JMU
Jurnal Medika Udayana

ISSN: 2597-8012 JURNAL MEDIKA UDAYANA, VOL. 15 NO.10, OKTOBER, 2026

Received: 2026-01-13 Revision: 2026-03-09 Accepted: 16-10-2026

WILLINGNESS TO RECEIVE FEE AND PAID HPV VACCINATION AND ITS PREDISPOSING FACTORS AMONG WOMEN OF REPRODUCTIVE AGE IN DENPASAR, INDONESIA: A DESCRIPTIVE CROSS-SECTIONAL STUDY

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ABSTRACT

Background: Human Papillomavirus (HPV) vaccination plays an important role in cervical cancer prevention. This study presents the condition of these predisposing factors among WRA in the catchment area of Puskesmas I Denpasar Timur. This study aims to describe predisposing factors, including sociodemographic characteristics, knowledge, perception, interest, and willingness related to HPV vaccination among WRA. **Methods:** This study employed a descriptive cross-sectional design involving 102 WRA selected through consecutive sampling in the working area of Puskesmas I Denpasar Timur. Data were collected using a structured questionnaire and presented as frequencies and percentages.

Results: Respondents were predominantly aged 20–29 years, had senior high school or university-level education, and were mostly married. Most were employed in the private sector or self-employed, with varied income levels. Knowledge regarding HPV was generally good (88.2%), positive perception was dominant (99.1%), and interest in vaccination remained high (93.1%). Willingness to receive the HPV vaccine reached 97.1% when the vaccine was free and 68.6% when payment was required. A total of 23.5% had previously received the HPV vaccine.

Conclusions: Most WRA demonstrated good knowledge, positive perceptions, and high interest in HPV vaccination, with greater willingness observed when the vaccine was provided free of charge. These findings may serve as a basis for considering efforts to enhance understanding and access to HPV vaccination.

Keywords: HPV vaccine, women of reproductive age, predisposing factors

INTRODUCTION

Cervical cancer is a major public health problem around the world. It is the fourth most common cancer in women, with an anticipated 604,000 new cases and 342,000 deaths globally in 2020.[1] Southeast Asia continues to experience a substantial burden of cervical cancer, and Indonesia has shown a consistent increase in incidence, prevalence, and mortality over recent decades.[2,3] Cervical cancer is currently the second most common cancer among Indonesian women, indicating the urgent need for effective preventive strategies.[3]

Cervical cancer is a major health concern in Bali, particularly in Denpasar. Data from RSUP Prof. I.G.N.G. Ngoerah in 2022 reported more than 300 cervical cancer cases, with the majority diagnosed at advanced stages. Most patients were aged 50–60 years, suggesting that disease progression often occurs after the reproductive age period, when preventive interventions could have been implemented earlier.[4] In addition, screening data from Denpasar indicate the presence of a considerable number of women with positive visual inspection with acetic acid (VIA) results, highlighting ongoing transmission of risk factors within the community.[5]

The best strategy to reduce the incidence of cervical cancer is primary prevention with HPV vaccination, since persistent HPV infection is the main cause of the disease.[6,7] The World Health Organization recommends HPV vaccination for girls aged 9–14 years, and Indonesia has implemented a national HPV vaccination program targeting female students in grades 5 and 6.[1] However, this program does not include women of reproductive

age (15–49 years), despite this group being more likely to have been exposed to HPV due to sexual activity.[8] As a result, women

of reproductive age must access HPV vaccination independently, often facing financial and informational barriers.[5]

Globally, HPV vaccination coverage among women of reproductive age remains low, particularly in Asia and Indonesia.[6] In Bali, HPV vaccination coverage is still below optimal levels. Limited access to free vaccination programs is not the only contributing factor; low willingness to receive HPV vaccination also plays a critical role.[9,10] Previous studies have demonstrated that willingness to vaccinate is strongly influenced by predisposing factors, including knowledge, perceptions, attitudes, and sociodemographic characteristics.[11–13] These factors shape how individuals perceive disease risk and vaccine benefits, ultimately affecting health-related decision-making.[14]

Despite cervical cancer being recognized as a public health concern in Denpasar, coupled with the large population of women of reproductive age, data on HPV vaccination willingness and its predisposing factors in this group remain scarce. The lack of local evidence restricts the creation of focused initiatives to increase vaccine uptake. This study aims to examine the predisposing factors linked with the willingness to obtain HPV vaccination among women of reproductive age in Denpasar. The findings of this study are expected to provide evidence that supports the development of more effective cervical cancer prevention programs and helps guide local public health policies.

MATERIALS AND METHODS

This cross-sectional descriptive observational study was carried out at Puskesmas I Denpasar Timur from January to December 2025, with data collection taking place between August and October of the same year.

The target population comprised women of reproductive age (18–49 years) residing in Denpasar, while the study population included women of reproductive age visiting Puskesmas I Denpasar Timur during the data collection period. Participants who fulfilled the inclusion criteria were women who resided in the study area, attended the health center, and agreed to participate by providing written informed consent. The study excluded women who had a history of HPV vaccination allergies, serious mental or psychiatric illnesses, or long-term conditions that made it difficult for them to communicate effectively.

Consecutive sampling was used to recruit participants, in which all eligible women attending the health center were enrolled sequentially until the required minimum sample size was reached. The minimum required sample size was calculated using the single population proportion formula, with a 95% confidence level (Z = 1.96), an assumed proportion of 0.5, and a margin of error of 0.1, resulting in a minimum sample size of 96 participants. The final analysis included 102 responders in all.

Data was collected through face-to-face interviews by a single trained researcher under supervision from the health center staff. Eligible women waiting for services were approached and screened. A standardized questionnaire was used to conduct interviews after respondents provided informed consent, and responses were recorded directly into a Google Form linked to a Google Spreadsheet.

The study variables included willingness to receive HPV vaccination, knowledge, interest, perception, and sociodemographic characteristics, including age, occupation, marital status, religion, income, and education level. History of HPV vaccination was also assessed. The questionnaire consisted of four sections: sociodemographic characteristics, knowledge, perception, and willingness to receive HPV vaccination. Sociodemographic items were developed by the researchers, while the knowledge and perception sections were adapted from previously validated instruments and modified to suit the study objectives.[15,16] The collected data were entered into Microsoft Excel and underwent data entry, coding, cleaning, and transformation before analysis. Statistical analysis was carried out using the Statistical Package for the Social Sciences (SPSS). Univariate analysis was used to describe the distribution of each variable, and descriptive comparison of willingness across categories of predisposing factors was performed using frequencies and percentages.

Ethical approval was obtained from the Research Ethics Committee of the Faculty of Medicine, Udayana University (No. 1335/UN14.2.2.VII.14/LT/2025) on 15th May 2025. Research permission was also granted by the Denpasar City Health Office and Puskesmas I Denpasar Timur (No. 000.9/2216/Dikes) on 17th September 2025. Prior to participation, all participants were given thorough information about the study's objectives, procedures, benefits, and potential dangers, and they gave signed informed permission. Participant confidentiality was maintained by using coded identifiers, and all data were examined and published in aggregate, following the ethical principles of beneficence, nonmaleficence, autonomy, and justice.

RESULT

A total of 102 women of reproductive age participated in this study, All who met the inclusion criteria were included in the final analysis. Most respondents were within the productive age group, were married, and had completed at least secondary or higher education. The majority of respondents had never received the HPV vaccine. Knowledge regarding HPV infection and cervical cancer prevention ranged from poor to good, with most respondents demonstrating moderate to good knowledge levels. Perceptions toward HPV vaccination were predominantly positive, and interest in HPV vaccination was generally high.

Willingness to receive HPV vaccination differed according to the vaccination scenario. When the HPV vaccine was assumed to be provided free of charge, nearly all respondents expressed willingness to be vaccinated. However, when vaccination required out-of-pocket payment, the proportion of respondents willing to receive the HPV vaccine was lower. The overall distribution of respondents' characteristics, HPV vaccination history, knowledge, perceptions, interest, and

willingness to receive free and paid HPV vaccination is presented in Table 1.

Tabel 1. Distribution of respondents' characteristics, HPV vaccination history, and willingness to receive free and paid HPV vaccination

Characteristics	Frequency (n) & Percentage (%)	Free Vaccine Willingness (+)	Paid Vaccine Wllingness
Age (Sociodemographic)			
Teenager (18-20 years)	2 (2%)	2	1
Young Adults (20-29 years)	56 (54.9%)	56	42
Middle-Aged Adults (30-39 years)	33 (32.4%)	32	22
Older Adults (40-49 years)	11 (10.8%)	9	5
Mean ± SD		29.3 ± 7.4	
Median (Min-Maks)		28 (18-49)	
IQR		12	
Religion			
Hindu	70 (68.6%)	67	47
Islam	17 (16.7%)	17	13
Christian	10 (9.8%)	10	7
Catholic	5 (4.9%)	5	3
Educational Level			
Junior High School	4 (3.9%)	4	4
Senior High School	51 (50%)	50	32
University	47 (46.1%)	45	34
Occupation			
Civil Employee	16 (15.7%)	16	13
Private Employee	18 (17.6%)	18	12
Housewife	19 (18.6%)	18	9
Scholars	16 (15.7%)	16	13
Self-employed	32 (31.4%)	30	22
No Answer	1 (1%)	1	1
Income			
<3.3 (million IDR)	23 (22.5%)	23	16

Characteristics	Frequency (n) & Percentage (%)	Free Vaccine Willingness (+)	Paid Vaccine Wllingness
3.3 (million IDR)	7 (6.9%)	6	5
>3.3 (million IDR)	35 (34.3%)	34	25
No Income	30 (29.4%)	29	17
No Answer	7 (6.9%)	7	7
Mean ± SD	Rp 4,253,906 ± 2,404,448		
Median (Min-Maks)	Rp 3,625,000 (1,000,000-15,000,000)		
Marital Status			
Married	68 (66.7%)	65	44
Not Married	34 (33.3%)	34	26
Knowledge Classification			
Good Knowledge (Score = 11-14)	90 (88.2%)	87	61
Moderate Knowledge (Score = 8-10)	10 (9.8%)	10	8
Poor Knowledge (Score 0-7)	2 (2%)	2	1
Perception Classification			
Positive (Score > 36)	101 (99.1%)	98	69
Negative (Score ≤ 36)	1 (0.9%)	1	1
Interest Classification			
Interested	95 (93.1%)	95	68
Not Interested	7 (6.9%)	4	2
Total	102 (100%)	99	70
HPV Vaccine History			
Previously Vaccinated	24 (23.5%)		
Never Vaccinated	78 (76.5%)		
Amount Willing to be Paid			
Very Low (<Rp500.000)	5 (7.5%)		
Low (Rp500.000-Rp900.000)	35 (52.2%)		

Characteristics	Frequency (n) & Percentage (%)	Free Vaccine Willingness (+)	Paid Vaccine Wllingness
Moderate (Rp900.000-Rp1.000.000)		11 (16.4%)	
High (>Rp1.000.000)		16 (23.9%)	

DISCUSSION

This study examined key sociodemographic characteristics as predisposing factors influencing HPV vaccination willingness. Although most respondents were of productive reproductive age, HPV vaccination may not be perceived as a priority among adult women, particularly as vaccination programs are primarily targeted toward younger age groups. Despite relatively high educational attainment among respondents, education alone did not ensure HPV vaccination acceptance among women of reproductive age.[17,18]

In this study, the majority of respondents were employed rather than unemployed, indicating that most women were economically active. Nevertheless, income levels were predominantly low or absent, suggesting limited financial autonomy despite employment status and highlighting cost as a potential barrier to accessing HPV vaccination, which must be obtained independently in Indonesia. Most respondents were married, which may influence perceived susceptibility to HPV infection and health-related decision-making through shared family considerations. In addition, the majority of respondents adhered to Hinduism, reflecting the local demographic context of Denpasar. Religious and cultural values may still influence perceptions toward HPV vaccination, highlighting the need for culturally sensitive education.[19]

This study found distinct differences in willingness to receive HPV vaccination depending on whether the vaccine was provided free of charge or required out-of-pocket payment. When HPV vaccination was assumed to be free, the majority of respondents expressed willingness to be vaccinated regardless of variations in sociodemographic and psychosocial characteristics. This pattern suggests that cost may be perceived as an important consideration in HPV vaccination decisions among women of reproductive age.

In contrast, when HPV vaccination required personal payment, several trends in willingness were observed. With respect to age, willingness to receive paid HPV vaccination tended to decrease with increasing age. This finding is consistent with the study by Agorastos et al., which reported lower vaccine acceptance among older women.[20] However, it contrasts with findings by Dapari et al., who observed increased willingness with advancing age.[21] Differences in study populations, cultural contexts, and vaccine accessibility may partly explain these inconsistencies.

Regarding employment status, a lower proportion of housewives expressed willingness to receive paid HPV vaccination compared to employed women. This trend is consistent with findings reported by Lin et al., suggesting that women without formal employment may face greater financial constraints and lower prioritization of adult vaccination. Similarly, income level showed a clear trend, whereby women with low income or no personal income were less willing to receive paid HPV vaccination. This finding aligns with previous studies by Lin et al., reinforcing the role of economic barriers in adult HPV vaccine uptake.[18]

Differences in willingness to receive paid HPV vaccination were observed across marital status categories. A lower proportion of married women expressed willingness to receive paid HPV vaccination compared to unmarried women. This finding is consistent with the study by Tran et al., which reported lower acceptance among married women, possibly due to lower perceived susceptibility to HPV infection or shared decision-making within the family.[22] However, this result differs from the findings of Agorastos et al., who reported higher willingness among married respondents.[20] Such discrepancies may reflect differences in sociocultural norms and perceptions of HPV risk across settings.

Differences in willingness to receive paid HPV vaccination were observed across educational levels. A lower proportion of respondents with a senior high school education expressed willingness to receive paid HPV vaccination compared to those with junior high school or higher education. This finding is consistent with Lin et al., who reported higher acceptance among respondents with junior high school and tertiary education.[18] In contrast, Kepka et al. found higher willingness among individuals with a senior high school background.[17] These differing results suggest that the relationship between education level and vaccine acceptance may be context-specific and influenced by the quality and content of health information received.

Interest in HPV vaccination showed a clear trend, whereby respondents who were not interested in HPV vaccination were less willing to receive the vaccine. This finding is consistent with previous studies, which generally report interest as a strong determinant of vaccination willingness, reflecting an individual's readiness to engage in preventive health behavior.[23–25]

Several factors did not demonstrate a clear trend in willingness to receive HPV vaccination. No meaningful differences in willingness were observed across religious affiliations. This finding is consistent with the study by Odongo Ojok et al., which reported no significant influence of religion on HPV vaccination acceptance.[19] However, it contrasts with findings by Winarto et al., who reported that religious factors reduced willingness to receive HPV vaccination.[12] These differences may be influenced by local cultural interpretations and levels of religious engagement in health-related decision-making.

Knowledge regarding HPV infection, cervical cancer, and HPV vaccination did not show a clear trend with willingness

to receive vaccination. This finding suggests that adequate knowledge alone may not be sufficient to guarantee vaccine acceptance. This result is consistent with Lin et al., who reported that knowledge does not necessarily translate into vaccination willingness, but contrasts with the findings of You et al., who observed that better knowledge was associated with higher acceptance of HPV vaccination.[18,26]

Similarly, perception toward HPV vaccination did not demonstrate a distinct trend in willingness. Although positive perceptions are generally considered supportive of vaccine acceptance, this study suggests that positive perception alone may be insufficient to ensure willingness to receive paid HPV vaccination. This finding differs from the study by You et al., which reported that positive perceptions significantly supported HPV vaccination willingness.[26] Structural barriers, particularly cost and accessibility, may play a more dominant role in shaping decision-making among women of reproductive age in this setting.[7]

Despite generally favorable predisposing factors, the history of HPV vaccination among respondents remained low. This gap suggests that positive knowledge, perceptions, and interest alone are insufficient to ensure vaccine uptake among women of reproductive age. Other factors, particularly structural and enabling barriers such as cost, accessibility, and service availability, are likely to play an important role. Therefore, interventions should address not only individual readiness but also systemic barriers to improve HPV vaccination coverage.

This study has several limitations. The use of a non-probability sampling technique in a single health center may limit sample representativeness and generalizability. The analysis was restricted to predisposing factors, while reinforcing and enabling factors were not explored. In addition, some respondent categories were small in number, and HPV vaccination history was self-reported without verification through medical records, which may have introduced bias.

CONCLUSION AND SUGGESTION

This study found that predisposing factors among women of reproductive age in Denpasar were generally favorable. Most respondents were young to middle-aged adults, had moderate to high educational attainment, and were predominantly married. Knowledge regarding HPV and its vaccination was mostly good (88.2%), perceptions were largely positive (99.1%), and interest in HPV vaccination was high (93.1%), although only 23.5% had previously received the vaccine.

Willingness to receive HPV vaccination was very high when provided free of charge (97.1%) but declined under paid conditions (68.6%). Lower willingness to pay was observed among older respondents, those with lower interest, senior high school education, married status, housewives, and respondents with low or no income. No clear trends were found for knowledge, perception, or religion. These findings highlight the need for interventions that address affordability and accessibility to improve HPV vaccination uptake.

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