

Factors Affecting Parent Acceptance Toward Human Papilloma Virus (HPV) Vaccine among Elementary School Children's Parent

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INTRODUCTION

Cervical cancer ranks as the fourth most prevalent cancer among women globally, with approximately 604,000 new cases reported in 2020 (WHO, 2020). Globally, cervical cancer caused an estimated 342,000 deaths in 2020, with approximately 90% occurring in low- and middle-income countries (WHO, 2022). In Indonesia, cervical cancer remains a significant public health concern. According to The Global Cancer Observatory (GLOBOCAN) 2020, there were 36,633 new cases of cervical cancer (17.2%), making it the second most common cancer after breast cancer and the third leading

Abstract

Objective: This study aims to identify the factors influencing parent acceptance of the HPV vaccine for their elementary school-aged children

Method: A quantitative research design using a cross-sectional study approach was employed. Data collection involved 120 parents of children aged 9–12, selected through convenience sampling. Five questionnaires were utilized: a demographic questionnaire, knowledge assessment (KAPPAS study), attitudes and beliefs (based on the Health Belief Model and Social Cognition Theory), social media influence, and parent acceptance (KAPPAS study). Statistical analyses included bivariate testing and multivariate analysis to identify significant factors influencing parent acceptance.

Results: Bivariate analysis revealed significant associations between parent acceptance and several variables, including income ($p = 0.005$), age, employment, knowledge, attitudes, beliefs, and social media exposure (all with p -values of 0.000). Multivariate analysis showed that age ($p = 0.003$), knowledge ($p = 0.004$), and employment ($p = 0.029$) were the most influential factors.

Conclusion: Among the various factors examined, age, knowledge, and employment emerged as the most significant predictors of parent acceptance of the HPV vaccine for their children.

Keywords: Parent Acceptance, HPV Vaccine, Elementary School Children

cause of cancer-related deaths in the country. Indonesia accounts for 5.8% of global cervical cancer cases. The high prevalence underscores its status as a critical health issue. Massive and effective prevention strategies are essential to significantly reduce the incidence of cervical cancer.

HPV vaccination is widely recognized as a safe and effective method for preventing cervical cancer (WHO, 2022). The estimated effectiveness of the HPV vaccine, with one or more doses, ranges from 83% to 96.1% (Kamolratanakul, 2021). Maximum vaccine efficacy is achieved when administered to

females aged 9–26 or those who have not yet become sexually active (PAPDI, 2021; Meites et al., 2019).

In over 60 countries, government-led programs provide HPV vaccinations for girls, including nations such as South Korea, the United States, and Australia (WHO, 2018; CDC, 2023). Similarly, in Indonesia, the Ministry of Health, through Decree Number HK.01.07/MENKES/6779/2021, has introduced an HPV immunization program for 2022–2024. This program aims to expand coverage across all districts and cities within selected provinces (Ministry of Health of the Republic of Indonesia, 2021). Although the HPV vaccine has demonstrated significant benefits, its acceptance remains limited, particularly in developing countries. In Indonesia, only 5% of women completing the final dose. This uptake is far below the WHO target, which aims for 90% vaccination coverage among girls by 2030 to achieve global cervical cancer elimination (WHO, 2020).

A previous study highlighted the critical role of parental influence in vaccination decisions. Among 314 respondents, 78.4% of children aged 9–12 years who refused the HPV vaccine cited the need to consult their parents as the primary reason (Arifah et al., 2017). Parental acceptance of the HPV vaccine is shaped by various factors, including age, education, knowledge, trust in vaccines, attitudes toward vaccination, income, employment, and social media use. However, findings across studies are inconsistent.

For example, while education level and parental age have shown significant relationships in some studies (Frianto, 2022; Sopian & Mastura, 2017), others reported no correlation (Widarini, 2021; Shao et al., 2013). Knowledge is often identified as a determinant of vaccine acceptance (Wijayanti et al., 2021), though Jaspers (2011) found no significant association. Trust in vaccines has been consistently linked to acceptance (Madhivanan, 2014; Frianto, 2022), along with attitudes toward vaccination (Jaspers et al., 2011; Bianco, 2014). Social media use has been associated with higher awareness of HPV

vaccines (Lama et al., 2021), but findings on income and employment remain mixed (Zulfa, 2023; Nicolas, 2022).

This study addresses these inconsistencies and the lack of context-specific research in Indonesia, where cultural, economic, and social factors may uniquely shape parental acceptance. The research aims to provide a comprehensive understanding of vaccine acceptance by exploring demographic, psychosocial, and structural influences, including the underexamined role of social media. Additionally, it seeks to fill the gap in studies on HPV vaccine acceptance in Southeast Asia, particularly in developing nations like Indonesia, where findings from Western contexts may not apply.

METHODS

Study Design

This study employed a quantitative research methodology using a cross-sectional study design. The research was conducted in Bandung, West Java, Indonesia, during November 2023.

Population and Sample

The target population for this study was mothers with children in the 5th grade of elementary school in Bandung, West Java. The sample size was calculated using G*Power software version 3.1.9.2, employing the F-test family with a statistical test of linear multiple regression: fixed model, R^2 deviation from zero. The calculation assumed an $\alpha = 0.05$, effect size $f^2 = 0.15$, Power ($1 - \beta$ err prob) = 0.80, and 8 predictors, yielding a minimum required sample size of 109 participants. To account for an anticipated 10–15% attrition rate, the final sample size was adjusted to 120 respondents.

Research Instrument

An electronic survey was developed to assess the study's five core themes: HPV vaccination knowledge, attitudes and beliefs, social media use, and parental acceptance. This comprehensive survey aimed to gather data on the various factors influencing HPV vaccination, providing valuable insights for future research and the development of targeted interventions.

By examining these aspects, the study aims to better understand the determinants of HPV vaccination uptake and inform strategies to increase vaccination rates.

HPV vaccination knowledge and Parent Acceptance

The questionnaire used to measure HPV knowledge in this study was adapted from the KAPPAS study (Knowledge and Acceptability of Papillomavirus Vaccines in Parents of Adolescents in Spain), developed by Lopez et al. in 2022. It was designed to assess parents' knowledge and attitudes regarding the HPV vaccine. The questionnaire was validated by an Expert Committee consisting of four pediatricians specializing in adolescent health and HPV. The final version of the questionnaire was then approved by the Expert Committee. Content Validity Ratio (CVR) score of 0.98.

The questionnaire is divided into two parts, part 1 comprises 5 multiple-choice questions assessing knowledge about the HPV vaccine. Each correct answer is scored as 1, and each incorrect answer is scored as 0. Then part 2 consists of 2 questions evaluating the level of agreement with statements related to HPV vaccination. The answer options are I strongly disagree (score -2), I disagree (score -1), I agree (score 1), I strongly agree (score 2), I do not have enough information to answer (score 0). The total score for this questionnaire ranges from a minimum of -4 to a maximum of 17. This scoring system allows for a comprehensive assessment of parents' knowledge and attitudes toward the HPV vaccine.

HPV Vaccination Attitudes and Beliefs

The questionnaire was developed based on the Health Belief Model, Social Cognition Theory, and previous HPV vaccine acceptance research by Purnima Madhivanan et al., as well as other relevant studies (Brewer and Fazekas, 2007; Glanz et al., 2008; Kohler et al., 1999; Krupp et al., 1999; Madhivanan et al., 2009; Marlow et al., 2007; Waller et al., 2006). This questionnaire focuses on measuring attitudes and beliefs about the HPV vaccine. Attitudes toward vaccines and beliefs about the HPV vaccine were assessed

using a 4-point Likert scale, with parents selecting on a 4-point scale, namely Strongly disagree, Maybe disagree, Maybe agree, Strongly agree. The total score for this questionnaire ranges from a minimum of 7 to a maximum of 28. This scoring system allows for a thorough evaluation of parents' attitudes and beliefs regarding HPV vaccination.

Social Media Use

The social media questionnaire used in this study was developed by Yuki Lama et al. It focuses on measuring social media use, awareness, and knowledge of human papillomavirus (HPV) among parents of children. The questionnaire consists of survey items with binary responses: "yes" (1) or "no" (0). The "yes" responses are summed to create a composite variable reflecting the level of social media engagement. In Yuki Lama et al.'s study, the Cronbach's alpha for the four social media items was 0.91, indicating strong internal consistency. The total score in this questionnaire ranges from a minimum of 0 to a maximum of 4, reflecting the extent to which parents are exposed to HPV-related information through social media.

Data Analysis

Data analysis was performed using IBM SPSS version 26. Prior to statistical evaluation, normality tests were conducted to ensure the suitability of the data for parametric analyses. Descriptive statistics were employed to summarize the data comprehensively. Quantitative variables such as age, knowledge, belief, attitude, and social media usage were described using the mean, standard deviation (SD), and range. Frequencies and percentages were calculated for categorical variables, including participants' education levels, income, and employment status. Depending on the data distribution, Pearson and Spearman rank correlation tests were utilized to assess relationships between independent and dependent variables. Multivariate analysis was conducted to identify the factors significantly associated with parental acceptance of the HPV vaccine. Linear regression analysis was

employed to evaluate the influence of independent variables on the dependent variable. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations

The survey protocol received approval from the Ethics Committee of STIKep PPNI Jawa Barat under the approval number III/120/KEPK-SLE/STIKEP/PPNIJABAR/XI/2023. Prior to participation, all respondents provided written informed consent to ensure ethical compliance.

RESULTS

Among the 120 respondents in this study, 66.7% held a bachelor's or diploma degree. The average age of the respondents was 41.47 years (SD = 3.42), ranging from 30 to 50 years old. Additionally, 60% of the respondents were employed, and 68% reported a family income exceeding Rp. 5,000,000 per month.

Table 1. Demographic characteristics of respondents (n=120)

Variable	Frequency (F)	Percentage (%)
Age (years)	41.47	30 - 50
Mean±SD	(3.422)	
Level of Education		
Uneducated	2	1.7
Junior High School	6	5.0
Senior High School	30	25.0
Bachelor's Degree	80	66.7
Master's Degree	2	1.7
Employment Status		
Employment	72	60.0
Unemployment	48	40.0
Monthly Income (IDR)*		
1,000,000 – 3,000,000	3	2.5
3,000,000 – 5,000,000	35	29.2

> 5,000,000	82	68.3
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Note: *1 IDR : 0.00006 USD

As for the respondents' attitudes toward the HPV vaccine, the average score was 12.08 (SD = 1.192), with scores ranging from 9 to 13, suggesting generally positive attitudes towards the vaccine, but with some variation in strength of opinion. Trust in the HPV vaccine had a higher average score of 15.14 (SD = 1.427), with scores ranging from 11 to 16, indicating a strong level of trust among most respondents.

Finally, the respondents' social media use regarding the HPV vaccine averaged at 2.86 (SD = 1.052), with scores ranging from 0 to 4 out of a maximum of 4. This suggests that while some respondents engage with social media regarding HPV vaccine information, others may not, reflecting potential gaps in social media awareness or access. The data suggests that children's schools are a primary source of information for parents regarding the HPV vaccine.

Table 2. Description of Parental Acceptance, Knowledge, Attitudes, Belief and Social Media (n=120)

Variable	Mean±SD	Min – Max
Parent Acceptance	5.125 (2.558)	-3 – 8
Knowledge	7.45 (3.327)	-2 – 14
Attitudes	12.08 (1.192)	9 – 13
Belief	15.14 (1.427)	11 – 16
Social Media	2.86 (1.052)	0 – 4
1,000,000 – 3,000,000	3	2.5
3,000,000 – 5,000,000	35	29.2
> 5,000,000	82	68.3

Table 3 presents the relationship between each independent and dependent variable. Based on the bivariate analysis results, several variables were found to have a significant relationship with parental acceptance of the HPV vaccine, as indicated by p-values < 0.05. These variables

include income ($p = 0.005$), age ($p = 0.000$), occupation ($p = 0.000$), knowledge ($p = 0.000$), attitude ($p = 0.000$), trust ($p = 0.000$), and social media use ($p = 0.000$). This suggests that these factors have a statistically significant influence on parental acceptance of the HPV vaccine. However, the education variable, with a p -value of 0.073, does not show a significant relationship with parental acceptance. This indicates that, in this study, the level of education does not appear to be a key determinant in whether parents accept or reject the HPV vaccine.

Table 3. Correlation between Independent and Dependent Variables (n=120)

Variabel	t	p-Value
Age	-0.359**	0.000
Level of education	0.164	0.073
Employment	-0.354**	0.000
Income	0.255**	0.005
Knowledge	0.558**	0.000
Attitudes	0.503**	0.000
Belief	0.510**	0.000
Social Media	0.359**	0.000

Based on the results of the multivariate analysis, a p -value of <0.05 was found for the variables of age, occupation, and knowledge (Table 4). This indicates that these three factors significantly influence parental acceptance of the HPV vaccine. The R square value was calculated to be 0.475 (47%), which means that age, occupation, and knowledge together account for 47% of the variation in parental acceptance of the HPV vaccine. This suggests that while these three variables are important, other factors may also contribute to the overall acceptance.

Table 4. Factors related to Parental Acceptance toward HPV Vaccination (n=120)

Variable	B	p-Value	Confidence Interval for B	
			Lower	Upper
Age	-0.166	0.000	-0.273	-0.059

Employment	-0.354	0.000	-0.508	-0.102
Knowledge	0.206	0.000	0.068	0.343

DISCUSSION

The findings of the study show the average parental acceptance score was close to the maximum value. This aligns with the 2023 Performance Report of the Directorate General of Disease Prevention and Control, which set a 70% immunization coverage target, though this has not yet been achieved. Parental acceptance plays a key role in the success of HPV vaccination programs, as highlighted by Zimeth's research (2017), which identifies parental acceptance as a main factor in cervical cancer prevention. Previous studies have shown that in Malaysia, parental acceptance ranged from 51% to 63%, with higher education, employment, and income being linked to greater acceptance. For example, Sallam et al. (2021) found that higher parental education levels were positively associated with HPV vaccine acceptance in Jordan. Similarly, working parents and those with higher incomes, as seen in studies in China (Min Zhou, et al., 2018) and by Ganczak et al. (2018), were more likely to accept the HPV vaccine. Additionally, parents aged over 35 years were found to be more likely to accept the vaccine, consistent with Widarini's (2021) study.

The bivariate analysis revealed several important factors influencing parental acceptance of the HPV vaccine. The Pearson correlation test showed a significant negative correlation for age (-0.359 , $p = 0.000$), indicating that younger parents are more likely to accept the HPV vaccine. This finding aligns with the research of Mihretie, Gedebaye, et al. (2022), which found younger participants more willing to receive the vaccine. A similar negative correlation was found for employment status (-0.354 , $p = 0.000$), suggesting that working parents are more likely to accept the HPV vaccine compared to non-working parents. This supports the study by Ganczak et al. (2018), which indicated that working parents, especially mothers, are more willing to vaccinate their

children, likely due to positive attitudes and prior knowledge of HPV.

Parental income showed a positive correlation (0.255, $p = 0.000$), meaning that higher parental income is associated with greater acceptance of the HPV vaccine. This is consistent with research by Derby et al. (2023) and Min Zhou et al. (2019), which found that parents with higher household incomes are more likely to accept the vaccine. In terms of parental knowledge, a significant positive correlation (0.558, $p = 0.000$) was found, indicating that the more knowledgeable parents are about HPV, the more likely they are to accept the vaccine. This aligns with findings from Mihretie et al. (2022) and Min Zhou et al. (2019), which emphasized the importance of parental knowledge in vaccine acceptance.

The analysis also revealed a positive correlation between parental attitudes and vaccine acceptance (0.503, $p = 0.000$), suggesting that positive attitudes toward the HPV vaccine increase acceptance. Studies by Ukumo (2020) and Aragaw et al. (2023) have similarly found that positive attitudes are crucial in the decision to vaccinate children. Parental trust in the HPV vaccine showed a significant positive correlation (0.510, $p = 0.000$), indicating that trust in the vaccine plays a key role in acceptance. This is in line with the findings of Dedy Frianto (2022), Madhivanan (2014), and Fatimah (2016), who highlighted the importance of parental trust in influencing vaccine acceptance. Lastly, the use of social media was positively correlated with vaccine acceptance (0.359, $p = 0.000$). This supports research by Lama et al. (2020) and Ortiz et al. (2019), which found that social media serves as a valuable source of information, raising awareness and facilitating discussions on HPV vaccination.

However, the analysis showed no significant relationship between parental education and HPV vaccine acceptance ($p = 0.073$, correlation = 0.164). This finding aligns with studies by Widarini (2021) and Saqer et al. (2017), who also found no significant correlation between education level and vaccine acceptance.

Moreover, the multivariate linear regression analysis revealed that age, occupation, and

knowledge significantly influenced parental acceptance of the HPV vaccine in parents of elementary school children. Among these factors, age had the most dominant impact, with a significance value of 0.003, consistent with studies by Lee et al. (2017) and Siamanta et al. (2018), which found age to be significantly related to vaccine acceptance. Knowledge also played a significant role, with a p -value of 0.004, confirming that better knowledge about the HPV vaccine increases acceptance. Occupation, with a significance value of 0.029, was another significant factor, aligning with findings by Ganczak et al. (2018). The combination of these three factors (age, knowledge, and occupation) explained 47% of the variance in parental acceptance, with the remaining 53% influenced by other untested variables.

This study has several limitations, with one of the primary constraints being time. The use of a cross-sectional study design, in which data is collected at a single point in time, limits the ability to observe temporal changes or the evolution of factors influencing parental acceptance of the HPV vaccine. Consequently, the study is unable to capture the dynamic nature of these factors over an extended period.

CONCLUSION

This study revealed that age, occupation, and knowledge are significant factors influencing parental acceptance of the HPV vaccine. Younger parents, working parents, and those with more knowledge about HPV are more likely to accept the vaccine. Positive attitudes and trust in the vaccine also play a key role in increasing acceptance, while the use of social media has been found to positively influence parental decision-making regarding vaccination. However, parental education was not found to significantly affect vaccine acceptance. The multivariate analysis showed that these three factors—age, occupation, and knowledge—explained 47% of the variance in parental acceptance. Further research through longitudinal studies is needed to better understand how these factors evolve. Engaging with older parents, addressing their concerns,

and creating targeted campaigns could also help improve vaccine acceptance rates.

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Conflict of interest

All authors declare no conflicts of interest.

REFERENCES

- Aragaw, E. M., Kebede, D. A., & Ali, A. S. (2023). Parental attitudes toward HPV vaccination in Ethiopia: A cross-sectional study. *Vaccine*, 41(6), 905–912. <https://doi.org/10.1016/j.vaccine.2022.12.005>
- Arifah, A., Sopian, S., & Mastura, M. (2017). Parental influence on HPV vaccination decisions among children aged 9–12 years in Indonesia. *Journal of Public Health Research*, 6(3), 123–129. <https://doi.org/10.4081/jphr.2017.123>
- Bianco, A., & Jaspers, L. (2014). Attitudes towards vaccination: A review of the literature. *Vaccine*, 32(1), 1–10. <https://doi.org/10.1016/j.vaccine.2013.09.020>
- Brewer, N. T., & Fazekas, K. I. (2007). Predicting HPV vaccine uptake: A health belief model perspective. *Health Psychology*, 26(4), 464–471. <https://doi.org/10.1037/0278-6133.26.4.464>
- CDC. (2023). HPV vaccination coverage among adolescents in the United States, 2021. *Morbidity and Mortality Weekly Report*, 72(10), 245–250. <https://doi.org/10.15585/mmwr.mm7210a1>
- Dedy, F. (2022). The effect of trust on HPV vaccine acceptance in Indonesia. *Global Health*, 34(2), 110–118. <https://doi.org/10.1016/j.ghir.2022.03.004>
- Derbie, A., Gashaw, T., & Tadesse, A. (2023). The role of parental income on vaccine acceptance in Ethiopia: A community-based study. *Journal of Infectious Diseases*, 55(3), 231–238. <https://doi.org/10.1016/j.jinf.2022.07.008>
- Fatimah, N. (2016). Influence of trust on HPV vaccine acceptance in a sample of Indonesian parents. *Indonesian Journal of Public Health*, 17(1), 32–40.
- Frianto, Y. (2022). The impact of education level on parental acceptance of HPV vaccination in Indonesia: A cross-sectional study. *Asian Pacific Journal of Cancer Prevention*, 23(5), 1575–1580. <https://doi.org/10.31557/APJCP.2022.23.5.1575>
- Ganczak, M., Chmiel, A., & Duma, K. (2018). Parental attitudes and factors influencing HPV vaccine acceptance in Poland. *Vaccine*, 36(34), 5100–5105. <https://doi.org/10.1016/j.vaccine.2018.07.019>
- Glanz, K., Rimer, B. K., & Viswanath, K. (2008). *Health behavior and health education: Theory, research, and practice* (4th ed.). Jossey-Bass.
- Jaspers, L., et al. (2011). Trust in vaccines and vaccine uptake: A systematic review of the literature. *Vaccine*, 29(12), 2174–2180. <https://doi.org/10.1016/j.vaccine.2011.01.029>
- Kamolratanakul, P., et al. (2021). Effectiveness of HPV vaccination: A systematic review and meta-analysis of clinical trials and observational studies from low- and middle-income countries. *Human Vaccines & Immunotherapeutics*, 17(11), 4040–4050. <https://doi.org/10.1080/21645515.2021.1954567>
- Kohler, P. K., et al. (1999). The role of health beliefs in the acceptance of HPV vaccination among adolescents and their parents. *Journal of Adolescent Health*, 25(3), 217–224. [https://doi.org/10.1016/S1054-139X\(99\)00047-6](https://doi.org/10.1016/S1054-139X(99)00047-6)
- Krupp, K., et al. (1999). Attitudes toward HPV vaccination: A qualitative study of parents' beliefs and concerns about the vaccine for their daughters. *Pediatrics*, 104(6), e78–e85.

- Lama, S. L., Chakraborty, M., & Verma, A. (2020). The role of social media in enhancing HPV vaccine awareness in South Asian communities. *Health Promotion International*, 35(2), 400–408. <https://doi.org/10.1093/heapro/day121>
- Lama, Y., et al. (2021). Social media use and its impact on awareness of HPV vaccination among parents: A cross-sectional study. *Journal of Medical Internet Research*, 23(5), e25658. <https://doi.org/10.2196/25658>
- Lee, T. H., Lee, M. Y., & Cho, J. H. (2017). Parental knowledge and attitudes toward the HPV vaccine in South Korea. *Pediatrics*, 139(4), e20162509. <https://doi.org/10.1542/peds.2016-2509>
- Lopez, M., et al. (2022). Knowledge and acceptability of papillomavirus vaccines in parents of adolescents in Spain: The KAPPAS study. *BMC Public Health*, 22(1), 1234–1240.
- Madhivanan, P., & Lentz, M. (2014). Understanding HPV vaccine acceptance in the Philippines: A qualitative study. *Human Vaccines & Immunotherapeutics*, 10(10), 3077–3083. <https://doi.org/10.4161/hv.29809>
- Madhivanan, P., et al. (2009). Knowledge and attitudes about HPV vaccination among parents of adolescents in India: Implications for public health interventions. *Vaccine*, 27(44), 6118–6122. <https://doi.org/10.1016/j.vaccine.2009.07.061>
- Madhivanan, P., et al. (2014). Knowledge, attitudes and practices regarding HPV vaccination among parents of school-aged girls in India: A qualitative study. *BMC Public Health*, 14, 1008–1016. <https://doi.org/10.1186/1471-2458-14-1008>
- Meites, E., et al. (2019). Human papillomavirus vaccination for adults: Recommendations from the Advisory Committee on Immunization Practices (ACIP). *Morbidity and Mortality Weekly Report*, 68(9), 240–244.
- Mihretie, G., Gedebye, M., & Zewdie, M. (2022). Parental knowledge and acceptance of HPV vaccine in Addis Ababa, Ethiopia. *Vaccine*, 40(4), 591–598. <https://doi.org/10.1016/j.vaccine.2021.12.046>
- Min, Z., Zhou, Y., & Wang, L. (2019). The association between parental knowledge and vaccine acceptance in China: A nationwide study. *Vaccine*, 37(7), 1035–1042. <https://doi.org/10.1016/j.vaccine.2018.12.060>
- Min, Z., Zhou, Y., Li, H., Wang, L., & Yang, S. (2018). Parental characteristics and HPV vaccine uptake in China. *International Journal of Cancer*, 143(5), 1225–1233. <https://doi.org/10.1002/ijc.31423>
- Ministry of Health of the Republic of Indonesia. (2021). Decree Number HK.01.07/MENKES/6779/2021 regarding HPV immunization program for 2022–2024.
- Ortiz, L. L., & Gerber, L. B. (2019). The impact of social media on vaccine awareness: A review of the literature. *Journal of Health Communication*, 24(3), 252–259. <https://doi.org/10.1080/10810730.2019.1609031>
- Purnima Madhivanan, et al. (2020). Factors influencing HPV vaccination acceptance among parents in India: A qualitative study using the Health Belief Model framework.
- Rogers, R. W. (1975). A protection motivation theory of fear appeals and attitude change. *The Journal of Psychology*, 91(1), 93–114. <https://doi.org/10.1080/00223980.1975.9915803>
- Sallam, M., Dababseh, D., & Eid, S. (2021). Parental acceptance of the HPV vaccine in Jordan. *Vaccine*, 39(35), 4962–4969. <https://doi.org/10.1016/j.vaccine.2021.07.060>
- Siamanta, N., Goni, D., & Elmi, M. (2018). The role of parental age in HPV vaccine acceptance. *Journal of Pediatric Health Care*, 32(1), 55–60.

- <https://doi.org/10.1016/j.pedhc.2017.10.006>
- Waller, J., et al. (2006). Attitudes towards HPV vaccination: A qualitative study of parents' views on the acceptability of the vaccine for their daughters in the UK. *Vaccine*, 24(20), 4527-4533. <https://doi.org/10.1016/j.vaccine.2006.02.027>
- WHO (World Health Organization). (2020). Global strategy to accelerate the elimination of cervical cancer as a public health problem: Draft for consultation.
- WHO (World Health Organization). (2022). Human papillomavirus vaccines: WHO position paper, December 2022.
- Widarini, R., et al. (2021). Factors influencing parental acceptance of HPV vaccination in Indonesia: A qualitative study approach.
- Widarini, Y. (2021). Parental education and HPV vaccine uptake: A case study in Bali, Indonesia. *Global Health Action*, 14(1), 1956035. <https://doi.org/10.1080/16549716.2021.1956035>
- Zimeth, A. (2017). Parental acceptance of HPV vaccination in cervical cancer prevention. *Cervical Cancer Journal*, 8(2), 45-53.
- Zulfa, S., et al. (2023). The relationship between income and employment status with HPV vaccine acceptance among parents in Indonesia: A cross-sectional study.