

## Indonesia's readiness to implement the HPV vaccine mandatory for school age

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### Abstrak

**Latar Belakang:** Menurut WHO, dua dari 10.000 wanita di Indonesia hidup dengan kanker serviks dan diperkirakan 26 wanita meninggal setiap hari akibat kanker serviks. Berdasarkan kondisi ini, pemerintah Indonesia berencana menambahkan vaksin HPV ke dalam program imunisasi nasional. Tujuan penelitian adalah untuk menilai kemungkinan kesiapan Indonesia untuk menerapkan vaksin HPV wajib untuk usia sekolah dan faktor-faktor yang dapat mempengaruhinya.

**Metode:** Metode yang digunakan adalah systematic review. Melalui artikel terkait vaksin HPV yang terbit di jurnal terakreditasi dan scopus-indeks selama 10 tahun terakhir dengan kata kunci "Implementasi untuk Imunisasi HPV", ditemukan sebanyak 17.000 hasil pencarian. Setelah itu, penilaian kritis pada artikel yang dipilih dilakukan dengan menggunakan metode PRISMA.

**Hasil:** Ditemukan bahwa kesadaran masyarakat, terutama orang tua, tentang vaksin HPV masih kurang, namun penerimaan mereka terhadap vaksin ini cukup positif. Ada beberapa faktor lain yang menjadi keberatan mereka terhadap vaksin, seperti harga tinggi, ketakutan akan efek samping, seksualitas, gender, dan sistem perawatan kesehatan. Saat ini di Indonesia vaksin HPV harus dibeli atas inisiatif mereka sendiri dan bukan merupakan program wajib dari pemerintah pusat dan juga tidak diberikan secara gratis melalui program JKN. Namun demikian, Kementerian Kesehatan telah memulai proyek percontohan untuk menyediakan vaksinasi HPV gratis di beberapa daerah dalam Program Bulan Imunisasi untuk Usia Sekolah menggunakan kombinasi sumber daya pusat dan daerah.

**Kesimpulan:** Telah ada peraturan dan pedoman teknis untuk pelaksanaan proyek percontohan vaksinasi HPV gratis, namun masih perlu penyesuaian dan dukungan dari Pemerintah jika akan dilaksanakan secara nasional dan disesuaikan dengan kondisi di daerah dengan fasilitas dan akses terbatas. Dibutuhkan peran pemerintah dalam memberikan informasi yang baik tentang vaksin HPV bagi masyarakat.

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**Keyword:** Vaksin HPV, Kesiapan Implementasi, Program Imunisasi Nasional

### Abstract

**Background:** According to WHO, two out of 10,000 women in Indonesia live with cervical cancer and an estimated 26 women die each day from cervical cancer. Indonesian government is planning to add the HPV vaccine into the national immunization program. The objective is to assess the possibility of Indonesia's readiness to implement the HPV vaccine mandatory for school age and factors that may affect it.

**Methods:** The method was a systematic review through articles related to HPV vaccine which have been published in accredited and scopus-indexed journals for the last 10 years. With keywords "Implementation for HPV Immunization", founded 17,000 search results. Afterwards, a critical appraisal on the selected articles is conducted using PRISMA method.

**Results:** It is found that the awareness of community, especially parents, about HPV vaccine is still lacking, but their acceptance of this vaccine is quite positive. There are other factors into their objection to vaccines, such as the high price, fear of the side effects, sexuality, gender, and healthcare systems. Currently in Indonesia HPV vaccine must be purchased on their own initiative and is not a mandatory program of the central government. Neither has it been given free of charge through JKN program. Nevertheless, The Ministry of Health has begun a pilot project to provide free HPV vaccination in some areas within Immunization Month for School Age program using a combination of central and regional resources.

**Conclusion:** Although there have been regulations and technical guidelines for the implementation of the pilot project of free HPV vaccination, it still needs adjustment and support from the Government if it will be implemented nationally and adapted to conditions in areas with limited facilities and access. The role of the government is needed in providing good knowledge about the HPV vaccine for the community.

(*Health Science Journal of Indonesia* 2018;9(2):107-18)

**Keyword:** HPV Vaccine, Implementation Readiness, National Immunization Program

Cervical cancer is the second most common type of cancer in women worldwide, with all cases linked to a sexually transmitted genital infection with the human papillomavirus (HPV). Due to poor access to screening and treatment services, more than 90% of deaths occur in women living in low and middle-income countries.<sup>1</sup> Cervical cancer is the fourth most common cancer in women, and the seventh overall, with an estimated 528,000 new cases in 2012.<sup>2</sup> According to the WHO (2012), two out of 10,000 women in Indonesia live with cervical cancer and an estimated 26 women die each day from cervical cancer. The total number of women with cervical cancer in Indonesia has reached 21 thousand cases. Current estimates in 2017 indicate that every year, 20928 women are diagnosed with cervical cancer and 9498 die from the disease.<sup>2</sup> Cervical cancer ranks as the 2nd most frequent cancer among women in Indonesia and the 2nd most frequent cancer among women between 15 and 44 years of age.<sup>3</sup>

It was known that cervical cancer is caused by an oncogenic human papillomavirus (HPV) infection. The oncogenic HPV types are of 16, 18, 45, 31, 33, 52, 58, 35, 59, 56, 51, 39, 68, 73, and 82. HPV types 16 and 18 are the main causes of 70% cases of cervical cancer.<sup>4</sup> In cases of cervical cancer in Indonesia the HPV types with the highest prevalence are HPV 16, 18, and 52. This virus infects the cervix through sexual contact.<sup>5</sup>

HPV virus infection can affect anyone, which ranges from women aged 20 years to women who are no longer in productive age. Some of the risk factors of HPV infection include early age of marriage and sexual intercourse at the age of less than 18, and women with high frequency of sexual activity and multiple partners, smokers, have a history of sexually transmitted diseases, parity (the number of births), and long-term use of oral contraceptives. These groups face a 5 time greater risk to be infected with the HPV virus (human papillomavirus).<sup>6,7</sup> In developing countries, the number of children and poverty is a main factor that makes the incident of cervical cancer so high.<sup>6,7</sup> High risk for women from the age of 20 years indicates that adolescence women or women who already experienced menstruation should start paying attention to her reproductive health.

WHO recommends a comprehensive approach to cervical cancer prevention. The recommended set of actions includes interventions across the life course. It should be multidisciplinary, including components from community education, social mobilization, vaccination, screening, treatment and palliative care.<sup>8</sup> Primary prevention begins with HPV vaccination of girls aged 9-13 years, before they become sexually

active. Other recommended preventive interventions for boys and girls as appropriate are education about safe sexual practices, including delayed start of sexual activity; promotion and provision of condoms for those already engaged in sexual activity; warnings about tobacco use, which often starts during adolescence, and which is an important risk factor for cervical and other cancers; and male circumcision.<sup>8</sup> WHO recommends vaccination for girls aged 9-13 years as this is the most cost-effective public health measure against cervical cancer.<sup>8</sup>

Immunization is estimated to be able to prevent 2.5 million cases of child deaths per year worldwide.<sup>9</sup> In Indonesia, immunization is regulated by national policy through immunization program. According to Minister of Health Regulation No.42 of 2013 on immunization implementation, it is mentioned that immunization which applied in Indonesia consists of 2 types that is mandatory immunization and preference immunization. Mandatory immunization is an immunization given by the government for a person in accordance with his / her needs in order to protect the concerned and the surrounding community from certain infectious diseases, whereas the preference immunization is an immunization that can be provided to a person in accordance with his/her needs in order to protect the affected person from a particular infectious disease. Mandatory immunizations consist of routine immunization, supplemental immunization, and special immunization.<sup>10</sup> Categories of preference immunization are Haemophilus influenza type b (Hib), Pneumococcal, Rotavirus, Influenza, Varicella, Measles Mumps Rubella, Typhoid Fever, Hepatitis A, Human Papilloma Virus (HPV), and Japanese Encephalitis.<sup>10</sup>

Until now HPV vaccine is included in the preference immunization category that may not be applied by all Indonesians to their children. Although several districts/ municipalities in Bali have used APBD for free HPV vaccination since a few years ago and so did Surabaya using APBD funds, unfortunately, it did not take place in all regions in Indonesia.<sup>11</sup> Under these conditions, the current Indonesian government is planning to add the HPV vaccine into the national immunization program. The HPV immunization program through the Bulan Imunisasi Anak Sekolah (BIAS)/Immunization Month for School Age program begins with the provision of immunization at a pilot site that has a high prevalence rate of cervical cancer and is considered to have readiness in carrying out HPV immunization. The first place to begin the project is DKI Jakarta province starting in October 2016 and will be continued a year after in two districts

in DIY provinces: Kulonprogo and Gunung Kidul regencies. DKI Jakarta and DI Yogyakarta provinces are the two cities that are considered the most ready for the pilot study, and if the project was successful then immunization program can be proposed to the National Parliament in order to become a national program.<sup>11</sup>

However, although the HPV vaccine will be incorporated into the national immunization program, the characteristics and culture of the population in Indonesia may not support the ongoing system. This study would review the possibility of Indonesia's readiness to implement the HPV vaccine mandatory for school age and the factors that may affect it.

**METHODS**

**Study Design and Sampling Procedure**

The method of this study was a systematic review, equipped with secondary data search and sorted the

relevant news to analyze stakeholder's statement about mandatory HPV Vaccine for school-age children. Initial exploration was performed through google scholar, ScienceDirect, SemanticScholar and Pubmed to find suitable articles using keywords "Implementation for HPV Immunization" and finding as many as 17,000 search results, then refined with more specific keywords. The results then was specified with research sites in Indonesia or residing in developing countries that have a nearly identical characteristics of population with Indonesia. From the inclusion criteria were then obtained three articles that describe how the views of parents and the community on the importance of getting vaccinated at an early age performed in India, Indonesia, and Brazil. The time period between 2011 and 2016 was applied to be able to explore the latest situation. Finally, 5 articles matched the criteria and were chosen for the review.

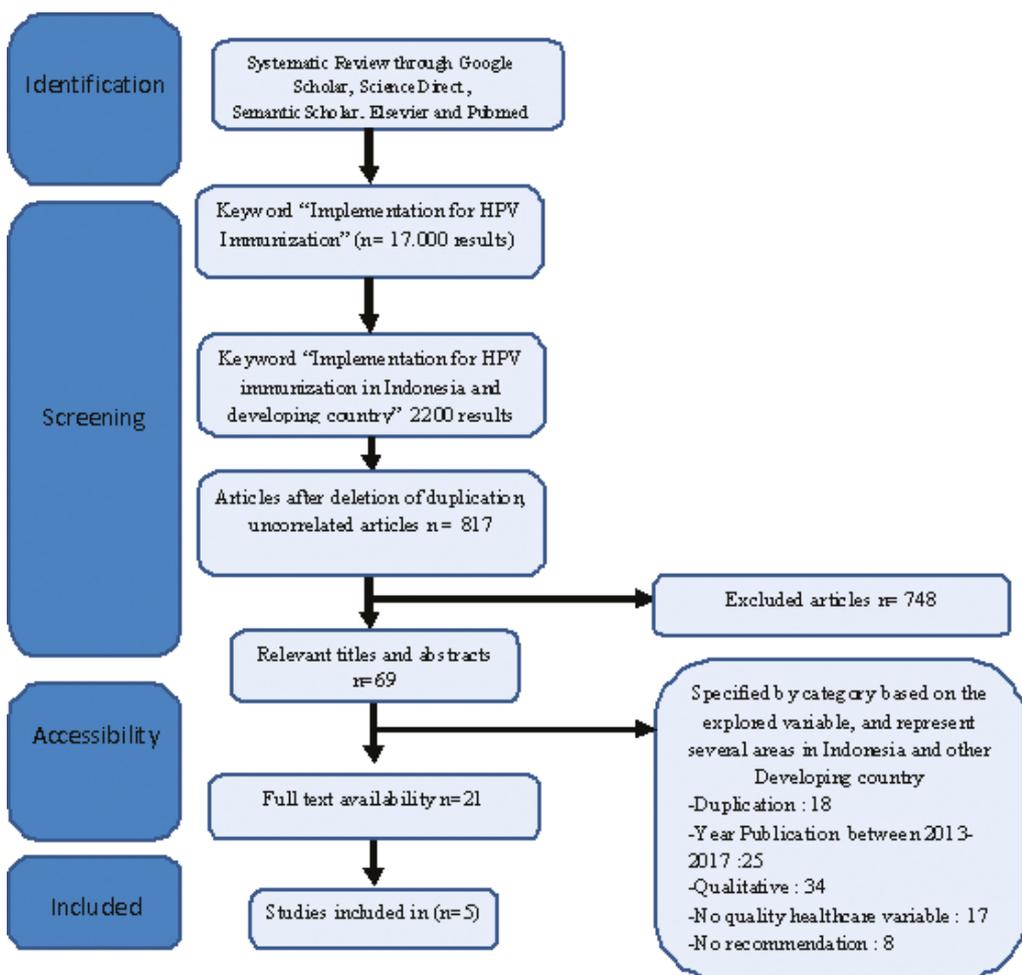


Chart 1. Systematic review process

Table 1. Articles Characteristic

No	Title	First Author, Year of Publication, Journal's name	Objective	Setting	Study Design	Subject and Study Sample	Variable
1	Acceptability of HPV vaccine implementation among parents in India <sup>12</sup>	Paul, Prama (2014), Health Care Women Int Journal; Author manuscript; available in PubMed Central 2015 July 15.	Assess STI-related knowledge and HPV-specific vaccine awareness and acceptability	India	Qualitative study	Thirty-six interviews with parents were conducted to assess STI-related knowledge and HPV specific vaccine awareness and acceptability	Current vaccine utilization, potential barriers to receiving existing and new vaccine, knowledge of HPV and related diseases.  Participants were asked about the current immunization programs and vaccine availability. Next, participants knowledge regarding HPV infection, genital warts, and cervical cancer was assessed
2	"Those Who Love, Vaccinate": Parental Perceptions Of HPV Vaccination <sup>13</sup>	Chiang EDO (2014), Journal of Human Growth and Developmen 2015; Author manuscript; available in SemanticScholar 2015	Describe determinants of parental decisions to vaccinate their daughters against HPV	Brazil	Qualitative study	Thirty semi-structured interviews were conducted at five health posts in São Paulo, Brazil. Interview questions explored parental opinions of disease prevention methods, vaccines in general, and the HPV vaccine.	Demographics section and qualitative questions on six major themes. These questions explored parent opinions of disease prevention methods, the HPV vaccine, and vaccines in general, such as Participant demographics, HPV vaccination status, Perceptions of vaccination, Parental responsibility for preserving health, Trust in Health professional
3	Parental Acceptance Of Human Papillomavirus (HPV) Vaccination In Indonesia: A Cross-Sectional Study	Jaspers (2011), Vaccine Journal, Volume 29, Issue 44, 13 October 2011; Author manuscript; available in ScienceDirect 2011	To determine parental HPV vaccine acceptance in Indonesia, and factors that influence their Decision	Indonesia	Quantitative study	746 parents, with at least 1 daughter aged 0–14, were interviewed using questionnaires based on published and adjusted interviews. Interviews were done in sub district public health centers, general governmental hospitals, and via house-visits, in 5 Indonesian provinces.	Socio-demographic information, Knowledge and sources information, fact sheet, attitudes towards vaccination in general, health beliefs regarding cervical cancer; HPV vaccine acceptance and reason in favor and against, other factors and possible barriers

No	Title	First Author, Year of Publication, Journal's name	Objective	Setting	Study Design	Subject and Study Sample	Variable
4.	Parent and adolescent knowledge of HPV and subsequent vaccination.	Fishman et all (2014) <i>Pediatrics</i> . 2014 Oct;134(4):e1049-56. doi: 10.1542/peds.2013-3454. Epub 2014 Sep 15.	Examines how strongly HPV vaccination among high-risk adolescents is related to their or their parents' previous knowledge	Philadelphia	Quantitative Study	Longitudinal cohort study enrolled participants from low-income, predominantly African American neighborhoods. Baseline questionnaires measuring knowledge of HPV and HPV vaccination, as well other variables, were completed by 211 adolescents and 149 parents of another adolescent sample	Knowledge of HPV and HPV vaccination,
5	Attitudes and perceptions towards HPV vaccination among young women in Saudi Arabia	Hussain, Anella et all (2016) <i>J Family Community Med</i> . 2016 Sep-Dec; 23(3): 145–150. doi: 10.4103/2230-8229.189107	To determine the awareness of HPV infection, its health sequel and the attitude and barriers to the acceptance of HPV vaccine by young women in Saudi Arabia	Saudi Arabia	Quantitative study	All patients of Family Medicine department, King Faisal Specialist Hospital and Research Center, Riyadh were invited to participate in this study from January 2012 to June 2014. A total of 325 patients participated as per the inclusion criteria	The knowledge, perception, and associated sociodemographic factors of HPV

After the results were sorted into 5 (five) journals, then the analysis of the significant variables that affect the decision of parents in vaccinating their children with HPV and how the recommendations were applied in the country was conducted. The readiness of implementation of this policy then was analyzed using the Edward III Framework(1980), equipped with secondary data search, and analysis of relevant news in mass media as a form of triangulation to maintain the validity of data. This study wanted to identify what kind of efforts have been done and should be done by the government of Indonesia in supporting the implementation of HPV vaccine policy. From that point of view, it can be figured out how Indonesia's readiness to implement the HPV vaccine mandatory for school-age children.

## RESULTS

The study conducted in India with a qualitative approached and complimented with quantitative data analyzing, have found that based on demographic data, the participants were between 19–62 years old (average 30) and the majority were mothers (83%) and Hindu (81%). Education ranged from none to postgraduate degrees and most (67%) were employed.

The study found that, there was lack of knowledge of the respondent, only two respondents reported to have some knowledge of HPV. All but seven participants had heard of cervical cancer; however, only one knew cervical cancer was associated with Sexual Transmitted Infection. Overall, parents understood that vaccinations were important but several parents were unaware of the need for vaccines to be given at older ages. Moreover, none of the participants knew about the HPV vaccine. Despite of the lack of of knowledge related to HPV and the associated vaccine, most parents were willing to vaccinate their children against HPV, especially with a health worker recommendation.<sup>12</sup>

From the perspective of who will be given the vaccine, many parents reported acceptance of girls-only vaccination. Others, however, indicated that the vaccine would only be acceptable if it was given to both girls and boys. All parents reported they would vaccinate their children if the vaccines were free, while 18 parents reported willingness to pay. Primary obstacles to vaccination were related to missing work for vaccine appointments and associated costs. Although vaccines were free (or low-cost) the family still lost daily wages because of waiting or going to the health care center to take a HPV vaccination for

their children. Overall, the most common barriers to HPV vaccination were work, cost, the concern about side effects, and education about HPV vaccine (e.g., effectiveness, karma). There was little concern related to transportation as most of the clinics were nearby or health workers came to the village.<sup>12</sup>

Similarly, the study in Brazil found the result that the knowledge of HPV was low among all parents (The participants were mainly female (87%) and the average age of the parents was 38 years and many had 1-2 children (46.7%)). However, a lack of knowledge did not determine support for vaccination. The interviews reflected a prominent culture of vaccination, where the decision to vaccinate appears to be less of an independent decision and more of a cultural expectation. Previous positive experiences with vaccination, including childhood vaccinations, perpetuate current positive perspectives of vaccines and subsequently, and the normalization of vaccination. The majority of parents expressed their reliance on the healthcare professionals in the health posts for their health related questions. Trust in biomedicine extends to trust in the Ministry of Health and its guidelines.<sup>13</sup>

Perceived gender differences within the realm of health and sexuality contributed to the acceptance of HPV vaccination for both boys and girls. High rate of acceptance for the vaccine also contributed to the sense of responsibility among parents for both maintaining their child's health and making their healthcare decisions. This study suggests that parental decisions to vaccinate against HPV can be better understood by examining the culture of vaccination from which the vaccine gains more than just a biomedical identity. HPV knowledge levels are not predictive of parental decisions to vaccinate daughters. Context specific factors from the sociocultural dimensions of parenting, sexuality, gender, and the healthcare system are more influential in vaccine decision-making.<sup>13</sup>

On another note, results from the study in Indonesia maybe quite interesting because of the diverse sociodemographic. Participants came from more than 23 different ethnical backgrounds. The highest percentage of Muslims was found in Surabaya (98.7%) and Banjarmasin (97.4%), the highest percentage of Hindus was found on Bali (88.4%), and the highest percentage of Christians was found in Manado (84.6%). In Medan 73.6% were Muslims and 26.4% were Christians. Furthermore, the vaccination status of children in Medan (77.4%) and

Banjarmasin (83.6%) was lower than in the other regions ( $p < 0.001$ ). A lower education level of the parent also leads to a lower vaccination status of their children ( $p < 0.001$ ).<sup>5</sup>

In addition, knowledge of HPV, HPV vaccination, and cervical cancer was low, inferred from three hundred and seven (41.6%) of the participants had 0 answers correct and only 30 participants (4.1%) had the maximum score of 8. The majority of the parents stated that they would like to learn more about these topics. In general, participants had (very) positive attitudes towards vaccination. Slightly fewer than 40% were afraid for the side-effects of vaccines and nearly 35% believed vaccination should only be given for very severe diseases. Health beliefs regarding cervical cancer showed that nearly 100% of the participants agreed that cervical cancer was either a very severe or severe disease; nearly 100% of the participants were either very afraid or afraid that their daughter(s) would develop cervical cancer in the future. Furthermore, 96.1% participants would accept HPV vaccination for their own daughters.<sup>5</sup>

The acceptance rate of immunization in the five provinces is as follows: Surabaya (98.7%), Bali (97.7%), Manado (96.0%), Banjarmasin (95.7%), and lastly Medan (92.5%). Due to the high acceptance rate, people who were in favor of HPV vaccination were also asked for their hypothetical reasons against vaccination. Ethnicity and HPV vaccine acceptance were found to be significantly associated. People from a Malay or Batak background (who both live in the provinces of Medan, Sumatra), were more negative towards HPV vaccination of their children. The Javanese and Balinese were more positive. Province by itself was not statistically significant.

Regression revealed that age, health beliefs about cervical cancer score, and the attitudes towards vaccination in general, were the only significant factors. Participants who were in favor of HPV vaccination were younger than those against HPV vaccination. Positive attitudes towards vaccination in general and positive health beliefs about cervical cancer also lead to a higher HPV vaccine acceptance rate. HPV vaccine acceptance was higher for participants with a higher total knowledge score, and for participants of whom the children received all the recommended vaccinations according to the national vaccination program.<sup>5</sup>

The high acceptance rate of immunization found in this

study could be explained by different reasons. Firstly, routine national immunization schedules are extensive in Indonesia, and parents are used to having their children vaccinated. Secondly, for many respondents their participation in this survey was their first contact with the topics HPV and HPV vaccination. Thirdly, the positive response towards HPV vaccination could be explained because participants gave the answer they thought would be the most socially desirable, instead of giving the answer they truly wanted to give. In Indonesian culture, this phenomenon is seen more frequently.

In this study possible barriers towards HPV vaccine acceptance were found, such as the cost of the vaccine, the fear for possible side-effects could form a possible barrier, and also the preferred location where participants would like to go for HPV vaccination differed. Most of the participants would prefer to go to a Puskesmas (sub district public health center) to get their children vaccinated to public hospitals. The reason why most participants of this study would prefer to go to the Puskesmas for HPV vaccination is because they belong to the group of people with a low or middle income. They are the ones that use the Puskesmas as their primary health care facility. Therefore, vaccination locations should be taken into account when planning strategies to implement HPV vaccination on a large scale in Indonesia.<sup>5</sup>

## DISCUSSION

From the five studies above, it is found that the parent's knowledge about HPV, cervical cancers and HPV vaccine are still low, but their acceptance of this vaccine is quite positive. On the other hand, HPV knowledge levels are not predictive of parental decisions to vaccinate daughters. This is similar to the opinion of Fishman et al<sup>14</sup> according to the results of his research which states that, although it is conceivable that knowledge is a prerequisite of healthy choices, it has been unclear if knowledge is indeed related to HPV vaccination. Neither parental nor adolescent knowledge was related to adolescent vaccination, as measured objectively at prospective time points. Some with low knowledge did get vaccinated and others with high knowledge did not get vaccinated. This finding suggests that, for many, knowledge was neither necessary nor sufficient.<sup>14</sup>

Another research conducted by Hussain found that, although the proportion of participants who had prior knowledge of HPV vaccine was low, the majority of

participants consented to initiate the HPV vaccine series.<sup>15</sup> This was predominantly the result of their physician's encouragement and the free availability of vaccine. Therefore, the health care providers are a quintessential source of education and advocates of this relatively new vaccine.<sup>14</sup> Primary health care physicians, pediatricians, and nurses are all crucial in educating and encouraging patients to initiate and complete the HPV vaccine series. Physician-patient encounter may also be used as a platform to deal with the commonly cited concerns of parents who decline the vaccine.<sup>16</sup>

From the results obtained in India, many parents reported acceptance of girls-only vaccination while others indicated that the vaccine would be acceptable if it was given to both girls and boys. Parents consider sex and gender in giving HPV vaccine to their children. This is also still a consideration in some countries, some have implemented Gender-Neutral policies such as Australia, US, and Canada for the provision of HPV vaccine for both boys and girls, but some countries such as the UK, budget problems still into a major consideration in giving HPV vaccine for all of the children. The basis of gender-neutral application is the fact that even though men are at low risk, but if he is a homosexual who had a sex with men, may be at higher risk than girls.<sup>17</sup> Important possible benefits from male immunization include significantly reducing or eliminating transmission of the virus in the population, thereby protecting the non-immunized, and the benefits from preventing HPV disease in males, which is not insignificant.<sup>18</sup> In addition, the factors which may affect the acceptance rate of HPV vaccine is age, health beliefs and attitude toward the immunization. Other things that may be a parent consideration to give HPV vaccine to their children one of them is the price charged for the vaccine. Without a doubt, one of the greatest barriers to the introduction of the HPV vaccine is its price.<sup>19</sup>

The process to include HPV Vaccine into the national immunization program in Indonesia will certainly be a fairly long discussion considering the price of HPV vaccine package is quite expensive. However, if viewed from a cost-effective perspective this certainly should be a more appropriate approach compared to the risk of cervical cancer-affected generation. In developing countries, HPV vaccines are not offered as part of the national immunization schedules. Immunization costs are not covered and vaccine uptake may be determined by the market (and marketing). Mandatory HPV immunization, although effective, would strain the health budgets

of developing countries.<sup>20</sup> The GAVI Alliance (formerly known as the Global Alliance for Vaccines and Immunization) — a partnership of national governments, the World Health Organization, the World Bank, the Bill and Melinda Gates Foundation, the vaccine industry, public health institutions, and non governmental organizations — provides technical assistance and financial support for vaccines in countries with a gross national income of less than \$1,000 per capita, as well as in China, India, and Indonesia.<sup>19</sup> This partnership can be an alternative solution to the funding problem.

All of the research above stated that, more positive health beliefs of the parents will have an impact on the increased acceptance rate of HPV vaccine. This statement in accordance with research from Emily L. B. Lykins, M.S., et al), who stated that beliefs are influenced by personal experience of a disease that affects the acceptance of messages and interventions to perform risk-prevention behaviors of a disease, in this case cancer.<sup>21</sup> Attitudes towards general health, vaccinations in general, as well as HPV vaccines are important in HPV vaccine uptake.<sup>22</sup> Factors that form attitudes, such as the experience of parents and families about cervical cancer, can give a support to the respondents to prevent cervical cancer. This is consistent with Azwar, who stated that there are several factors that influence a change in a person's attitude: personal experience, other important person's influence, cultural influence, mass media influence, education and emotional.<sup>23</sup>

Currently in Indonesia HPV vaccine is still included in the preference immunization category that may not be applied by all Indonesians to their children. The vaccine must be purchased on their own initiative, not a mandatory program of national governments and has not given free of charge through JKN program. The services provided are merely early detection through visual inspection methods acetic acid (VIA) or pap smear tests for participants BPJS. However, the current Indonesian government is planning to add the HPV vaccine into the national immunization program.<sup>11</sup> The pilot project to give a free-cost HPV immunization for school age children was conducted in DKI Jakarta on October 2016 and in DI Yogyakarta will conduct on 2017, through the Bulan Imunisasi Anak Sekolah (BIAS)/Immunization Month for School Age program. The government is implementing the provision of HPV immunization to female students of grade 5 (first dose) and 6 (second dose) of elementary school / Madrasah Ibtidaiyah and equal to both state and private school. For

pilot program in DKI Jakarta and Yogyakarta, the central government cooperates with GAVI (Global Alliances for Vaccine and Immunization). After this pilot project, the government will review that if the project was successful then immunization program can be proposed to the National Parliament in order to become a national program and the funding source for the vaccines comes from APBN (Anggaran Pendapatan Belanja Negara/State Budget Revenue).<sup>11</sup>

In Indonesia, an ineffectiveness of policy implementation is quite often due to a lack of coordination and cooperation among states and/or government institutions. Even though the implementation is a crucial stage in the policy process and without effective implementation, the decision of the policy maker will not be successfully implemented.<sup>24,25</sup> Implementation of a policy is an activity that is visible after a legitimate directive is issued from a policy that includes managing inputs to produce outputs or outcomes for the community. According to George Edward III (1980) in Nugroho (2009) states four things that drive policy implementation into success as follows<sup>25</sup>:

#### **a. Communication**

Related to how the policy is communicated to the organization and/or the public, the availability of resources to implement the policies, attitudes and responses of the parties involved, and how the organizational structure of the policy implementer. Indonesian Government need to ensure the policy communication system between the Ministry of Health and the units of the Public Health Office (PHO) which is then downgraded to Puskesmas in the region runs well and smoothly, even if it is necessary to maintain cross-sectoral communication. There needs to be coordination and intensive meetings to keep the socialization of the policy well received up to the smallest unit of society. Socialization media must also be used effectively, considering the results of research in some areas in Indonesia stated that the level of public knowledge about HPV vaccine is still low. During this time the Ministry of Health is actively providing the correct information related to the HPV vaccine implementation in school-age children. For example, there is fear from the parents about alleged side effects of vaccines that lead to early menopause. This information is then denied and straightened out through various media, for example articles published by the Bureau of Communication and Public Services, Ministry of Health through Ministry of Health's web.<sup>11</sup>

The same situation of controversies occurred recently in India over implementation of HPV vaccine studies (e.g., adverse event/side effects) resulting in the suspension of these projects.<sup>12</sup> These unfortunate events highlight the need for Indian health authorities and government officials to address people's concerns clearly and quickly to dispel fears based on misinformation and focus on improving the informed consent process.<sup>12</sup>

In Indonesia, the implementation of HPV immunization within the Immunization Month for School Age program (BIAS) has been regulated through the Decree of the Minister of Health of the Republic of Indonesia No. Hk.02.02 / Menkes / 489/2016 on Implementation of Immunization of Human Papilloma Virus in the DKI Jakarta and Daerah Istimewa Yogyakarta. This regulation is issued to regulate the implementation of pilot projects in 2 major cities in 2016 and 2017, and not yet applicable to implementation all over Indonesia. This regulation then disseminated to the implementers and stakeholders involved to facilitate the implementation of activities. In addition, there is also a technical guidance of implementation designed by the Ministry of Health to make the implementation more effective.

Moreover, the government needs to prepare adequate funds and facilities related to the implementation of free HPV. If the funds are approved to be included in the state budget, then vaccine-cost is no longer a barrier in parents' consideration of giving vaccines so that every child in Indonesia can get this vaccine.

## **b. Resources**

This is related to the availability of support resources, especially human resources, more specifically the skills of public policy implementers to carry out the policy effectively. Training and dissemination of HPV vaccine and its delivery procedures need to be provided to officers to ensure that even in the smallest units, health worker can provide good information to the parents. Front line physicians and educated men (though not health workers) in every environment can be important stakeholders in HPV vaccine acceptability and involve in the community as group or opinion leaders to transport awareness on vaccines in general as well as on HPV vaccine in particular.<sup>16</sup> In the Technical Guidance for the implementation of HPV Immunization

issued by Ministry of Health in 2016 to support the implementation of pilot project in two regions; DKI Jakarta and Yogyakarta, there is a statement explained that for the implementation of immunization in elementary school children are equally implemented in an integrated manner by cross-program and cross-sectoral in terms of personnel, facilities and funds from the central level to the executing level. While in detail for the needs such as all vaccine needs, syringes and safety box are charged to the National Budget, while the needs of immunization cards of school children, report format, anaphylactic equipment, and operational costs are charged to District Budget.

The design of funding system and the needs fulfillment was done on two big cities or areas in Java. However, the discussions will be more complicated considering this design on the islands of the archipelago with inadequate fiscal means and capacity by charging the District Budget. In addition, if the HPV vaccine is incorporated into a national immunization program, it should also be noted that the provision of state budget funds have to meet vaccine needs for all school-aged children in all regions of Indonesia.

## **c. Disposition or policy implementation attitude**

Related to the willingness of the implementors to carry out such public policies. Skills alone are not enough without the willingness and commitment to implement the policy. Commitment of health service and stakeholder in community health clinics can be maintained with clear regulation related to this HPV vaccine. Regulations governing the role of stakeholders and vaccine delivery procedures will keep the implementation of the policy on track. Multi-sectoral roles and co-operation can also makes policy implementation runs well.

Government's support is vital in encouraging HPV vaccine to become mandatory immunization for all children in Indonesia. Although clinically, HPV vaccine is highly recommended for every child, but bureaucratic problems within a country can be a polemical things in determining the policy of whether HPV vaccine will be included in the national immunization program or not. A contrast opinion that is mentioned by Javit et al, while the emergence of an HPV vaccine reflects a potentially significant public health advance,

the vaccine raises several concerns.<sup>26</sup> First, the long-term safety and effectiveness of the vaccine are unclear. Second, the legal and ethical justifications that have historically supported state mandated vaccination do not support mandating HPV vaccine. Mandating HPV would therefore constitute an expansion of the state's authority to interfere with individual and parental autonomy. Engaging in such expansion in the absence of robust public discussion runs the risk of creating a public backlash that may undermine the goal of widespread HPV vaccine coverage and lead to public distrust of established childhood vaccine programs for other diseases. Third, the current sex-based HPV vaccination mandates present constitutional concerns because they require only girls to be vaccinated. Such concerns could lead to costly and protracted legal challenges. Finally, vaccination mandates will place economic burdens on federal and state governments and individual practitioners that may have a negative impact on the provision of other health services.<sup>26</sup> Although public health officials have recommended that all girls aged 11 or 12 be vaccinated for HPV—a sexually transmitted virus that causes cervical cancer—political controversy has blocked adoption of mandatory school-enrollment vaccination programs in all but one state.<sup>27</sup>

Quoted from Media Indonesia (January 22, 2018), the member of the Legislative Assembly; Irma Chaniago, stated that the Legislative especially Commission IX support and encourage HPV vaccine to get into the national immunization program. This has been done from 2015 and all fractions in the parliament have agreed. The Legislative Assembly considers that the cost for a nationwide HPV vaccination program is smaller than the impact of illness. Moreover, in some area in Indonesia does not have the chemotherapy facilities that cervical cancer patients need. They hoped that HPV vaccination pilot project in school children in Jakarta, Yogyakarta and Surabaya can be extended to other areas so that after 2019 HPV vaccine has become a national program.<sup>28</sup>

The introduction of HPV immunization has also been planned for a long time by the Government, which has been stated in the comprehensive Multi Year Plan (cMYP) of 2015-2019 immunization program. The introduction of HPV immunization into the national immunization program was carried out in stages, starting with the

implementation of pilot project in DKI Jakarta in 2016, then this year expanded to 2 (two) districts in DIY Province namely Kulonprogo and Gunung Kidul Regency and Surabaya City (Ministry of Health, 2017). For the implementation of this introduction is also regulated through the Decree of the Minister of Health of the Republic of Indonesia No. Hk.02.02 / Menkes / 489/2016 on Implementation of Immunization of Human Papilloma Virus in DKI Jakarta and Daerah Istimewa Yogyakarta.

Ministry of Health also provides a Technical Guide to Implementation of HPV Implementation in Immunization Month of School Age (BIAS) issued in 2016, which explained about the role and function of each level either from the Central Ministry, Provincial, District / Municipal Health Office and Puskesmas. In addition to involving health agencies there is also multisectoral cooperation with the ministry of education and culture also the education offices at the district / municipal level, the Ministry of Religious Affairs and its staff and the Ministry of Internal Affairs in coordination with the Provincial Government and District / City Government.<sup>29</sup>

#### **d. Bureaucratic Structure**

Related to the suitability of the bureaucratic organization which is the organizer of the implementation of public policy. Providing HPV vaccine that is planned to be given in conjunction with the school immunization month program can simplify the procedure, because the existing bureaucratic structure will follow a pattern that has been going well before.

Implementation of BIAS in Primary Schools / Madrasah Ibtidaiyah of both public and private in Indonesia is the result of mutual cooperation and coordination. BIAS activity is one of the health services activities included in the Trias Program of the School Health Unit / Community Health Unit which is the provision of health services involving the Ministry of Health, the Ministry of National Education, the Ministry of Religious Affairs and the Ministry of Home Affairs. BIAS involving all levels, starting from National, Provincial, District / Municipal level to Sub-district level so that the health sector always coordinate with the Team of Trustees and the School Health Unit / Community Health Unit Implementation Team. The implementation

of guidance and development of School Health Unit / Community Health Unit is implemented by the Ministry of National Education, Ministry of Health, Ministry of Religious Affairs, and Ministry of Internal Affairs either individually or jointly in accordance with their duties and functions, which has been established by the Joint Decree between the Minister of Education and Culture Health, Minister of Religious Affairs and Minister of Home Affairs in 2014. These four Ministries are hereinafter referred to as the School Health Unit / Community Health Unit Fostering Team that control the School Health Unit / Community Health Unit at the Central, Provincial, District / Municipal and District levels.<sup>29</sup>

Technically, at the beginning of the school year, public health officers ask for data on the number of school children of Primary Schools especially in grades 5 and 6 to the District / City Education Office and Regency / City Religious Offices. Immunization then was done in school and if there is an ill student, they will be given a letter of introduction from the school to get immunization later at the nearest health center. Immunization records and report, vaccines, logistics, vaccine chains, and post-immunization follow-up incidents (KIPI) are sent gradually from the Public Health Offices to the Center with copies to the School Health Unit Development Team at each level.<sup>29</sup>

A detailed and clear support structure will make policy implementation effective. Design structures such as those designed for BIAS, especially pilot projects in some areas for HPV immunization can be adapted to facilitate future implementation. The system of giving through schools can also make it easier for parents so they do not have to lose their work time just to get their children vaccinated. However, an alternative needs to be arranged for children in areas with low school-entry levels. Whether the door to door system would be better implemented still needs to be re-examined.

Consideration of this matter will surely be a long discussion, but of course it is expected that the Government's plan to put HPV vaccine into national immunization program, as well as its policy implementation, can run as planned. This will certainly be a major step of the Indonesian nation to keep away the generations from cervical cancer and

reduce the death cases from this disease.

In conclusion, the information and analysis from systematic reviews, secondary data, and stakeholder's statement which stated in relevant news can be concluded that, although knowledge is not a determining factor, the government needs to raise people's awareness about the HPV vaccine through a variety of media to encourage them to get the HPV vaccine from an early age. Health belief and attitude toward immunization also can be influenced by a good role of the Primary health care physicians in educating and encouraging patients to initiate and complete the HPV vaccine series. Government needs to support this program with a good communication and socialization system, by providing a clear regulation related to this HPV vaccine, and making sure the required resources are available, especially the funding resources for the implementation.

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#### REFERENCES

1. World Health Organization. 2013. Women's health (Fact sheet). Available from: <http://www.who.int/mediacentre/factsheets/fs334/en/>
2. GLOBOCAN Cervical Cancer. 2012. Estimated incidence, mortality and prevalence worldwide in 2012. Available from: <http://globocan.iarc.fr/old/FactSheets/cancers/cervix-new.asp>
3. ICO HPV Information Centre. 2017. Indonesia; Human Papillomavirus and related Cancers, fact sheet 2017. Available from: [http://www.hpvcentre.net/statistics/reports/IDN\\_FS.pdf](http://www.hpvcentre.net/statistics/reports/IDN_FS.pdf)
4. Ocviyanti,D & Handoko, Y.2013. Peran dokter umum dalam pencegahan Kanker Serviks di Indonesia. Journal of Indonesian Medicine Association, Volume: 63, No. 1, January 2013. Jakarta : Indonesian Medicine Association.
5. Jaspers et all. 2011. Parental acceptance of human papillomavirus (HPV) vaccination in Indonesia: A cross-sectional study. Available from: [www.elsevier.com/locate/vaccine](http://www.elsevier.com/locate/vaccine)
6. Rachmani, B., Shaluhiah, Z., & Cahyo, K. 2012. Sikap remaja perempuan terhadap pencegahan Kanker Serviks melalui vaksinasi HPV di kota Semarang. Media Kesehatan Masyarakat Indonesia, Vol. 11 / No. 1, April 2012. Available from: <https://ejournal.undip.ac.id>

7. Aziz, MF. 2005. Vaksin Human Papillomavirus: suatu alternatif dalam pengendalian Kanker Serviks di masa depan. Disampaikan pada Upacara Pengukuhan sebagai Guru Besar Tetap dalam Ilmu Obstetri dan Ginekologi pada Fakultas Kedokteran Universitas Indonesia, Jakarta 28 Mei 2005.
8. WHO. 2016. Human papillomavirus (HPV) and cervical cancer (Fact sheet). Available from: <http://www.who.int/mediacentre/factsheets/fs380/en/> Human papillomavirus (HPV) and cervical cancer. Updated June 2016.
9. WHO, UNICEF, World Bank. 2009. State of the world's vaccines and immunization. 3rd edition. Geneva: World Health Organization.
10. Minister of Health Regulation No.42 of 2013 on Immunization Implementation.
11. Health Ministry. 2016. Kendalikan Kanker Servix sejak dini dengan imunisasi. [published on 26 November 2016] Available from: <http://www.depkes.go.id/article/view/16112800001/kendalikan-kanker-servix-sejak-dini-dengan-imunisasi.html>.
12. Paul, Prama et al. 2014. Acceptability of HPV vaccine implementation among parents in India. *Health Care Women International*. Volume 35(10): 1148-61. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/23611111>.
13. Chiang, Edo et al. 2014. "Those who love, vaccinate": parental perceptions of HPV vaccination". *Journal of Human Growth and Development*. 25(3): 341-350. Available from: [https://www.researchgate.net/publication/283292187\\_Those\\_who\\_love\\_vaccinate\\_Parental\\_perceptions\\_of\\_HPV\\_vaccination](https://www.researchgate.net/publication/283292187_Those_who_love_vaccinate_Parental_perceptions_of_HPV_vaccination)
14. Fishman et al. 2014. *Parent and adolescent knowledge of HPV and subsequent vaccination*. *PEDIATRICS Journal* Volume 134, Number 4, October 2014 published online September 15, 2014. Available from: <http://pediatrics.aappublications.org/content/pediatrics/134/4/e1049.full.pdf>.
15. Hussain, A. 2016. Attitudes and perceptions towards HPV vaccination among young women in Saudi Arabia. *Journal Family Community Medicine*, volume 23(3); Sep-Dec 2016. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5009883/>
16. Borena, W et al. 2016. Pre-vaccine era cervical human papillomavirus infection among screening population of women in west Austria. *Biomed Central Public Health* volume 16(1); 2016..
17. Smith, M. 2015. Should HPV vaccination be gender neutral? *CMAJ* volume 187(11) August 11, 2015. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4527922/>
18. Kane, MA. 2012. Preventing cancer with vaccines: progress in the global control of cancer. *Cancer Prev Res (Phila)*. 2012 Jan;5(1):24-9. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/22219163>
19. Agosti JM, Goldie SJ. 2007. Introducing HPV vaccine in developing countries—key challenges and issues. *N Engl J Med*. 2007;356:1908–10, May 10 2007. Available from: <http://www.nejm.org/doi/full/10.1056/NEJMp078053>
20. Graham, J. & Mishra, A. 2011. Global challenges of implementing Human Papillomavirus vaccines. *International Journal for Equity in Health* (2011). Available from: <https://equityhealthj.biomedcentral.com/track/pdf/10.1186/1475-9276-10-27?site=equityhealthj.biomedcentral.com>
21. Emily L. B. Lykins, M.S., et al. 2008. Beliefs about Cancer causation and prevention as a function of personal and family history of Cancer: a national, population-based study. *Journal of Psychooncology*. 2008 October ; 17(10): 967–974. doi:10.1002/pon.1306. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/18203236>
22. Tung, Wei-Chen et al. 2016. Application of the transtheoretical model to Cervical cancer screening in Latina women. *Journal of Immigrant and Minority Health* October 2016, Volume 18, Issue 5, pp 1168–1174. Available from: <https://link.springer.com/article/10.1007/s10903-015-0183-3>
23. Azwar, Saifudin. 2002. Human attitude: theory and measurement. Yogyakarta: Pustaka Pelajar.
24. Wibawa, Samodra. 1994. Kebijakan publik. Intermedia : Jakarta.
25. Nugroho, R. 2008. Public policy. Jakarta : Elex Media Komputindo.
26. Javit et al. 2008. Assessing mandatory HPV vaccination: who should call the shots? *Journal Of Law, Medicine & Ethics* Summer;36(2):384-95, 214. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/18547207>
27. Kahan D et al. 2010. Who fears the HPV vaccine, who doesn't, and why?: an experimental study of the mechanisms of cultural cognition. *Law and Human Behavior*, December 2010, Volume 34, Issue 6, pp 501–516. Available from: <https://link.springer.com/article/10.1007/s10979-009-9201-0>
28. Media Indonesia. 22 Januari 2018. Available from: <http://news.metrotvnews.com/peristiwa/8KyvgZYN-imunisasi-hpv-didorong-masuk-program-nasional>
29. Minister of Health. 2016. Technical guidance for the implementation of HPV immunization issued by Ministry of Health.