RESEARCH ARTICLE

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Exploring Parents' Decisions Regarding HPV Vaccination for Their Daughters in Jakarta, Indonesia: A Qualitative Study

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Abstract

Background: Cervical cancer, caused by the human papillomavirus (HPV), is the fourth most common cancer among women worldwide. Although many countries have introduced national HPV vaccination programs, many girls worldwide remain unprotected. As part of a demonstration project in 2016, the Indonesian government provided the HPV vaccination for free to all year five and six female students in Jakarta and several other cities, with a plan to roll out the program nationally in the future. Understanding parents' decision-making regarding whether they will allow their daughters to receive the HPV vaccine is important to ensure optimum uptake. **Methods:** Twenty-four parents in Jakarta were interviewed. Data were analysed thematically using The Theory of Planned Behaviour constructs of attitudes, subjective norms and perceived behavioural control. **Result:** Some parents had limited knowledge about cervical cancer and the HPV vaccine; others did not even realise that the free HPV vaccination program had been offered in their daughter's schools. Those who had better knowledge and positive attitudes trusted their health professionals as a source of information. Peer approval, trust in the government and having the vaccine through a school-based program was important for trust, eliminated cost barriers, and increased access. **Conclusion:** Parents' attitudes towards cervical cancer and HPV vaccination are influenced in part by their knowledge. Shaping positive initial attitudes is important, as once formed, attitudes are often difficult to change. Our findings suggest that a free school-based vaccine accompanied by sufficient and non-ambiguous information from trusted sources is vital to uptake.

Keywords: Decision making- HPV vaccination- cervical cancer prevention- adolescents- parents- qualitative

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Introduction

Cervical cancer is a leading cause of morbidity and mortality caused by human papillomavirus (HPV) infection. It is the fourth most common cancer among women worldwide, with approximately 604,000 new cases and 342,000 deaths in 2020 (Sung et al., 2021). Over 85% of the mortality caused by cervical cancer occurs in low-and middle-income countries. Indonesia has the second highest mortality rate in Asia due to cervical cancer (Arbyn et al., 2020), with about 32,000 new cases and 18,279 deaths in 2018 (Bruni et al., 2018).

The first vaccine to prevent HPV infection (Crosbie et al., 2013) was licensed in 2006 (Cutts et al., 2007). The HPV vaccine has proven to be effective in decreasing HPV infection by up to 90%, the incidence of low-grade cervical abnormalities by roughly 45%, high-grade abnormalities by 85% (Garland et al., 2016), and the quadrivalent HPV vaccination is associated with reduced risk of invasive cervical cancer at a population level (Lei et al., 2020).

By 2020, 107 countries had included HPV vaccination programs (Bruni et al., 2021). Australia and New Zealand had the highest coverage (77%), followed by Latin America (61%), Europe (35%), North America (35%), whilst coverage rates in western Asia and northern Africa were among the lowest (Bruni et al., 2021). However, only 15% of girls and 4% of boys worldwide are estimated to be fully vaccinated against HPV (Bruni et al., 2021). This is because several of the most populous countries, including Russia, China, India, Indonesia, Pakistan, Nigeria and Bangladesh, have not introduced the HPV vaccine, or only give the vaccine in some regions (Bruni et al., 2021).

Vaccine uptake among girls is associated with parents' education or socioeconomic status (Schülein et al., 2016); recommendations from health providers and peer endorsements are also important (Loke et al., 2017). Higher uptake is found in countries where the vaccine is publicly funded, suggesting that cost is also a crucial factor (LaMontagne et al., 2011; Loke et al., 2017; Garon et al., 2019). Meanwhile, parents' concerns about the vaccine's safety and lack of information are seen as barriers to HPV vaccine uptake (Gilmour et al., 2013; Loke et al., 2017;

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Suppli et al., 2018).

The Indonesian government started providing free school-based HPV vaccinations to all Year 5 and 6 female school students in Jakarta in October 2016 (Aziza, 2016), in Yogyakarta in 2017 (Handito, 2017), and Surabaya, Makassar and Manado in 2018 (Ramdan, 2020). It is estimated that the resultant uptake is over 90% (Pranita, 2019), even though no formal studies about the actual uptake or what guided parents' decisions regarding whether or not they would allow their daughters to receive the vaccine have been conducted.

The Theory of Planned Behaviour (TBP) is the most common used theory in HPV vaccination behaviour research (Batista Ferrer et al., 2015). The theory proposes that actions are influenced by intentions, even though not all intentions will be translated into actions (Ajzen, 1985). According to the theory, intentions are predicted by three main domains: attitude, subjective norms and perceived behavioural control (Ajzen, 1991). Attitude is defined as a person's beliefs of outcomes if they perform a particular behaviour; subjective norms refer to the importance of social pressure to carry out the behaviour; and perceived behavioural control is someone's belief and confidence in their ability to carry out the behaviour (Ajzen, 1991). If someone is confident that they can carry out the desired behaviour, it is likely they will have a higher intention to carry out the behaviour (Ajzen, 2020). In previous studies that used the TPB to examine behaviour related to HPV vaccine, (Ogilvie et al., 2007; Askelson et al., 2010; Fahy and Desmond, 2010; Teitelman, 2011; Hertweck et al., 2013), attitudes were a strong predictor for parents to accept and approve their daughters to receive the HPV vaccination (Askelson et al., 2010; Fahy and Desmond, 2010), while subjective norms also predicted intention (Askelson et al., 2010).

Most previous research in Indonesia has been quantitative studies that examined parents' intentions to have their daughters receive the HPV vaccine, or parents' acceptance of the vaccine in hypothetical scenarios (Jaspers et al., 2011; Endarti et al., 2018). To the best of our knowledge, there is a lack of studies that utilised a qualitative approach to explore what influenced parents' actual decisions regarding HPV vaccine for their daughters in Indonesia. Therefore, the aims of this research were to explore parents' knowledge of cervical cancer, the HPV vaccine, and what guided their decisions about their daughters receiving the HPV vaccine, in Jakarta, Indonesia.

Materials and Methods

Study design, setting and participants

This qualitative case study utilised an interpretivist constructivist epistemology which acknowledges that an individual's reality is dependent upon how they interact with the natural world and with one another (Crotty, 2003). This is relevant when exploring individual beliefs and factors associated with behaviour.

The study was conducted in Jakarta Indonesia, the sixth most populous province in Indonesia, with 10.6 million people (BPS, 2020). This study was part of a larger study and preceded by a quantitative component. In the quantitative component, 33 elementary schools in Jakarta were selected using stratified random sampling to ensure the sample was representative of parents from government, private, and religiously affiliated schools. Four hundred and eighty-four parents of Year 6 students in these schools returned an anonymous survey, which also asked parents to provide their details if they would agree to participate in the qualitative component of the study. Purposive sampling was then used to select parents from different sociocultural and economic backgrounds who allowed, refused or could not remember being offered the free school-based HPV vaccine for their daughters. Contact information was disaggregated from the survey to ensure participant confidentiality. The first author (KW), who did not have any previous relationship with parents, then contacted parents to make an appointment. Parents of Year 5 students were not contacted as they had not yet received the invitation to be vaccinated at the time of data collection, and the global COVID-19 pandemic prevented return travel to Indonesia during the study period.

Data collection

Semi-structured interview questions were developed by the research team based on the existing literature. The interview guide comprised six broad questions exploring parents' knowledge of cervical cancer and the HPV vaccine, whether or not they had allowed their daughters to receive the vaccine, and what guided their decisions. Questions were first piloted with five native Indonesian speakers for clarity and to ensure sufficient cross-cultural adaptation. KW a medical doctor and native Indonesian speaker, conducted the interviews in Indonesian, in person or by phone, depending on interviewee's preference, between September and November 2019. Interviewing continued after data saturation was reached (that is repetitive answers were received and no new information was found), to ensure a good spread of participants from diverse backgrounds and from those who refused the vaccine for their daughters (Fusch and Ness, 2015). All interviews were audio recorded with consent and transcribed verbatim.

Data analysis

Data were analysed deductively using framework analysis under the TPB constructs of attitude, subjective norms and perceived behavioural control (Ajzen, 1991).. The NVivo version 12 software program was used to assist in managing data. To increase rigour, researcher triangulation was employed to minimise researcher bias from having only one person analyse the data (Lincoln and Guba, 1985). KW translated the first few transcripts into English. KW and HS then coded together to create the coding framework, which KW used to code the subsequent interviews. HS and RI cross-coded 20% of interviews (Braun and Clarke, 2006); disagreements were discussed amongst all coders and resolved by consensus. Member checking (a process whereby the coded transcripts are taken back to respondents to check if they have correctly captured parents' views) was not conducted (Lincoln and Guba, 1985) because it was felt some parents might

become embarrassed or distressed by seeing their knowledge (or lack thereof) coded (Birt et al., 2016).

Ethics

Ethics approval was obtained from the Human Research Ethics Committee (HREC) of [removed for review purposes] (2019/076); governance approval was obtained from the Health Office in Jakarta and participating schools. Parents were informed that their participation was voluntary and provided written informed consent to participate.

Results

Parents' demographic and characteristics

Forty-one parents provided their details for the qualitative study. Two parents were not contactable. Interviewing continued after data saturation was reached to ensure a good spread of participants from diverse backgrounds and from those who refused the vaccine for their daughters, resulting in 24 interviews. Average interview length was 20 minutes (range 13-37 minutes). Nineteen had allowed the HPV vaccine, three had refused the vaccine and two could not recall being offered the vaccine and were asked to reflect on their possible response if they were offered the vaccine anytime soon. Parents' demographic characteristics are shown in Table 1.

Table 1. Parents' Characteristics.

Characteristic	N (%)
Response	
Allowed	19 (79.1)
Refused	3 (12.5)
Not aware	2 (8.3%)
Role	
Father	3 (12.5)
Mother	21 (87.5)
Age	
<30	1 (4.1)
31-40	13 (54.1)
41-50	9 (37.5)
>50	1 (4.1)
Employment status	
Employed	16 (66.7)
Not employed	8 (33.3)
Education	
Primary education	7 (29.2)
Senior secondary education	12 (50)
Higher education	5 (20.8)
Religion	
Buddhism	2 (8.3)
Christianity	2 (8.3)
Islam	20 (83.3)
Ethnicity	
Javanese	11 (45.8)
Sundanese	2 (8.3)
Betawi	6 (25)
Minangkabau	2 (8.3)
Chinese	3 (12.5)

Decisions regarding the HPV vaccination

Factors that influenced parents' decisions regarding HPV vaccination were coded under the three TPB domains of Attitudes, Subjective norms, and Perceived Behavioural Control, and are discussed below.

Attitudes

This theme captured parents' attitudes and knowledge towards the HPV vaccine.

In general, parents had little knowledge about cervical cancer and the HPV vaccine. Some of their knowledge was accurate while some was inaccurate:

"*All I know is that this cancer happens because of lack of hygiene and multiple partners."* (Mother , 41-50 years,employed, refused vaccination)

Despite this, many understood that cervical cancer is dangerous and believed that the HPV vaccine would protect their daughters against cervical cancer. Some parents also needed to be convinced about the authenticity of the vaccine, because it was being offered for free through schools:

"I'm afraid it is the counterfeit vaccine...I spent 1,8 million [rupiah] to get the vaccine for myself. Now it is given for free, I am a little bit doubtful whether the vaccine is [a] placebo or not." (Mother, 30-40 years, unemployed, refused vaccination)

Parents obtained information about HPV and cervical cancer from various sources including television, the internet, schools, friends, and family; only a few received information from health professionals. Receiving information from ill-advised sources, often led to misinformation:

"Other moms discussed the effects of the vaccine on our daughters' womb. It worried me since our daughters have not given birth." (Mother, 31-40 years, unemployed, refused vaccination):

In regards to the school-based program, the majority of parents stated that they received a brochure from the school with some information about the vaccination program along with a document asking for their permission to allow their daughter to be vaccinated. Many felt that the information in the brochure was not sufficient since it only contained the name of the vaccine, benefits of the vaccine, and date the vaccine would be administered. There was also inconsistency across schools in how information was disseminated to parents:

"Yes, some of the parents only got pamphlets, some were invited to the school in the first place and given [an] explanation. It depended on how active the Puskesmas [local health centre] officers were in doing their job." (Mother, 31- 40 years, employed, allowed vaccination)

Some parents felt they had insufficient knowledge and sought more information before making their decision*: "Before I allowed it, I searched it first. I read on the internet about what it is for, or if it is important or not. I also searched information about the virus, how it was*

transferred, and how to prevent it." (Mother 41-50 years, employed, allowed vaccination)

However, other parents were satisfied with the information because it was provided through the school:

"...if [the information] is announced by the school, I just believe it. I never ask for more information…" (Father, 51-60 years, employed, allowed vaccination)

Some parents took their previous immunisation experiences into account when considering whether or not to allow their daughters to receive the HPV vaccine. Parents who reported negative experiences with other vaccines and were concerned about side effects, declined vaccination for their daughter:

"Last time my daughter got an immunisation, she vomited and had [a] fever. She missed school for three days. I am afraid this vaccine will cause the same, so I'd rather not allow it." (Mother 31- 40 years, unemployed, refused vaccination)

Subjective norms

This theme captured parents' perceptions about whether people important to them think they should give HPV vaccination to their daughters. The theme also reflects their trust toward other people involved in their lives, and how they justify their cultural beliefs.

Parents with peers that vaccinated their daughters believed that they had based their decisions on what was best for their children and were therefore more inclined to allow vaccination:

"I think the vaccine is good, because one of my friends also allowed her daughter to receive it." (Mother,31-40 years, unemployed, allowed vaccination)

Having trust in the government seemed to eliminate doubts about the vaccine's ingredients or potential side effects. A mother, who previously refused HPV vaccine when her daughter was in Year 5, said that she would allow the vaccine for her daughter (now in Year 6) because she was more knowledgeable and trusted the governor:

"When my daughter was in Year 5, I did not allow her to receive the vaccine…I was also questioning the school's role in the program. This is a health matter, not [an] education matter. Now I know better. I know that the vaccine will be more effective if it is given to girls aged 9-13. That's why girls receive the vaccine at schools, because kids at that age spend most of their time at schools...I trust my governor 100 percent that he would give what is best for his people." (Mother, 41-50 years, refused vaccination)

Trust in the government as the vaccine provider and schools as the place where the vaccine was administered was important for acceptance. Parents' believed the government would not promote something harmful or against Indonesian religious or cultural practices:

"The halal [permissible] factor is indeed influential… It has been through a long process and the safety is guaranteed by the government…The government will take the responsibility if any side effect occurs. They will trace and make sure if the effects are related to the vaccine or the victim has any comorbidity that may result in poor outcomes of the vaccine." (Mother, 31-40 years, employed, allowed vaccination)

"My daughter is studying in an Islamic school. I think the school must have a better understanding about this... Since the school allowed it, they allowed the government to run the program in their place, I didn't think about that [whether it is permissible religiously] at that time." (Mother, 31-40 years, employed, allowed vaccination)

Others parents' relied more on the advice received by health professionals as they felt they had sufficient medical training and shared the same Muslim religious values:

"I don't really pay attention to the religious leaders, but I look at the doctors in the Puskesmas…They are also good Muslims." (Mother, 31-40 years, employed, allowed vaccination)

Perceived behavioural control

This theme encompassed parent's perceptions of their ability to vaccinate their daughters in terms of cost and access. Most parents who allowed the HPV vaccine for their daughters believed that they would not be able to afford the vaccine if it was not free:

"I am glad the government provides it for free. I don't think I can afford it. I would rather to use the money to pay rent or to buy food." (Mother , 41-50 years, unemployed, allowed vaccination)

In contrast, those who believed that they could afford HPV vaccine themselves tended to have the capacity to refuse or postpone the vaccine and buy the vaccine themselves in the future:

"Even though I am afraid that my daughter can get cervical cancer in the future, I made up my mind to refuse the vaccine…It is available in hospitals anyway. We can get it anytime." (Mother, 31-40 years, unemployed, refused vaccination)

Prior to the school-based vaccination program, the HPV vaccine was only available in hospitals. Access to hospitals is not the same for all Indonesians, and those who rely on the national health insurance scheme are required to attend Puskesmas before being referred to hospitals. Having the HPV vaccine administered at schools made it more convenient and accessible for parents to get their daughters vaccinated:

"I received it [the HPV vaccine], but my daughters had not received it at that time. I heard that they will get it in Year 5, so I was waiting for her to get it at school." (Mother, 31-40 year, unemployed, allowed vaccination)

Discussion

This study aimed to understand factors that guided parents' decisions regarding HPV vaccination. Through rich narratives and personal experiences, this study offers valuable insight that complement and enhance our understanding of how the TPB constructs of attitudes, subjective norms and perceived behavioural control shaped parents' decisions regarding HPV vaccination, as discussed below.

We found that parents had positive attitudes towards the benefits of the HPV vaccine, despite having limited knowledge about cervical cancer or the HPV vaccine specifically demonstrating that knowledge is not the only

important factor in driving uptake. Parents who refused the HPV vaccine displayed omission bias, that is a belief that bad outcomes resulting from acting on something (commission) are worse that bad outcomes from not doing something (omission), even if bad outcomes due to omission affect a large number of people or occur more often (Spranca et al., 1991). In this study, parents who denied vaccination said that they would rather wait a little longer to allow their daughters to have the vaccine despite the threat of cervical cancer. Previous studies also found that many people chose not to vaccinate their children when the risk of the vaccine-preventable diseases were perceived to be the same or higher than the risk from the vaccines (Ritov and Baron, 1990; Connolly and Reb, 2003; Wroe et al., 2004; Dibonaventura and Chapman, 2008). Omission bias might be caused by the feeling of responsibility (Ritov and Baron, 1990) and that bad outcomes from actions cause more regret than bad outcomes result from a lack of action (Spranca et al., 1991).

Parents' trust in their peers, the government and health professionals appear to be important in reducing vaccination hesitancy, which remains a significant threat to global health (Scheres and Kuszewski, 2019). A systematic review on the determinants of HPV vaccine hesitancy in Europe (the region in the world with the least confidence in vaccination), suggests that the quality and quantity of information about HPV vaccination is the most common reason for hesitancy, followed by concerns about potential side effects and stakeholder mistrust (Karafillakis et al., 2019). Our findings support this evidence. Vaccine hesitancy can range from low to high level (Edwards et al., 2021), and people can change their mind as demonstrated by a mother in this study who refused the HPV vaccine for her daughter but then changed her mind. Other previous research suggests that those who were the most reluctant usually said they did not trust the government and the vaccine, while less hesitant individuals explained that they were waiting to see if the vaccine was truly safe (King et al., 2021). Parents who refused the HPV vaccine in this study did not mention distrust of the government nor did they have strongly held beliefs about vaccination, but rather were misinformed about the vaccine and the side effects, or wanted more information. However, persuading parents who have high vaccine hesitancy might be more challenging (Anderson et al., 1980) and require more specifically targeted approaches.

We found that perceived behavioural control in terms of access was one of the main drivers behind parents allowing their daughters to receive the HPV vaccine. Having the vaccine administered for free by appropriately trained medical staff at school overcame access barriers such as time, convenience, location and cost, and facilitated uptake. To our knowledge, our study is the first to utilise a qualitative approach to explore HPV vaccine uptake with parents as participants in Indonesia. It offers a deeper understanding of how parents formulate and justify their decisions, something that is difficult to explore using surveys. We found that one cannot simply expect that people will evaluate available information and then use it to make logical decisions (Ryan and Carr, 2010). Support and/or advice from trusted individuals played an important role in parents' decision-making. If parents were informed that the HPV vaccine was a good idea and if parents perceived that person as trustworthy, then they might allow the vaccine even if they did not really understand HPV or HPV vaccination. It is likely that misinformation and access issues are important factors in other Indonesian localities and other low- and middle- income countries with similar infrastructure and sociodemographic backgrounds. Therefore, provision of a free school-based vaccination program together with appropriately targeted information campaigns, could reduce vaccine hesitancy and improve uptake.

This research has some limitations. Some parents did not recall being invited to the program. This might be due to their daughters being absent on the day when information and consent forms were sent home, or students may have forgotten to give it to their parents. It is also possible that parents forgot to sign the consent form or they forgot to return it to the school, or that by the time data collection occurred parents had forgotten they had received the consent forms or their decision. The small number of parents who refused the vaccine for their daughters in this study is not unexpected since the HPV vaccine uptake rate in Indonesia is estimated to be over 90% (Pranita, 2019). However, it is possible that some parents who refused the HPV vaccine may realise that they had marginalised views and did not want to participate in this study, explaining why no strong vaccine hesitant views were found in this study. Different views may have been obtained if they did participate. The global COVID-19 pandemic limited recruitment and thus sample size. Further research assessing vaccine hesitancy may be useful to explore other information or key themes that may have been missed from this study.

Author Contribution Statement

All authors attest they meet the ICMJE criteria for authorship

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Approval

Governance approval was obtained from the health office in Jakarta and participating schools. Parents were informed that their participation was voluntary and provided written informed consent to participate.

Ethical Declaration

Ethics approval was obtained from the Human Research Ethics Committee (HREC) of [removed for review purposes] (2019/076).

Conflict of Interest

None declared.

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