page 1 and 2 of questionnaires. These pages informed about the aim and the importance of the research, that the participation is voluntary and that they are free to leave the research at any time. They were guaranteed that their identities and answers would be kept confidential.

Data analysis

Descriptive statistics, including frequencies and percentages, were used to summarize categorical measures; mean and standard deviation were used to summarize continuous measures for the demographic variable. The response options for the instrument questions of knowledge and acceptance of HPV vaccine among adolescents, parents and health professionals[16] were: yes; no; not sure. To score

the answers, a grouping of the questions by themes was done, assigning (0) to the non-correct as negative and (1) to the correctness as positive of each question. There was a reversal of scores in questions 11, 12, 19 and 31. The proportion of correct responses and respective 95% confidence intervals (CIs) were used to describe the proportion of correctness for each question and the knowledge and acceptability of the HPV vaccine.

The results of the interviews were recorded, transcribed verbatim, and analyzed thematically. Three researchers (TS, IR, and RAY) manually read the results of the transcript and encoded the data related to the keywords independently, then reviewed the transcripts again until agreement was reached within the framework of the main themes in the study. We used the nine stages of Colaizzi in analyzing the data.[19] We conducted transcribing with verbatim techniques on a digital recording of interviews from participants through FGDs. The next step was to do a thematic analysis to obtain themes appropriate to get the themes of the problem faced by the participants.[20] We made categories and codes based on statements obtained from interviews with participants to answer the research objectives. The next step was to make a conceptual formula from the themes.[19]

Results

The mean age of adolescent, parent, teacher, and healthcare professional participants was 10.3 years, 35 years, 45 years, and 35.8 years, respectively. Participants' gender was 70.5% males, and 29.5% females among adolescents; among teachers, one was male and seven were females, while most parents and healthcare professionals were female. The majority of the participants' religion and ethnicity were Hindu and Bali. For healthcare professionals, the majority occupation was midwifery, and 2 of them were trained for the HPV vaccine. The demographics of adolescents, parents, teachers, and healthcare professionals are described in Table 1.

In Table 2 (Appendix), regarding the perception about HPV knowledge and its repercussions on health, a lower proportion of correctness was identified, especially among adolescents and teachers, for all of the questions, and parents just for the following question: "Is cervical cancer a major cause of cancer in women?", with 60% (CI 8.0; 111.9), although for these questions healthcare professionals had a high level of correctness, 78.9% (CI 66.7; 91.2). Regarding knowledge about the HPV vaccine, adolescents had a high level of correctness for the following question: "Are three doses required for complete vaccination?", with 74.4% (CI 69.3; 79.6) for adolescents and 84.2% (CI 72.7; 95.7) for the healthcare professionals, respectively. A lower proportion of correctness was identified for all of the questions for teachers and particularly for the following question: "Is the HPV vaccine provided by the Government?", with 78.9% (CI 66.7; 91.2) for parents. Regarding acceptability of HPV vaccine and female personal history, a lower proportion of correctness was identified for all of the questions for adolescents, parents, and teachers, while healthcare professional had a high level of correctness for the following question: "Would you recommend the HPV vaccine for a child, friend, or relative to take?" with 76.3% (CI 63.9; 88.7).

In the data analysis, themes, categories, and keywords from an in-depth interview of parents and teacher, and focus group discussion of healthcare professionals were generated in Table 3 (Appendix). Three themes were identified from healthcare professionals, including community response, health promotion program of HPV vaccine, and the process of implementing the HPV vaccine program. Then, one theme was explored from parents, such as the perception of vaccine administration, while two themes were identified from teachers, including awareness and program sustainability.

Discussion

The study identified that perception about HPV knowledge and HPV vaccine had a lower proportion of correctness among adolescents and teachers for all of the questions, and a higher level of correctness among parents and healthcare professionals. Meanwhile, the acceptability of HPV vaccine and female personal health history have a high level of correctness for the healthcare

Table 1. Characteristics of participants, n (%)

Variable		Adolescents (n=176)	Parents (n=5)	Teachers (n=8)	Health professionals (n= 19)
Age (mean ± SD)		10.3±0.5	35.0±6.0	45±15.1	35.8±9.2
Gender	Male	124 (70.5)	0	1 (12.5)	0
	Female	52 (29.5)	5 (100)	7 (87.5)	19 (100)
Ethnicity	Jawa	18 (10.2)		0	2 (10.5)
	Bali	156 (88.6)	8 (100)	8 (100)	16 (84.2)
	Kupang	1 (0.6)		0	0
	Sumba	1 (0.6)		0	0
	Batak	0	0	0	1 (5.3)
Religion	Islam	21 (11.9)	0	0	0
	Hindu	152 (86.4)	5 (100)	8 (100)	17 (89.5)
	Catholic	1 (0.6)	0	0	1 (5.3)
	Christian	2 (1.1)	0	0	1 (5.3)
Education	Elementary school	N/A	0	0	0
	Junior high school	N/A	0	0	0
	Senior high school	N/A	8 (100)	0	0
	Diploma	N/A	0	0	14 (73.7)
	Bachelor degree	N/A	0	2 (25.0)	4 (21.1)
	Master degree	N/A	0	5 (62.5)	1 (5.3)
	Doctor degree	N/A	0	1 (12.5)	0
Occupation	Working	N/A	3 (60.0)	N/A	N/A
	Not working	N/A	2 (40.0)	N/A	N/A
Family income	Less than	N/A	1 (20.0)	N/A	N/A
	More than	N/A	4 (80.0)	N/A	N/A
Health professional	Medical doctor	N/A	N/A	N/A	3 (15.8)
	Nurse	N/A	N/A	N/A	6 (31.6)
	Midwife	N/A	N/A	N/A	10 (52.6)
Training regarding HPV vaccine	Yes	N/A	N/A	N/A	2 (10.5)
	No	N/A	N/A	N/A	17 (89.5)

N/A – not assessed; **SD** – standard deviation.

professionals. These results indicate that knowledge and perception regarding HPV and HPV vaccination among adolescents and teachers in Indonesia, particularly in Denpasar, Bali, are still insufficient. However, the perception of vaccine administration was acceptance for parents (90%) and healthcare professionals (81.6%). These results were similar with previous studies about HPV vaccination in Indonesia that was going well.[11-13]

In this study, the knowledge of HPV and HPV vaccine among adolescents and teachers had a lower proportion of correctness. This is likely caused by the fact that children are not yet familiar with the HPV vaccine, and no detailed information is given about the HPV program at school. In Indonesia, the immunization program is known only to the basic immunization program in public health services, so this has an impact on knowledge among children and teachers about HPV vaccination for children in preventing cervical cancer. These findings are similar to previous studies which revealed that knowledge of HPV and HPV vaccines in Indonesia is still low.[11-13] However, based on the results of the qualitative study, the teachers perceived an acceptability of the HPV vaccine for preventing HPV, although the main importance is given to preventing risk behaviors which cause HPV. Therefore, health promotion programs for giving information, an explanation, and understanding of HPV vaccine should be done in

schools, and then opening services of HPV vaccine could be conducted in school health services for sustainability of the HPV program based on schools. Public health nurses from Public Health Centers where the schools are located could give the HPV vaccination for young age women after they get menstruation.

Meanwhile, parents' knowledge on HPV and acceptance of the HPV vaccine are quite good. This is probably because the majority of participants in the interview were mothers who understood reproductive health conditions. Based on the results of the interview, parents perceived the importance of giving HPV vaccine to prevent early childhood health issues related to reproductive health, so parents accept the HPV vaccine program for their children. Previous studies have also shown the same results that parents believe that giving their children an HPV vaccine can help improve their children's reproductive health[12, 18] However, on the other hand, there are some parents who are worried about the HPV vaccine program. This is in accordance with previous studies, which revealed that the use of the HPV vaccine as immunization against HPV infection in young women is still a lot that can't be accepted by people.[21-25] Therefore, it is necessary to disseminate information through health education to parents who have adolescents, related to the administration of HPV vaccines to adolescents, related to dosage, type, method of administration, and side effects, as well as the benefits of vaccines. This is sought to increase the coverage of HPV vaccine programs provided by the socio-cultural and religious conditions of the local community.

The results of the study show that the knowledge of health workers about HPV and the HPV vaccine is very good. The results of the focus group discussion analysis also showed that health workers received well the HPV vaccine in adolescents to prevent cervical cancer. This is probably because the majority of the health workers in this study were midwives who were accustomed to handling reproductive health problems in the community and had received HPV vaccine training. The results of this study are the same with a previous study that showed that the aspect of community acceptance related to the HPV vaccine is very dependent on the ability of health care professionals to conduct health promotion and also provide HPV vaccines.[5,11] In the research, an exploration process was also carried out regarding the response of public acceptance of the HPV vaccine both regarding benefits and safety. This information is very useful for the community in responding to the HPV vaccine program. Therefore, health promotion related to the importance of HPV vaccine and HPV vaccine services needs to be done in the community based on the socio-cultural and religious background of the community by using a manual or vaccine card that contains information needed by the community.

However, this study has several limitations. First, this study is only a pilot study in two health centers in the Bali region implementing the HPV vaccine for young women. The two public health centers became part of the initial project for HPV vaccination for young women. Therefore, more locations and more participants are needed for the data to be generalized in Indonesia. Second, this research was carried out in Bali, which has almost the same social, cultural and religious backgrounds. This is likely to result in different results if done on some islands in Indonesia because Indonesia is multi-ethnic and has multiple religions. The majority of religion in Indonesia is Islam that might want the Halal aspect of the HPV vaccine for them. For this reason, a cross-cultural approach in subsequent research is needed. Third, the provision of the HPV vaccine is very dependent on the holders of government policies for each province. However, the Ministry of Health is suggested for providing HPV vaccine, but the implementation is dependent on the holders of each provinces. Therefore, in the next study policy views in health need to be seen. For this reason, a research approach to the socio-ecological model needs to be done in exploring the acceptance of HPV vaccines in Indonesia.

Conclusions

We can conclude that knowledge about HPV and HPV vaccines is still very low, especially in

the adolescent and teacher groups. Older people groups and health workers have accepted the administration of the HPV vaccine as a preventive method against cervical cancer. Furthermore, socialization of school-based and community-based HPV vaccine programs is needed to increase health promotion of the importance of HPV vaccines. Health promotion programs must be adapted to the local community's social, cultural, and religious background. Information about HPV vaccine should be clear, including details about the method and the benefits of the vaccine. The detailed information can be written on the vaccine card to help people access public health services.

Authors' contributions statement: TS: conceptualization, methodology, validation, formal analysis, investigation, resources, data curation, writing – original draft, writing – review and editing, supervision, project administration, and funding acquisition. ENR: conceptualization, methodology, validation, formal analysis, investigation, resources, data curation. LAS: conceptualization, methodology, validation, formal analysis, investigation, resources, data curation. IR: validation, formal analysis, investigation, data curation, and writing – original draft. RAY: validation, formal analysis, investigation, data curation, and writing – original draft. NLPE: Validation, formal analysis, investigation. PASU: validation, formal analysis, investigation. All authors read and approved the final version of the manuscript.

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Appendix

Table 2. HPV vaccine knowledge and acceptability, ratio (95% confidence interval)

Variable	Adolescents (n=176)	Parents (n=5)	Teachers (n=8)	Health professionals (n=19)
Knowledge about HPV				
Do you know what HPV is?	34.6 (28.8; 40.5)	20.0 (-35.5; 75.5)[a]	43.7 (28.9; 58.5)	76.3 (63.9; 88.7)
Is HPV a virus?	55.9 (50.2; 61.7)	80.0 (24.5; 135.5)	31.2 (9.6; 52.9)	76.3 (63.9; 88.7)
Is HPV a sexually transmitted disease?	54.5 (47.7; 61.3)	80.0 (45.9; 114.0)	37.5 (18.1; 56.8)	71.0 (54.4; 87.7)
Can HPV cause cervical cancer?	55.1 (49.6; 60.6)	90.0 (62.2; 117.8)	43.7 (28.9; 58.5)	76.3 (63.9; 88.7)
Can HPV cause changes in the Pap (screening for cervical cancer)?	67.0 (60.9; 73.1)	90.0 (62.2; 117.8)	31.2 (9.6; 52.9)	76.3 (63.9; 88.7)
Is cervical cancer a major cause of cancer in women?	51.9 (48.3; 55.6)	60.0 (8.0; 111.9)	25.0 (2.6; 47.3)	78.9 (66.7; 91.2)
Can smoking increase the risk of cervical cancer?	54.5 (49.1; 59.9)	70.0 (35.9; 104.0)	25.0 (2.6; 47.3)	76.3 (63.9; 88.7)
Knowledge about HPV vaccine				
Does the HPV vaccine prevent cervical cancer?	57.7 (53.9; 61.4)	80.0 (45.9; 114.0)	37.5 (18.1; 56.8)	76.3 (63.9; 88.7)
Should the HPV vaccine be given before the first sexual intercourse?	61.6 (56.4; 66.9)	90.0 (62.2; 117.8)	31.2 (9.6; 52.9)	73.7 (58.9; 88.4)
Can the HPV vaccine be given to people who have had sex?	58.8 (51.8; 65.8)	80.0 (24.5; 135.5)	37.5 (18.1; 56.8)	76.3 (63.9; 88.7)
Can HPV vaccine be harmful to health?	34.9 (28.7; 41.2)	90.0 (62.2; 117.8)	25.0 (2.6; 47.3)	55.3 (31.3; 79.2)
Can the HPV vaccine cause HPV infection?	56.5 (49.5; 63.5)	90.0 (62.2; 117.8)	12.5 (-6.8; 31.8)[a]	57.9 (34.8; 80.9)
Is the HPV vaccine provided by the Government?	55.9 (52.2; 59.7)	60.0 (32.2; 87.8)	37.5 (18.1; 56.8)	76.3 (63.9; 88.7)
Is the HPV vaccine part of the girls' immunization record?	54.5 (50.9; 58.2)	70.0 (14.5; 125.5)	50.0 (27.6; 72.3)	76.3 (63.9; 88.7)
Where did you hear about the HPV vaccine?	66.5 (61.9; 71.1)	80.0 (45.9; 114.0)	62.5 (32.9; 92.1)	76.3 (63.9; 88.7)
Are 3 doses required for complete vaccination?	74.4 (69.3; 79.6)	90.0 (62.2; 117.8)	37.5 (7.9; 67.0)	84.2 (72.7; 95.7)
Does the HPV vaccine lessen the chance of having genital warts?	64.8 (58.2; 71.3)	90.0 (62.2; 117.8)	25.0 (2.6; 47.3)	81.6 (69.6; 93.5)
Does the HPV vaccine decrease the chance of having Pap (cervical cancer screening) changes?	63.6 (57.7; 69.5)	90.0 (62.2; 117.8)	50.0 (27.6; 72.3)	68.4 (50.1; 86.7)
Do you think the HPV vaccine would stimulate the onset of sexual life earlier?	56.2 (49.0; 63.5)	80.0 (24.5; 135.5)	18.7 (-12.3; 49.8)[a]	55.3 (31.3; 79.2)
Do you think that after the HPV vaccine you still need to use a condom?	53.7 (46.3; 61.0)	80.0 (45.9; 114.0)	37.5 (18.1; 56.8)	73.7 (58.9; 88.4)
Do you think that after the HPV vaccine you still need to have the Pap (cervical cancer screening)?	58.5 (51.5; 65.5)	90.0 (62.2; 117.8)	25.0 (2.6; 47.3)	76.3 (63.9; 88.7)
Acceptability of HPV vaccine and female personal history				
Do you know anyone who has already had the HPV vaccine?	44.3 (38.5; 50.1)	20.0 (-35.5; 75.5)[a]	6.2 (-8.5; 21.0)[a]	71.0 (54.4; 87.7)
Have you taken the HPV vaccine yet?	51.9 (48.9; 55.0)	20.0 (-35.5; 75.5)[a]	12.5 (-6.8; 31.8)[a]	68.4 (50.1; 86.7)
Would you recommend the HPV vaccine for a child, friend, or relative to take?	54.5 (49.3; 59.8)	50.0 (-12.1; 112.1)[a]	31.2 (9.6; 52.8)	76.3 (63.9; 88.7)
Have you ever had Pap (cervical cancer screening)?	N/A	40.0 (-11.9; 91.9)[a]	12.5 (-17.0; 42.0)[a]	36.8 (23.3; 50.4)
Have you ever had cervical cancer?	N/A	30.0 (-25.5; 85.5)[a]	12.5 (-17.0; 42.0)[a]	5.3 (-5.8; 16.3)[a]
Have you ever had genital warts?	N/A	30.0 (-25.5; 85.5)[a]	25.0 (-13.7; 63.7)[a]	5.3 (-5.8; 16.3)[a]
Perception of health professionals				
Patients living with HIV can take the vaccine?	N/A	N/A	N/A	N/A
Am I confident to indicate HPV vaccination for patients?	N/A	N/A	N/A	55.3 (35.7; 74.8)
Do I feel confident giving information about HPV to patients?	N/A	N/A	N/A	55.3 (47.7; 62.9)
Can pregnant women take the vaccine?	N/A	N/A	N/A	7.9 (-1.1; 16.9)[a]

[a]Not significant.

N/A – not assessed.

Table 3. Perception of health professionals, parents, and teachers about HPV vaccine through focus group discussion

Participants	Theme	Category	Keyword
Health professionals	Community response	Enthusiasm	Asking questions
			Willingness
			Very good response
			Vaccination requests
			Demanding vaccination rights
			Requesting personal information (consultation)
		Information needs	Content of the vaccine
			Price of the vaccine
			Benefits of vaccination
			Schedule of vaccination
			Worries of parents due to free sex
			Type of vaccine
			Relation to menstruation
		Expediency	Reproductive health
			Prevention of diseases caused by free sex
			Prevention of cervical cancer
			Primary protection
			Cost-effectiveness
		Rejection	Vaccination caused pain for children
			Children are not attending school
			Halal status of vaccines
			Needle phobia for children
			Cervical cancer after vaccine
			Child becomes sick after vaccination
	Health promotion vaccine	Media	Social media (Instagram, WhatsApp, Facebook)
			Reproductive health counseling
			Discussions at the clinic in community health centers
			Immunization cards
			Posyandu (Community health centers)
		Time	Directly by the district health office to the health professional in community health centers
			By health professionals in community health centers to school teachers
		Contents	Content
			Benefits
			Schedule
			Treatment of side effects

Participants	Theme	Category	Keyword
		Target	5th grade girls in elementary school 1st grade junior high school students 9-13 year-old women Public and private elementary schools
	Process implementing program	Informed consent	Request for approval and signature of approval
		Vaccine administration	Vaccination Injection Education of side effects
		Follow-up	Handling side effects Registering the next vaccine Immunization cards Reporting systems
Parents	Perception of vaccine administration	Reception	May be vaccinated Agree to be vaccinated It's okay as long as it's free May be good
		Concerned and worried	Unclear content Understanding of benefits Post-vaccine symptoms Possible cervical cancer
		Lack of information	Vaccine types Vaccine benefits Vaccine schedule
Teacher	Awareness	The importance of understanding	Needed information, an explanation, and understanding There are questions and refuse because of doubt
		Risk behaviors which cause HPV	The content is not good from sanitary napkins How to clean up Clean the toilet Early free sex Changing partners
	Program sustainability	Cost reduction	Help finance and ease the burden of costs vaccine
		Service access	Easy to get and affordable to the community No hassle to go to the Community health services (Puskesmas)