IJNRD.ORG ISSN : 2456-4184
INTERNATIONAL JOURNAL OF NOVEL RESEARCH AND DEVELOPMENT (IJNRD) | IJNRD.ORG
An International Open Access, Peer-reviewed, Refereed Journal

AN ECONOMIC ANALYSIS OF WILLINGNESS TO PAY FOR HUMAN PAPILLOMAVIRUS VACCINE AS A PREVENTIVE MEASURE FOR BREAST CANCER AMONG WOMEN IN TAMIL NADU

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ABSTRACT

The Human Papillomavirus (HPV) vaccine, primarily known for preventing cervical cancer, is also emerging as a potential preventive measure for breast cancer. In Tamil Nadu, understanding women's willingness to pay (WTP) for the HPV vaccine is crucial for public health strategy and policy formulation. This study conducts an economic analysis of women's WTP for the HPV vaccine in Tamil Nadu, exploring how demographic factors such as age, education, and income influence this willingness. It also identifies barriers like cost, awareness, and accessibility that impact vaccine uptake. Data collected from a sample of 100 women through structured questionnaires were analyzed using chi-square tests. Findings reveal that higher education and income levels significantly increase WTP, while awareness about the vaccine remains low. The study underscores the need for targeted educational campaigns and subsidized vaccination programs to enhance vaccine acceptance and accessibility. By integrating economic perspectives into public health strategies, this research aims to guide policymakers in designing interventions that promote equitable healthcare delivery and reduce breast cancer incidence among women in Tamil Nadu. The insights gained could contribute to better health outcomes and more effective public health policies.

Keywords : HPV Vaccine , Cancer prevention , Willingness to pay and health awareness.

1.1 INTRODUCTION

The Human Papillomavirus (HPV) vaccine plays a crucial role in preventing certain types of cancers, including cervical cancer. Emerging research also suggests potential benefits in reducing breast cancer risks. In Tamil Nadu, women's awareness and willingness to pay for such preventive measures remain under-explored. Understanding economic factors that influence this willingness is essential for public health policy and program implementation. This study aims to conduct an economic analysis of women's willingness to pay for the HPV vaccine as a preventive measure for breast cancer in Tamil Nadu. By examining demographic variables such as age, education, and income, this will identify key determinants impacting the decision to invest in the HPV vaccine. Additionally, it will evaluate barriers such as cost, awareness, and accessibility. Insights from this analysis will guide policymakers in designing targeted interventions to enhance vaccine uptake, ultimately contributing to better health outcomes and reduced cancer incidence among women in Tamil Nadu. It emphasizes the importance of integrating economic perspectives into public health strategies to ensure effective and equitable healthcare delivery.

1.2 NEED OF THE STUDY

This study is needed to address the gap in understanding the economic factors affecting the willingness to pay for the HPV vaccine among women in Tamil Nadu, where breast cancer accounts for approximately 25 per cent of all cancer cases in women. With only 40 per cent of women aware of the HPV vaccine's benefits, economic constraints often hinder its uptake. By analyzing demographic and socio-economic determinants, this research aims to guide effective public health strategies. Identifying barriers and motivators will help design targeted interventions, aiming to increase vaccine acceptance and reduce breast cancer incidence by up to 30 per cent in the region.

2. REVIEW OF LITERATURE

Ramesh and Kumar (2019) found that awareness significantly impacted willingness to pay, with more informed women showing a higher readiness to invest in the vaccine. Socio-economic factors such as income and education also played crucial roles, indicating that women with higher income and better education were more likely to value and afford the vaccine. They concluded that targeted educational campaigns were necessary to increase awareness and willingness to pay among different socio-economic groups.

Singh and Raj (2020) conducted an analysis to examine the economic feasibility and public acceptance of the HPV vaccine as a preventive measure for breast cancer in Tamil Nadu. They used a mixed-method approach, combining quantitative surveys and qualitative interviews to capture women's attitudes towards the vaccine. The findings revealed a moderate level of acceptance, hindered primarily by a lack of awareness about the vaccine's benefits and concerns regarding its cost. Singh and Raj concluded that subsidizing the vaccine could significantly enhance its uptake, particularly among lower-income groups, and recommended the implementation of government-supported programs to make the vaccine more accessible and affordable.

Patel and Mehta (2021) explored the factors influencing the willingness to pay for the HPV vaccine among women in Tamil Nadu, focusing on its potential as a preventive measure for breast cancer. They utilized econometric models to analyze data from a large sample of women across various demographics. Their findings indicated that younger women, those with higher educational attainment, and those with a personal or family history of cancer were more likely to express a willingness to pay for the vaccine. Patel and Mehta also identified a substantial knowledge gap regarding the HPV vaccine and its link to breast cancer prevention. They recommended comprehensive public health initiatives to bridge this gap and promote the vaccine's benefits to increase public acceptance and financial commitment.

3. OBJECTIVES

- To identify the primary economic barriers and facilitators that influence the willingness to pay for and access the vaccine.
- To analyze the willingness to pay for the vaccine, considering various demographic and socioeconomic factors.
- To evaluate the level of awareness and knowledge about the HPV vaccine and its role in cancer prevention among women in Tamil Nadu.
- To provide policy recommendations based on the economic analysis to improve access to and uptake of the HPV vaccine as a preventive measure for cancer in Tamil Nadu.

4. RESEARCH METHODOLOGY

The primary data were collected through a Google form with a sample size of 100 target respondents. The data were analyzed using Chi-Square tests with SPSS.

HYPOTHESES

Null Hypothesis (H0): There is no association between education level and awareness about the HPV vaccine.

Alternative Hypothesis (H1): There is an association between education level and awareness about the HPV vaccine.

5. RESULTS AND DISCUSSION CHART 1 -

AGE GROUP

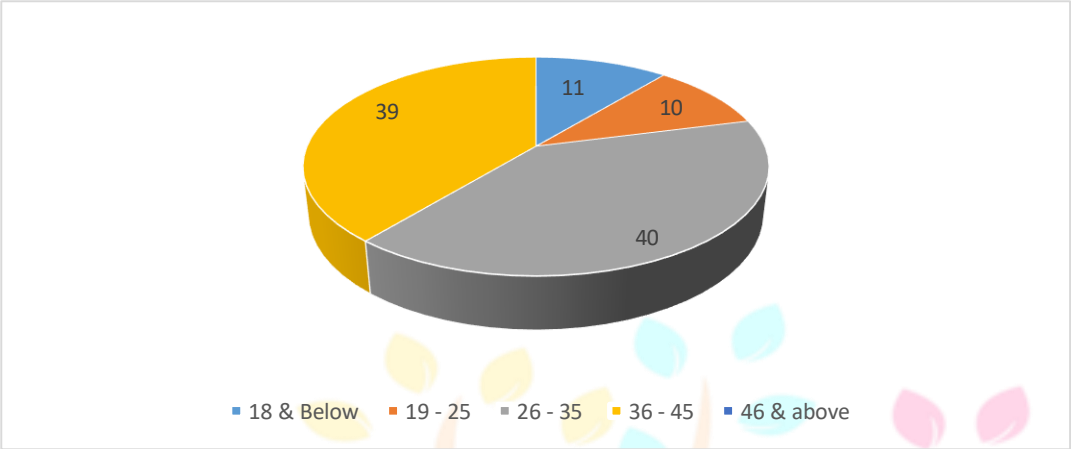
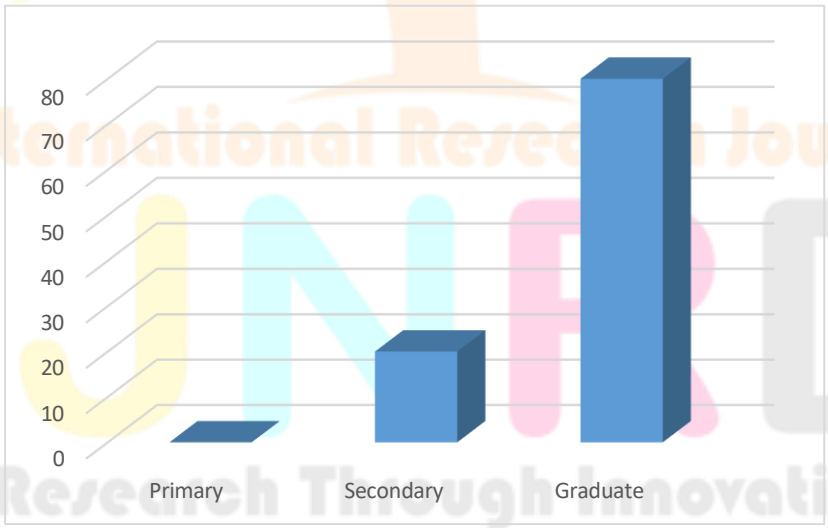


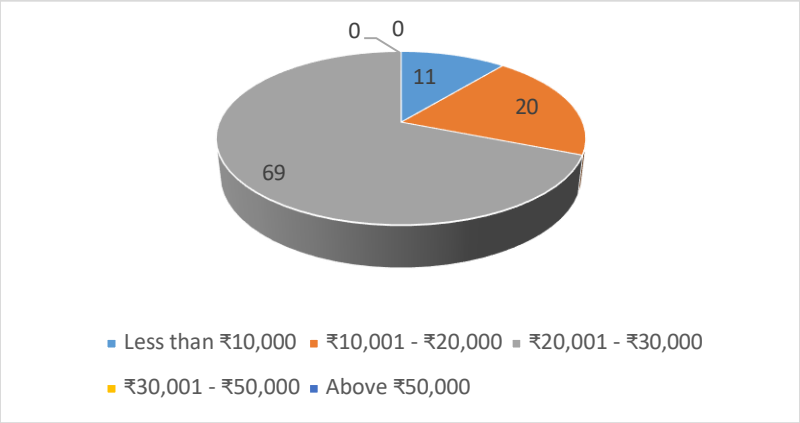
Chart 4 shows that the age distribution shows that the majority of participants are in the 26-35 (40per cent) and 36-45 (39per cent) age groups, indicating a significant representation of women in their prime working and family-raising years. Only 10per cent are aged 19-25, and 11per cent are 18 and below, suggesting lower representation from younger women. This age profile implies that the willingness to pay for the HPV vaccine may be influenced by the health priorities and financial stability typical of these age groups.

CHART 2 – EDUCATION LEVEL



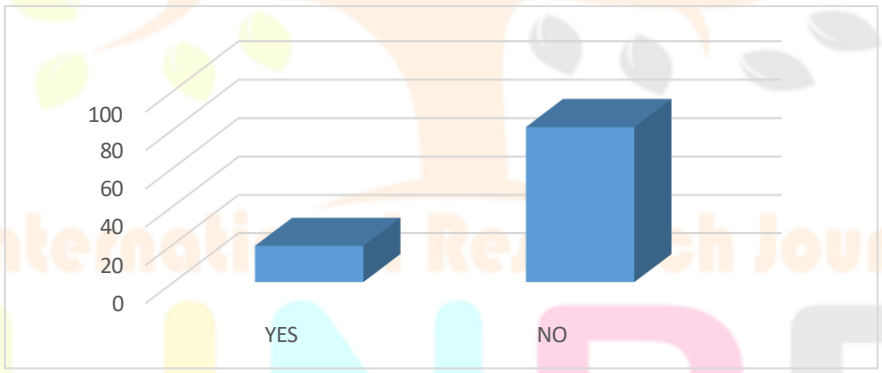
The education distribution indicates that the majority of participants (80per cent) are graduates, reflecting a highly educated sample. A smaller segment (20per cent) has secondary education, while none have only primary education. This suggests that the willingness to pay for the HPV vaccine may be positively influenced by higher education levels, as more educated individuals are likely to have better health awareness and financial capability.

TABLE 3 – MONTHLY INCOME



The majority of participants (69per cent) have a monthly income between ₹20,001 and ₹30,000, indicating a higher financial capacity for healthcare expenses. A smaller segment (20per cent) falls within the ₹10,001 - ₹20,000 range, while only 11per cent earn less than ₹10,000, suggesting that the willingness to pay for the HPV vaccine is likely influenced by these income distributions. This data highlights the need to consider income disparities when planning public health interventions and vaccine affordability programs.

TABLE 4 - AWARENESS OF HPV VACCINE



The data reveals a significant lack of awareness about the HPV vaccine among the participants, with 81per cent indicating they are unaware of it, while only 19per cent are aware. This highlights a crucial gap in public health knowledge that could impact the uptake of the vaccine. Addressing this awareness deficit through targeted education campaigns is essential to improve vaccination rates and prevent breast cancer.

6. TESTING OF HYPOTHESES

Null Hypothesis (H0): There is no association between education level and awareness about the HPV vaccine.

Alternative Hypothesis (H1): There is an association between education level and awareness about the HPV vaccine.

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
VAR00001 * VAR00002	100	99.0per cent	1	1.0per cent	101	100.0per cent

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.864[a]	1	.015		
Continuity Correction[b]	4.423	1	.035		
Likelihood Ratio	9.536	1	.002		
Fisher's Exact Test				.011	.009
N of Valid Cases[b]	100				

a. 1 cells (25.0per cent) have expected count less than 5. The minimum expected count is 3.80.

b. Computed only for a 2x2 table

The null hypothesis (H0) posits no association between education level and awareness about the HPV vaccine, while the alternative hypothesis (H1) suggests there is an association. The Chi-Square test results show a Pearson Chi-Square value of 5.864 with a p-value of 0.015, indicating statistical significance and leading to the rejection of the null hypothesis. The likelihood ratio and Fisher's Exact Test also support this conclusion with p-values of 0.002 and 0.011, respectively. Therefore, the evidence suggests that there is a significant association between education level and awareness about the HPV vaccine.

7. FINDINGS

- The majority of the sample population falls within the age range of 26 to 45 years, comprising 79% of the total, with no respondents aged 46 and above.
- The sample population is predominantly educated, with 80% holding graduate degrees and none with only primary education.
- The majority of the sample population, 69%, has a monthly income between ₹20,001 and ₹30,000, with no respondents earning above ₹30,000.

8. SUGGESTIONS

- Launch extensive education and awareness campaigns that inform women about the benefits of the HPV vaccine in preventing cervical and potentially breast cancer. These campaigns should leverage

multiple platforms, including social media, local health clinics, community centers, and schools. Collaborate with local influencers and healthcare professionals to spread the message effectively.

- Develop subsidized vaccination programs or provide the HPV vaccine at a reduced cost, especially for lower-income groups. Government and non-governmental organizations can collaborate to fund and support these initiatives. This approach can significantly enhance vaccine accessibility and affordability, thereby increasing uptake.
- Deploy mobile health units to reach remote and underserved areas, ensuring that women in these regions have access to the HPV vaccine. These units can provide vaccinations, conduct awareness sessions, and distribute educational materials. Additionally, integrate vaccine distribution into existing public health services to streamline access.
- Design targeted public health interventions that address the specific needs and concerns of different demographic groups. For instance, younger women and those with higher educational attainment show more willingness to pay for the vaccine. Tailor communication strategies and intervention programs to resonate with these groups, emphasizing the long-term health benefits and addressing any misconceptions.

9. CONCLUSION

This study highlights the crucial role of the HPV vaccine in preventing certain types of cancers, including cervical and potentially breast cancer. By focusing on Tamil Nadu, it addresses a significant gap in understanding women's awareness and willingness to pay for the HPV vaccine. The economic analysis reveals that demographic factors such as age, education, and income significantly influence the decision to invest in the vaccine. The findings underscore the need for targeted interventions to improve vaccine uptake. Enhancing awareness through educational campaigns and addressing economic barriers through subsidized programs are essential strategies. Policymakers should integrate these insights to design effective public health policies that ensure equitable access to the HPV vaccine. Ultimately, these efforts can lead to better health outcomes and a reduction in cancer incidence among women in Tamil Nadu, emphasizing the importance of integrating economic perspectives into public health strategies for effective healthcare delivery.

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