

Knowledge, Attitudes, and Acceptance of Human Papillomavirus (HPV) Vaccination among Parents of Female Students at the Basic Education Schools of Lorma Colleges

Guerly M. Acosta¹, Frances Shane Maefel J. Campos², Trisha S. Lachica³, Arshley Rochene Sara D. Ollero⁴, Jaja Loren L. Salarda⁵, Angel Anne V. Turquez⁶

¹College of Nursing, Lorma Colleges, guerly.acosta@lorma.edu,²College of Nursing, Lorma Colleges, francesshanemaefel.campos@lorma.edu, ³College of Nursing, Lorma Colleges, trisha.lachica@lorma.edu, ⁴College of Nursing, Lorma Colleges, arshleyrochenesara.ollero@lorma.edu, ⁵College of Nursing, Lorma Colleges, jajaloren.salarda@lorma.edu, ⁶College of Nursing, Lorma Colleges, angelanne.turqueza@lorma.edu

ABSTRACT

Human Papillomavirus (HPV) remains a significant public health concern, particularly among young females, as it is a leading cause of cervical cancer despite available safe and effective vaccines. This study evaluated parental knowledge, attitudes, and acceptance of HPV vaccination among parents of female students aged 9-14 years in the Basic Education Department of Lorma Colleges, San Juan, La Union, focusing on knowledge of HPV, its transmission and risks, and vaccine safety and effectiveness, attitudes in terms of perceived benefits, safety concerns, trust in authorities, and personal beliefs, and acceptance in terms of intention to vaccinate if free, willingness to pay, and recommend the vaccine. A quantitative descriptive-correlational design included 129 parents or guardians selected through total enumeration. Data were collected using a validated questionnaire (Cronbach's alpha = 0.980) and analyzed using weighted mean and Pearson's Product-Moment Correlation Coefficient (r). Results showed moderate parental knowledge (composite mean = 2.8114), positive attitudes (composite mean = 3.2277), and high acceptance (composite mean = 3.0186). Parents recognized the benefits of vaccination, although safety concerns and personal beliefs persisted. Key factors influencing decisions included safety concerns, knowledge, service accessibility, and trust in healthcare providers. Findings also showed significant relationships between knowledge and acceptance, and attitudes and acceptance of HPV vaccination. These findings highlight the need for targeted health education to improve parents' knowledge and increase vaccination acceptance through consistent information dissemination and strengthened collaboration between schools and healthcare providers to address concerns effectively and raise awareness.

Keywords: *HPV vaccination, parental knowledge, parental attitudes, parental acceptance, cervical cancer*

1. Introduction

Human Papillomavirus (HPV) remains one of the most common sexually transmitted infections worldwide and continues to be a major public health concern, particularly among women, because of its strong association with cervical cancer and other HPV-related diseases. Despite the availability of safe and effective vaccines, many adolescents remain unprotected due to low vaccination uptake and persistent vaccine hesitancy among parents and guardians. Since parents serve as the primary decision-makers regarding their children's healthcare, understanding their knowledge, attitudes, and acceptance toward HPV vaccination is essential in strengthening preventive healthcare strategies and reducing the burden of cervical cancer in future generations.

According to the World Health Organization (WHO, 2024), HPV primarily spreads through skin-to-skin and sexual contact, including vaginal, oral, and anal intercourse. Although many HPV infections are asymptomatic and resolve spontaneously, persistent infection involving high-risk HPV strains may eventually progress into cervical cancer over several years. Among the more than 200 HPV types identified, HPV 16 and HPV 18 account for approximately 70% of cervical cancer cases worldwide (Centers for Disease Control and Prevention [CDC], 2021; National Cancer Institute [NCI], 2025). This highlights the importance of early prevention, particularly among young girls before possible exposure to the virus.

The development of HPV vaccines marked a major advancement in cancer prevention and public health promotion. The currently available 9-valent vaccine, Gardasil 9, protects against HPV types responsible for most cervical cancer cases and genital warts, preventing approximately 90% of HPV-related diseases (NCI, 2025). Health organizations such as the WHO and CDC strongly recommend vaccinating girls aged 9-14 years because this age group demonstrates the strongest immune response and receives longer-lasting protection before possible exposure to HPV (WHO, 2020; CDC, 2021). Furthermore, studies consistently show that HPV vaccines are safe and effective, with adverse reactions generally limited to mild pain or swelling at the injection site, while severe side effects remain extremely rare.

Recognizing the increasing burden of cervical cancer worldwide, the World Health Organization launched the Global Strategy to Eliminate Cervical Cancer in 2020. The strategy introduced the 90-70-90 targets, which aim for 90% of girls to be fully vaccinated against HPV by age 15, 70% of women to undergo effective cervical screening, and 90% of women diagnosed with cervical disease to receive appropriate treatment (WHO, 2020). However, despite global efforts to improve vaccine accessibility and awareness, vaccination rates remain below target levels. According to WHO (2023), less than 21% of girls worldwide had received at least one dose of the HPV vaccine by 2022, emphasizing the continuing challenges surrounding vaccine acceptance and accessibility.

Parental knowledge and attitudes significantly influence the success of HPV vaccination programs because parents determine whether their daughters receive the vaccine. According to Heyde et al. (2024), parental support for HPV vaccination varies greatly across countries, ranging from as low as 12% to as high as 97.5%. Fear of side effects, misinformation, and lack of trustworthy information regarding vaccine safety were identified as major barriers to vaccine

acceptance. On the other hand, awareness regarding the role of HPV vaccination in preventing cervical cancer strongly encouraged parents to vaccinate their daughters. Similarly, Guo et al. (2025) found that parental knowledge and positive attitudes consistently predict HPV vaccine uptake across different populations and healthcare settings.

Several international studies further reinforce the importance of healthcare accessibility and parental perceptions in improving HPV vaccine uptake. Hawlader et al. (2024) reported high vaccine acceptance among parents in Bangladesh, particularly among younger parents with greater knowledge regarding cervical cancer prevention. Likewise, Juárez-León et al. (2025) found that cultural beliefs, socioeconomic status, and awareness levels strongly influenced parents' willingness to vaccinate their daughters in Peru. Meanwhile, Naoum et al. (2022) highlighted the importance of physician recommendations, trust in healthcare professionals, and disease-risk perceptions in shaping parental decision-making regarding HPV vaccination in Greece.

Conversely, studies conducted in low- and middle-income countries reveal that low awareness and unreliable information sources continue to hinder vaccine acceptance despite vaccine availability. According to Alshahrani et al. (2024), concerns regarding vaccine safety and side effects remain prevalent among parents in Gulf Cooperation Council countries. Similarly, Tobaiqy and MacLure (2024) found that limited knowledge and cultural misconceptions consistently serve as barriers to HPV vaccine uptake in several developing nations. These findings suggest that vaccination programs alone may not guarantee high vaccine coverage unless accompanied by effective public education and community engagement strategies.

In the Philippines, HPV continues to be a serious public health concern among women. According to the ICO/IARC (2023), approximately 7,897 new cervical cancer cases and 4,052 cervical cancer-related deaths occur annually in the country, making cervical cancer the second most common cancer among Filipino women aged 15-44 years. Despite the inclusion of HPV vaccination in the National Immunization Program since 2015, vaccination coverage remains alarmingly low. Reports indicate that only about 4% of eligible girls have received the first dose of the HPV vaccine, while even fewer complete the recommended vaccination series (ICO/IARC, 2023). Factors such as cost, misinformation, limited awareness, and inconsistent vaccine supply continue to contribute to low vaccine uptake nationwide (Cordero, 2025; Philippine Commission on Women [PCW], 2025).

Local studies in the Philippines reveal similar concerns regarding parental acceptance and vaccine hesitancy. Wahab et al. (2025) found that only 36% of parents in Zamboanga del Sur agreed to vaccinate their daughters against HPV because of safety concerns, inadequate information, and financial limitations. Similarly, Bravo (2025) reported that although many mothers expressed willingness to vaccinate their daughters, only a small proportion demonstrated high levels of knowledge regarding HPV infection and vaccination. Cultural and religious beliefs were likewise identified as influential factors affecting parental acceptance in several communities (Salleh et al., 2025). These findings emphasize that willingness alone may not

guarantee vaccine uptake when accurate knowledge and confidence regarding vaccination remain inadequate.

Despite ongoing vaccination initiatives and public health campaigns, limited studies have explored parental perspectives regarding HPV vaccination within La Union, particularly in private educational institutions such as Lorma Colleges. Local cultural beliefs, socioeconomic conditions, educational backgrounds, and healthcare perceptions may influence parental decisions differently across communities. Since Lorma Colleges Basic Education Department includes female students aged 9–14 years who belong to the recommended target group for HPV vaccination, the institution provides an appropriate setting for examining parental knowledge, attitudes, and acceptance regarding HPV vaccination.

This study is significant because it contributes to ongoing national and global efforts toward cervical cancer elimination through improved HPV vaccination coverage. By determining the levels of parental knowledge, attitudes, and acceptance toward HPV vaccination among parents of female students aged 9–14 years at Lorma Colleges, the study may help identify misconceptions, barriers, and factors influencing vaccination decisions. The findings may further assist healthcare professionals, educators, school administrators, and public health authorities in developing targeted educational interventions and communication strategies that strengthen parental awareness and confidence regarding HPV vaccination. Ultimately, the study seeks to support the protection of young girls against HPV-related diseases and contribute to improved public health outcomes in the Philippines.

2. Objectives

This study aimed to determine the levels of knowledge, attitudes, and acceptance of HPV vaccination among parents of female students aged 9-14 years enrolled in the Basic Education Schools of Lorma Colleges. Specifically, it sought to:

1. Determine the level of parental knowledge regarding HPV infection and HPV vaccination in terms of:
 - Understanding of HPV
 - Transmission and risks
 - Vaccine availability, safety, and effectiveness
2. Determine parental attitudes toward HPV vaccination in terms of:
 - Perceived benefits
 - Safety concerns
 - Trust in authorities
 - Personal or religious beliefs
3. Determine the level of parental acceptance of HPV vaccination for daughters aged 9-14 years in terms of intention to:
 - Vaccinate if free
 - Pay for vaccination
 - Recommend the vaccine

4. Identify the factors influencing parents' decisions to accept or refuse HPV vaccination.
5. Determine whether a significant relationship exists between parental knowledge and acceptance of HPV vaccination.
6. Determine whether a significant relationship exists between parental attitudes and acceptance of HPV vaccination.

3. Materials and Methods

This study employed a quantitative descriptive-correlational research design. Descriptive-correlational research is commonly used in nursing and health-related studies to describe existing conditions and determine whether relationships exist among variables without manipulating the research environment. Through this design, the researchers were able to determine the levels of parental knowledge, attitudes, and acceptance regarding HPV vaccination and identify whether significant relationships existed among these variables. Quantitative methods also allowed the researchers to gather measurable and objective data regarding parents' perspectives toward HPV vaccination for their daughters.

The researchers conducted the study at the Basic Education Department of Lorma Colleges located in San Juan, La Union. The respondents of the study were parents or legal guardians of female students aged 9-14 years enrolled in Grades 4 to 9 during the School Year 2025-2026. A total of 150 parents or guardians were identified as the target population of the study. Since the population was manageable, the researchers utilized total enumeration sampling to ensure complete representation of the identified respondents. Out of the total target population, 129 respondents participated in the study. The respondents served as the primary source of information regarding parental knowledge, attitudes, acceptance, and factors influencing decisions toward HPV vaccination.

The primary tool utilized for data collection was a structured survey questionnaire designed to assess parental knowledge, attitudes, and acceptance regarding HPV vaccination, as well as the factors influencing parents' decisions to accept or refuse vaccination. The questionnaire consisted of four parts aligned with the objectives of the study. The first part focused on parental knowledge regarding HPV infection and HPV vaccination. The second part evaluated parental attitudes toward HPV vaccination. The third part measured parental acceptance regarding HPV vaccination for their daughters, while the fourth part identified factors influencing parents' decisions regarding vaccination. The questionnaire was administered through printed copies and Google Forms to ensure accessibility and convenience among respondents.

Before the official conduct of the study, the questionnaire underwent content and face validation by a panel of experts composed of an Obstetrician, a Maternal and Child Nursing Clinical Instructor, and a Medical-Surgical Nursing Clinical Instructor. Pilot testing was also conducted among selected parents or guardians to determine the reliability and internal consistency of the instrument. The questionnaire obtained a Cronbach's alpha of 0.980, indicating excellent reliability. These procedures ensured that the instrument was valid, reliable,

and appropriate for assessing parental knowledge, attitudes, and acceptance regarding HPV vaccination.

During the data gathering procedure, the researchers first secured approval from the Lorma Colleges Research Ethics Committee and obtained permission from the Dean of the College of Nursing and the administration of the Basic Education Department. Informed consent forms were distributed together with the questionnaires, and respondents were informed regarding the purpose of the study, procedures involved, confidentiality measures, and their rights as participants. The researchers emphasized that participation was voluntary and that respondents had the right to withdraw from the study or refuse to answer uncomfortable questions at any time.

Initially, printed questionnaires were distributed through the assistance of class advisers. However, due to scheduling conflicts and delays in retrieving printed questionnaires, the researchers also utilized Google Forms to facilitate data collection. Survey links were distributed through official group chats to ensure that parents or guardians who were unable to return printed questionnaires could still participate in the study. This combined data collection approach enabled the researchers to obtain the required number of respondents despite varying schedules and respondent availability.

The researchers recognized the importance of conducting ethical and high-quality research. Throughout the conduct of the study, confidentiality, anonymity, voluntary participation, and proper handling of data were strictly observed to avoid ethical breaches and ensure the reliability of the gathered information. The collected data were organized, tabulated, analyzed, and interpreted using appropriate statistical tools such as weighted mean and Pearson Product-Moment Correlation Coefficient (r) to determine the levels of parental knowledge, attitudes, and acceptance regarding HPV vaccination and identify significant relationships among the variables included in the study.

4. Results

The results of the study provided an understanding of the parental knowledge, attitudes, and acceptance of Human Papillomavirus (HPV) vaccination among parents of female students aged 9–14 years enrolled in the Basic Education Schools of Lorma Colleges in San Juan, La Union. The researchers found similarities in the parents' responses regarding their awareness of HPV infection, perceptions toward HPV vaccination, willingness to vaccinate their daughters, and the factors influencing their vaccination decisions. The findings generated the three major variables explored in the study: (1) Parental Knowledge Regarding HPV Infection and HPV Vaccination, (2) Parental Attitudes Toward HPV Vaccination, and (3) Parental Acceptance Regarding HPV Vaccination. The following variables provide insight into the parents' awareness, beliefs, perceptions, and willingness regarding HPV vaccination, including the factors influencing their decisions to accept or refuse the vaccine.

The major variable Parental Knowledge Regarding HPV Infection and HPV Vaccination describes the parents' level of awareness and understanding regarding HPV, its transmission and

risks, and vaccine availability, safety, and effectiveness. The researchers found similarities in terms of parents demonstrating stronger awareness regarding HPV as a common infection associated with cervical cancer while showing lower understanding regarding asymptomatic transmission, persistence of infection, and vaccine accessibility. The findings revealed an overall composite mean of 2.8114, interpreted as moderately knowledgeable. Parents demonstrated greater awareness that HPV affects both males and females, affects the reproductive organs, and is common among sexually active individuals. However, lower awareness was observed regarding asymptomatic infection and the different types of HPV. Parents also demonstrated moderate knowledge regarding HPV transmission and risks, particularly on its association with cervical cancer and sexual transmission. However, lower awareness remained regarding asymptomatic transmission and long-term persistence of infection. In terms of vaccine availability, safety, and effectiveness, parents acknowledged that the HPV vaccine is safe, scientifically tested, and effective in preventing cervical cancer. Nevertheless, awareness regarding vaccine availability in schools and health centers obtained the lowest mean score, interpreted as slightly knowledgeable, indicating a gap in access-related knowledge regarding HPV vaccination.

Table 1. Summary of the Level of Parental Knowledge about HPV and the HPV Vaccine

Domains	WM	DV
Understanding of HPV	2.85	MK
Transmission and Risks	2.76	MK
Vaccine Availability, Safety, and Effectiveness	2.82	MK
Composite WM	2.81	MK

Legend: 2.51-3.25 - **MK** (Moderately Knowledgeable)

The major variable Parental Attitudes Toward HPV Vaccination describes the parents' perceptions, beliefs, and feelings regarding HPV vaccination. The researchers found similarities in terms of parents recognizing the preventive benefits of HPV vaccination while still expressing concerns regarding vaccine safety, misinformation, and personal or religious beliefs. The findings revealed an overall composite mean of 3.2277, interpreted as positive attitude. Parents generally agreed that HPV vaccination protects their daughters against cervical cancer and contributes to long-term health protection. Respondents also demonstrated trust in healthcare professionals and recognized the importance of preventive healthcare measures. However, concerns regarding possible side effects, misinformation, and personal or religious beliefs remained evident among several respondents. These findings indicate that although parents generally demonstrate favorable attitudes toward HPV vaccination, concerns and misconceptions continue to influence their perceptions regarding vaccine safety and acceptance.

Table 2. Summary of the Level of Parental Attitudes Toward HPV Vaccination

Domains	WM	DV
Perceived Benefits	3.29	VPA
Safety Concerns	3.06	PA
Trust in Authorities	3.39	VPA
Personal or Religious Beliefs	3.17	PA
Composite WM	3.23	PA

Legend: 2.51-3.25 - PA (Positive Attitude)

3.26-4.0 - VPA (Very Positive Attitude)

The major variable Parental Acceptance Regarding HPV Vaccination describes the willingness of parents to support HPV vaccination for their daughters. The researchers found similarities in terms of parents demonstrating willingness to vaccinate, willingness to recommend the vaccine, and willingness to personally pay for HPV vaccination. The findings revealed an overall composite mean of 3.0186, interpreted as high acceptance. Parents expressed greater acceptance particularly in terms of willingness to pay for HPV vaccination and willingness to recommend the vaccine to others. Respondents likewise demonstrated willingness to vaccinate their daughters if vaccination is offered free through school-based programs. These findings indicate that parents recognize the importance and protective value of HPV vaccination despite possible financial costs.

Table 3. Summary of the Level of Parental Acceptance of HPV Vaccination

Domains	WM	DV
Vaccinate if Free	3.09	HA
Pay for Vaccination	3.10	HA
Recommend the Vaccine	2.87	HA
Composite WM	3.02	HA

Legend: 2.51-3.25 - HA (High Acceptance)

The study also identified several factors influencing parents' decisions to accept or refuse HPV vaccination. The researchers found similarities in terms of parents being influenced by vaccine safety concerns, trust in healthcare professionals, level of knowledge regarding HPV and cervical cancer prevention, accessibility of vaccination services, and recommendations from healthcare providers. Cultural beliefs, misinformation from social media, and financial limitations likewise affected parental decision-making regarding HPV vaccination. These findings indicate that parental decisions regarding vaccination are influenced by multiple social, cultural, healthcare-related, and financial factors.

Furthermore, the findings revealed a significant relationship between parental knowledge and parental acceptance regarding HPV vaccination. Parents who demonstrated higher levels of knowledge regarding HPV infection and vaccination were more likely to accept HPV vaccination for their daughters. Similarly, the findings also revealed a significant relationship between parental attitudes and parental acceptance regarding HPV vaccination, indicating that parents with more positive attitudes toward HPV vaccination were likewise more willing to vaccinate their daughters against HPV. These findings emphasize the importance of strengthening parental awareness and promoting positive perceptions toward HPV vaccination to improve vaccine acceptance among eligible adolescents.

5. Discussion

Under the major variable **Parental Knowledge Regarding HPV Infection and HPV Vaccination**, the level of awareness and understanding of parents regarding HPV, its transmission and risks, and vaccine availability, safety, and effectiveness were discussed. The researchers found similarities in terms of parents demonstrating stronger awareness regarding HPV as a common infection associated with cervical cancer while showing lower understanding regarding asymptomatic transmission, persistence of infection, and vaccine accessibility. Furthermore, there were also similarities in terms of parents recognizing the importance of HPV vaccination in preventing cervical cancer and protecting their daughters' long-term health despite having limited knowledge regarding some clinical aspects of HPV infection.

The subvariables **Understanding of HPV, Transmission and Risks, and Vaccine Availability, Safety, and Effectiveness** underscore the parents' awareness and perceptions regarding HPV infection and vaccination. Parents generally recognized HPV as a sexually transmitted infection associated with cervical cancer and reproductive health complications, allowing them to acknowledge the importance of preventive healthcare measures such as vaccination. Based on the responses, parents demonstrated awareness that HPV commonly affects sexually active individuals and may negatively affect women's reproductive health. However, lower awareness regarding asymptomatic transmission, persistence of infection, and the different HPV types remained evident among several respondents, suggesting that some parents may underestimate their daughters' susceptibility to HPV infection because of misconceptions regarding disease transmission and progression. Parents also acknowledged that the HPV vaccine is scientifically tested, safe, and effective in preventing cervical cancer and other HPV-related diseases. Despite these positive perceptions, awareness regarding vaccine availability in schools and health centers obtained the lowest mean score among the knowledge indicators, indicating a gap in practical access-related knowledge regarding HPV vaccination. These findings highlight the importance of strengthening health education initiatives and improving dissemination of information regarding vaccine accessibility, safety, and effectiveness to support informed parental decision-making and improve vaccine confidence.

Under the major variable **Parental Attitudes Toward HPV Vaccination**, the perceptions, beliefs, and feelings of parents regarding HPV vaccination were discussed. The researchers found similarities in terms of parents recognizing the preventive benefits of HPV

vaccination while still expressing concerns regarding vaccine safety, misinformation, and personal or religious beliefs. Furthermore, there were also similarities in terms of parents demonstrating trust in healthcare professionals and recognizing the importance of preventive healthcare measures despite the persistence of fears and misconceptions regarding vaccination.

The subvariables **Perceived Benefits**, **Safety Concerns**, **Trust in Authorities**, and **Personal or Religious Beliefs** discuss the different perceptions influencing parental attitudes toward HPV vaccination. Parents generally viewed HPV vaccination as an important preventive healthcare measure that contributes to the long-term protection and well-being of their daughters. Based on the responses, parents recognized that vaccination may significantly reduce the risk of cervical cancer and improve future reproductive health outcomes. However, several parents continued to express hesitation because of concerns regarding side effects, misinformation, and fear of possible health complications associated with HPV vaccination. Despite these concerns, parents still demonstrated trust in healthcare professionals, schools, and public health authorities, recognizing the importance of medical recommendations in influencing vaccination decisions. Additionally, personal values, cultural practices, and religious beliefs also affected parental confidence and willingness regarding vaccination. These findings indicate that parental attitudes toward HPV vaccination are influenced not only by awareness regarding its benefits but also by fears, cultural beliefs, and the level of trust established between parents and healthcare providers.

Under the major variable **Parental Acceptance Regarding HPV Vaccination**, the willingness of parents to support HPV vaccination for their daughters was discussed. The researchers found similarities in terms of parents demonstrating willingness to vaccinate, willingness to recommend the vaccine, and willingness to personally pay for HPV vaccination despite possible financial costs. Furthermore, there were also similarities in terms of parents recognizing the importance and long-term protective benefits of HPV vaccination for their daughters' health and well-being.

The subvariables **Intention to Vaccinate if Free**, **Intention to Pay for Vaccination**, and **Intention to Recommend the Vaccine** explore the willingness of parents to support HPV vaccination under different circumstances. Based on the responses, parents demonstrated willingness to vaccinate their daughters when accessibility and financial barriers are minimized through school-based or government-supported vaccination programs. Parents also expressed willingness to personally shoulder the financial costs of HPV vaccination, with willingness to pay obtaining a slightly higher mean than willingness to vaccinate only if the vaccine is offered free. This indicates that parents recognize the importance and protective value of HPV vaccination despite possible financial costs. Moreover, parents demonstrated willingness to recommend HPV vaccination to other parents and community members because of their recognition of its protective benefits against cervical cancer and other HPV-related diseases. These findings suggest that parents who possess greater awareness and positive perceptions regarding HPV vaccination are more likely to support vaccination initiatives and encourage preventive healthcare practices within their communities.

Under the **factors influencing parents' decisions to accept or refuse HPV vaccination**, the researchers found similarities in terms of parents being influenced by vaccine safety concerns, accessibility of vaccination services, recommendations from healthcare professionals, level of knowledge regarding HPV and cervical cancer prevention, misinformation from social media, cultural beliefs, and financial limitations. Parents generally considered healthcare providers as credible sources of information, and recommendations from physicians and nurses significantly influenced their confidence regarding HPV vaccination. Based on the responses, concerns regarding side effects and misinformation continued to contribute to hesitation among several respondents despite generally positive attitudes toward vaccination. Accessibility of vaccination programs and financial considerations also affected parents' willingness to vaccinate their daughters, particularly among those who were uncertain regarding where and how vaccination services may be obtained. Furthermore, cultural beliefs and personal values influenced parental perceptions regarding adolescent vaccination and preventive healthcare practices. These findings indicate that parental decisions regarding HPV vaccination are influenced not only by knowledge and attitudes but also by social, cultural, financial, and healthcare-related factors that shape confidence and willingness regarding vaccination.

Furthermore, the findings revealed **significant relationships between parental knowledge and parental acceptance**, and **between parental attitudes and parental acceptance regarding HPV vaccination**. Parents with higher levels of knowledge regarding HPV infection and vaccination were more likely to accept vaccination for their daughters. Similarly, parents demonstrating more positive attitudes toward HPV vaccination likewise exhibited higher levels of acceptance. These findings reinforce the importance of strengthening parental awareness and promoting positive perceptions regarding HPV vaccination to improve vaccine uptake and participation in immunization programs.

The findings of the study emphasize the importance of strengthening school-based and community-based health education programs regarding HPV infection and HPV vaccination. Improving parental awareness, addressing misinformation and misconceptions, strengthening communication between schools and healthcare providers, and increasing accessibility of vaccination services may contribute to greater parental confidence and higher vaccination uptake. These efforts support ongoing national and global initiatives toward cervical cancer prevention and the reduction of HPV-related diseases among future generations.

6. Conclusion

The parents' knowledge, attitudes, and acceptance regarding HPV vaccination are multifaceted, involving both positive perceptions and existing concerns regarding HPV infection and vaccination. The study conducted an in-depth analysis of the parents' awareness regarding HPV infection and HPV vaccination, their attitudes toward vaccination, their willingness to support HPV vaccination for their daughters, and the factors influencing their vaccination decisions.

Parents demonstrated moderate knowledge regarding HPV infection and HPV vaccination. They recognized HPV as a common sexually transmitted infection associated with cervical cancer and acknowledged the importance of HPV vaccination in protecting their daughters against HPV-related diseases. Similarly, parents demonstrated awareness regarding the safety and effectiveness of HPV vaccination and recognized its role in promoting long-term health protection. However, despite these positive perceptions, misconceptions regarding asymptomatic transmission, persistence of infection, vaccine accessibility, and recommended vaccination schedules remained evident among several respondents.

In contrast, although parents generally demonstrated positive attitudes and high acceptance regarding HPV vaccination, concerns regarding vaccine safety, side effects, misinformation, and personal or religious beliefs continued to influence parental perceptions and willingness regarding vaccination. Parents also considered accessibility of vaccination services, trust in healthcare professionals, and financial costs when making decisions regarding HPV vaccination. Nevertheless, the respondents demonstrated willingness to vaccinate their daughters, recommend the vaccine to others, and personally pay for HPV vaccination because of their recognition of its protective benefits against cervical cancer and other HPV-related diseases.

Despite the concerns and misconceptions identified in the study, parents continued to recognize the importance of preventive healthcare measures and demonstrated trust in healthcare professionals and school-based vaccination initiatives. Their willingness to support HPV vaccination reflects the growing awareness regarding cervical cancer prevention and the importance of protecting adolescent girls from HPV-related diseases. This implies that parents value preventive healthcare and acknowledge the role of vaccination in promoting the long-term health and well-being of their daughters.

Based on the results and findings of the study, the researchers recommend that healthcare professionals, schools, and public health authorities strengthen health education programs regarding HPV infection and HPV vaccination. Educational campaigns should emphasize the importance of early HPV vaccination, vaccine safety, effectiveness, accessibility, and the prevention of cervical cancer and other HPV-related diseases. School-based vaccination programs and community health initiatives should also be strengthened to improve accessibility and encourage greater parental participation in vaccination programs.

Furthermore, parents should be encouraged to seek reliable and evidence-based information regarding HPV infection and HPV vaccination to reduce misconceptions and strengthen vaccine confidence. Healthcare professionals should continue providing clear communication, counseling, and support to parents regarding vaccination concerns, possible side effects, and preventive healthcare measures. Strengthening communication between schools, healthcare providers, and families may improve parental awareness and contribute to greater vaccine acceptance among eligible adolescents.

Additional studies are recommended to further explore parental perceptions regarding HPV vaccination in larger populations and different communities. Future researchers may also focus on evaluating the effectiveness of school-based vaccination programs, educational

interventions, and healthcare communication strategies in improving parental knowledge, attitudes, and acceptance regarding HPV vaccination. Moreover, future studies may investigate additional social, cultural, and economic factors influencing vaccine hesitancy and vaccination uptake among Filipino parents and guardians.

7. Acknowledgments

We, the researchers, sincerely express our deepest appreciation to all individuals and institutions who contributed to the successful completion of this research study. Their support, guidance, and encouragement played a vital role throughout this academic journey.

In particular, we extend our profound gratitude to Mrs. Guerly M. Acosta, our research adviser, for her expert guidance, valuable insights, and continuous encouragement. Her dedication and mentorship significantly influenced the direction and overall quality of this study.

We also wish to acknowledge Mrs. Editha C. Sabalboro, our research instructor, for providing us with essential knowledge and skills in research. Her guidance helped us carry out this study with clarity and confidence.

We are equally thankful to Mrs. Teresita A. Ferrer, Dean of the College of Nursing, for her support and for fostering an environment that promotes academic excellence and professional growth.

We also extend our sincere appreciation to our panelists, Mr. Edwin N. Aljentera, Mrs. Joylyn P. Baniaga, and Mrs. Araceli F. Surat, for their valuable time, insightful comments, and constructive recommendations that greatly improved this research.

Furthermore, we express our gratitude to the respondents of this study, whose participation and cooperation made the data collection possible and contributed significantly to the completion of this research.

We also acknowledge the College of Nursing and the Lorma Colleges community for providing a supportive academic environment that guided us throughout the research process.

Lastly, we extend our heartfelt thanks to our families and loved ones for their unwavering support, understanding, and encouragement. Their presence gave us strength and motivation to overcome challenges throughout this journey.

Above all, we give our deepest thanks to Almighty God for His guidance, strength, and wisdom throughout this endeavor.

8. References

Alshahrani, N. Z., Alshahrani, J. A., Almushari, B. S., Alshammri, F. M., Alshahrani, W. S., Alzabali, A. A. H., Alshehri, A. A., Alduaydi, N. Z., Alqarni, M., Alamri, A. M. A., & Alotaibi, K. (2024). Parental Perspectives on Human Papillomavirus (HPV) Vaccination in Gulf Cooperation Council Countries: A Systematic Review. *Medicine*, *103*(42), e40124. <https://doi.org/10.1097/md.00000000000040124>

Athifa, A., Mohamed, Y., Overmars, I., Danchin, M., & Kaufman, J. (2025). The behavioral and social drivers of HPV vaccination among parents and young people in Indonesia: a scoping review. *Cancer Causes & Control*. <https://doi.org/10.1007/s10552-025-02027-x>

- Bakhashab, A. S., Aljilani, S. A., Alkinaidri, N. M., Felimban, A. A., Habbal, M. H., Bashah, N. A., Ghoneim, R. H., Almasri, D., Thabit, R. K., Almutairi, M. S., & Thabit, A. K. (2025). Knowledge, attitude, and perception of the parents toward HPV vaccine administration to their children in Saudi Arabia: a cross-sectional study. *Frontiers in Public Health*, 13. <https://doi.org/10.3389/fpubh.2025.1531517>
- Bedford, H., Firman, N., Waller, J., Marlow, L., Forster, A., & Dezateux, C. (2021). Which young women are not being vaccinated against HPV? Cross-sectional analysis of a UK national cohort study. *Vaccine*, 39(40), 5934–5939. <https://doi.org/10.1016/j.vaccine.2021.07.094>
- Bravo, S. L. R. (2025). The influence of knowledge, attitude, and motivational factors on the willingness of mothers for their female children to undergo human papillomavirus vaccination. *Philippine Journal of Obstetrics and Gynecology*, 49(1), 18–42. https://doi.org/10.4103/pjog.pjog_69_24
- Bruni, L., Saura-Lázaro, A., Montoliu, A., Brotons, M., Alemany, L., Diallo, M. S., Afsar, O. Z., LaMontagne, D. S., Mosina, L., Contreras, M., Velandia-González, M., Pastore, R., Gacic-Dobo, M., & Bloem, P. (2021). HPV vaccination introduction worldwide and WHO and UNICEF estimates of national HPV immunization coverage 2010–2019. *Preventive Medicine*, 144(106399), 106399. <https://doi.org/10.1016/j.ypmed.2020.106399>
- Centers for Disease Control and Prevention. (2021, July 14). *Human Papillomavirus (HPV) Infection - STI Treatment Guidelines*. www.cdc.gov. <https://www.cdc.gov/std/treatment-guidelines/hpv.htm>
- Centers for Disease Control and Prevention. (2024, July 15). Chapter 11: Human Papillomavirus. *Epidemiology and Prevention of Vaccine-Preventable Diseases*. <https://www.cdc.gov/pinkbook/hcp/table-of-contents/chapter-11-human-papillomavirus.html>
- Cleveland Clinic. (2023, November 9). HPV Vaccine: Schedule, Side Effects & Who Can Get It. Cleveland Clinic. <https://my.clevelandclinic.org/health/treatments/21613-hpv-vaccine>
- Cordero, D. A. (2025). Improving the human papillomavirus vaccination in the Philippines. *Therapeutic Advances in Vaccines and Immunotherapy*, 13(25151355251326783). <https://doi.org/10.1177/25151355251326783>
- Davies, C., Stoney, T., Hutton, H., Parrella, A., Kang, M., Macartney, K., Leask, J., McCaffrey, K., Zimet, G., Brotherton, J. M. L., Marshall, H. S., & Skinner, S. R. (2021). School-based HPV vaccination positively impacts parents' attitudes toward adolescent vaccination. *Vaccine*, 39(30). <https://doi.org/10.1016/j.vaccine.2021.05.051>
- DepEd, DOH launch Bakuna Eskwela to revive School-Based Immunization against preventable diseases | Department of Education. (2024). [Deped.gov.ph](https://www.deped.gov.ph). <https://www.deped.gov.ph/2024/10/07/deped-doh-launch-bakuna-eskwela-to-revive-school-based-immunization-against-preventable-diseases/>
- Dewi, S., Bennett, L., & Barrett, A. (2024). Exploring Indonesian Primary Schoolgirls' Experiences of School-based HPV Vaccination, Knowledge of HPV Risks and Prevention, and Preferences for Cervical Cancer Education. *Asian Pacific Journal of Cancer Prevention*, 25(4), 1285–1292. <https://doi.org/10.31557/apjcp.2024.25.4.1285>

- DOH RECOGNIZES LAOAG CITY FOR ACHIEVING 90% HPV VACCINATION COVERAGE. (2025, October 4). Department of Health - Center for Health Development Ilocos. <https://ro1.doh.gov.ph/54-press-release-2/973-doh-recognizes-laoag-city-for-achieving-90-hpv-vaccination-coverage>
- DOH, Urdaneta City kick off HPV vax program in Pangasinan - Philippine Information Agency. (2023, November 30). Philippine Information Agency. <https://pia.gov.ph/news/doh-urdaneta-city-kick-off-hpv-vax-program-in-pangasinan/>
- Dubé, E., Gagnon, D., Pelletier, C., Comeau, J. L., Steenbeek, A., MacDonald, N., Kervin, M., MacDonald, S. E., Mitchell, H., & Bettinger, J. A. (2024). Enhancing HPV vaccine uptake in girls and boys – A qualitative analysis of Canadian school-based vaccination programs. *Vaccine*, 42(26), 126425. <https://doi.org/10.1016/j.vaccine.2024.126425>
- Elissa, N., Charbel, H., Marly, A., Ingrid, N., Nadine, S., & Rachel, A. (2024). Knowledge and perception of HPV vaccination among Lebanese mothers of children between nine and 17 years old. *Reproductive Health*, 21(1). <https://doi.org/10.1186/s12978-024-01764-7>
- Emon, H. H., Kowbi, R. N., Chowdhury, Md. N., Teep, T. R., Habib, Md. A., Tayeeba, F., & Hossain, Md. M. (2025). Assessing knowledge, attitudes, and barriers toward HPV cervical cancer and vaccination among female university students in Bangladesh. *Scientific Reports*, 15(1). <https://doi.org/10.1038/s41598-025-28112-4>
- Eva, F. N., Khan, M. A. S., Islam, T., Monisha, U. K., Meem, N.-E.-S., Hossain, M. A., Goutam, A., Zerine, T., Alam, N., Nath, R., Sifat, S., Sultana, S., Sultana, M. S., Saha, S. K., Sarker, N. E., Rahman, M. L., Nabi, M. H., & Hawlader, M. D. H. (2024). Awareness of HPV vaccine and its socio-demographic determinants among the parents of eligible daughters in Bangladesh: A nationwide study. *Heliyon*, 10(10), e30897. <https://doi.org/10.1016/j.heliyon.2024.e30897>
- Falcaro, M., Castañón, A., Ndlela, B., Checchi, M., Soldan, K., Lopez-Bernal, J., Elliss-Brookes, L., & Sasieni, P. (2021). The effects of the national HPV vaccination programme in England, UK, on cervical cancer and grade 3 cervical intraepithelial neoplasia incidence: a register-based observational study. *The Lancet*, 398(10316). [https://doi.org/10.1016/S0140-6736\(21\)02178-4](https://doi.org/10.1016/S0140-6736(21)02178-4)
- Guo, Y., Liu, X., Nicholas, S., Maitland, E., & Liu, R. (2025). Revisiting Global HPV Vaccination Behavior and Its Determinants: A Comprehensive Review. *Risk Management and Healthcare Policy*, Volume 18(2675–2689), 2675–2689. <https://doi.org/10.2147/rmhp.s524223>
- Hawlader, M. D. H., Eva, F. N., Khan, M. A. S., Islam, T., Monisha, U. K., Chowdhury, I., Ara, R., Meem, N.-E.-S., Hossain, M. A., Goutam, A., Zerine, T., Alam, N., Nath, R., Sifat, S., Sultana, S., Sultana, M. S., Saha, S. K., Sarker, N. E., Nabi, M. H., & Rahman, M. L. (2024). Acceptance of Human Papillomavirus (HPV) vaccine among the parents of eligible daughters (9-15 years) in Bangladesh: A nationwide study using Health Belief Model. *PloS One*, 19(11), e0310779. <https://doi.org/10.1371/journal.pone.0310779>
- Heyde, S., Osmani, V., Schauburger, G., Cooney, C., & Klug, S. J. (2024). Global parental acceptance, attitudes, and knowledge regarding human papillomavirus vaccinations for their children: a systematic literature review and meta-analysis. *BMC Women S Health*, 24(1). <https://doi.org/10.1186/s12905-024-03377-5>

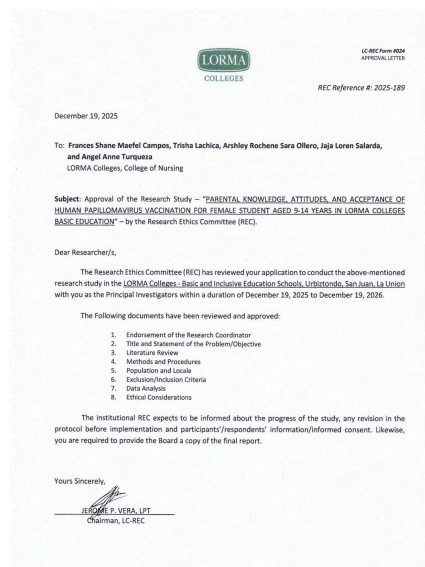
- Human Papillomavirus and Related Diseases Report PHILIPPINES. (2023). ICO/IARC Information Centre on HPV and Cancer (HPV Information Centre) 2023. <https://hpvcentre.net/statistics/reports/PHL.pdf>
- Ilocos Norte town expands HPV vax coverage to up to age 26. (2025). Philippine News Agency. <https://www.pna.gov.ph/articles/1257588>
- Ilocos Region intensifies catch-up vaccination of children. (2024). Philippine News Agency. <https://www.pna.gov.ph/articles/1228097>
- Juárez-Leon, V., Delahnie Calderón-Solano, Poterico, J. A., Ybaseta-Medina, J., Azañedo, D., & J Smith Torres-Román. (2025). Factors associated with parental acceptance of the HPV vaccine in girls from metropolitan Lima, Peru. *BMC Public Health*, 25(1). <https://doi.org/10.1186/s12889-025-23228-8>
- Kassa, B., Mohammed, A., & Gizachew Tadesse Wassie. (2025). Parents' acceptance of human papilloma virus vaccination for their daughters in adet town, North Gojjam zone, Northwest Ethiopia: A mixed method study. *PLoS ONE*, 20(8), e0330911–e0330911. <https://doi.org/10.1371/journal.pone.0330911>
- Khalil, G. E., Fisher, C. L., Chi, X., Hansen, M. D., Sanchez, G., Gurka, M. J., & Staras, S. A. S. (2025). The Role of Personal Social Networks in Parental Decision-Making for HPV Vaccination: Examining Support and Norms Among Florida Parents. *Vaccines*, 13(7), 667. <https://doi.org/10.3390/vaccines13070667>
- Kisa, S., & Kisa, A. (2024). Religious beliefs and practices toward HPV vaccine acceptance in Islamic countries: A scoping review. *PLoS ONE*, 19(8), e0309597–e0309597. <https://doi.org/10.1371/journal.pone.0309597>
- Lei, J., Ploner, A., Elfström, K. M., Wang, J., Roth, A., Fang, F., Sundström, K., Dillner, J., & Sparén, P. (2020). HPV Vaccination and the Risk of Invasive Cervical Cancer. *New England Journal of Medicine*, 383(14), 1340–1348. <https://doi.org/10.1056/nejmoa1917338>
- Lu, X., Ji, M., Wagner, A. L., Huang, W., Shao, X., Zhou, W., & Lu, Y. (2022). Willingness to pay for HPV vaccine among female health care workers in a Chinese nationwide survey. *BMC Health Services Research*, 22(1). <https://doi.org/10.1186/s12913-022-08716-6>
- Luo, W., Wang, D., Qin, R., Xu, G., & Zhou, L. (2025). Willingness to pay and preference for HPV vaccine among parents in China: A study based on a multi-center cross-sectional survey. *Human Vaccines & Immunotherapeutics*, 21(1), 2531651. <https://doi.org/10.1080/21645515.2025.2531651>
- Marlow, L. A. V., Forster, A. S., Wardle, J., & Waller, J. (2021). Mothers' and Adolescents' Beliefs about Risk Compensation following HPV Vaccination. *Journal of Adolescent Health*, 44(5), 446–451. <https://doi.org/10.1016/j.jadohealth.2008.09.011>
- Naoum, P., Athanasakis, K., Zavras, D., Kyriopoulos, J., & Pavi, E. (2022). Knowledge, Perceptions and Attitudes Toward HPV Vaccination: A Survey on Parents of Girls Aged 11–18 Years Old in Greece. *Frontiers in Global Women's Health*, 3(871090). <https://doi.org/10.3389/fgwh.2022.871090>
- National Cancer Institute. (2025, January 31). HPV and Cancer. National Cancer Institute. <https://www.cancer.gov/about-cancer/causes-prevention/risk/infectious-agents/hpv-and-cancer>
- Rajaie, S., Emamgholipour, S., Azari, S., Karimi, Z., & Karimi, F. (2026). Acceptance and the willingness to pay for human papilloma virus (HPV) vaccine: A systematic review.

- Rodrigues, F., Ziade, N., Jatuworapruk, K., Caballero-Uribe, C. V., Khursheed, T., & Gupta, L. (2023). The Impact of Social Media on Vaccination: A Narrative Review. *Journal of Korean Medical Science*, 38(40), e326. <https://doi.org/10.3346/jkms.2023.38.e326>
- Salleh, N. S., Abdullah, K. L., & Chow, H. Y. (2025). Cultural barriers and facilitators of the parents for human papillomavirus (HPV) vaccination uptake by their daughters: a systematic review. *Journal de Pediatria*, 101(2)(133–149). <https://doi.org/10.1016/j.jpmed.2024.07.012>
- Shin, M. B., Sloan, K., Báezconde-Garbanati, L., Dang, E., García, S., Palinkas, L. A., Unger, J. B., Mayumi Willgerodt, Crabtree, B. F., & Tsui, J. (2023). Multilevel perspectives on school-based opportunities to improve HPV vaccination among medically underserved adolescents: Beyond school entry mandates. *Human Vaccines & Immunotherapeutics*, 19(2). <https://doi.org/10.1080/21645515.2023.2251815>
- Thilly, N., Michel, M., Simon, M., Bocquier, A., Gagneux-Brunon, A., Gauchet, A., Gilberg, S., Le Duc-Banaszuk, A.-S., Bruel, S., Mueller, J. E., Giraudeau, B., Chevreul, K., & PreVHPV Study Group. (2024). Effectiveness of a School- and Primary Care-Based HPV Vaccination Intervention: The PreVHPV Cluster Randomized Trial. *JAMA Network Open*, 7(5), e2411938. <https://doi.org/10.1001/jamanetworkopen.2024.11938>
- Tobaiqy, M., & MacLure, K. (2024). A Systematic Review of Human Papillomavirus Vaccination Challenges and Strategies to Enhance Uptake. *Vaccines*, 12(7), 746. <https://doi.org/10.3390/vaccines12070746>
- Towards a Cervical Cancer-Free Future for All Filipinas | Philippine Commission on Women. (2025, May 21). [Pcw.gov.ph](http://pcw.gov.ph); Philippine Commission on Women. <https://pcw.gov.ph/towards-a-cervical-cancer-free-future-for-all-filipinas/>
- Vujovich-Dunn, C., Wand, H., Brotherton, J. M. L., Gidding, H., Sisnowski, J., Lorch, R., Veitch, M., Sheppard, V., Effler, P., Skinner, S. R., Venn, A., Davies, C., Hocking, J., Whop, L., Leask, J., Canfell, K., Sanci, L., Smith, M., Kang, M., & Temple-Smith, M. (2022). Measuring school level attributable risk to support school-based HPV vaccination programs. *BMC Public Health*, 22(1). <https://doi.org/10.1186/s12889-022-13088-x>
- Wahab, F. K., Punzalan, J. K., & Punzalan, M. G. (2025). Protecting Our Children: A Cross-sectional Study on the Decision-making of Parents on Human Papillomavirus Vaccination for Adolescent Females in Zamboanga del Sur, Philippines. *Asian Journal of Public Health Practice*, 2(1), 33–42. https://doi.org/10.4103/ajphp.ajphp_12_25
- World Health Organization. (2020). Global strategy to accelerate the elimination of cervical cancer as a public health problem. [Www.who.int](http://www.who.int). <https://www.who.int/publications/i/item/9789240014107>
- World Health Organization. (2023). Global partners cheer progress towards eliminating cervical cancer and underline challenges. [Www.who.int](http://www.who.int). <https://www.who.int/news/item/17-11-2023-global-partners-cheer-progress-towards-eliminating-cervical-cancer-and-underline-challenges>
- World Health Organization. (2024). Cervical Cancer. World Health Organization; World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/cervical-cancer>
- World Health Organization. (2024, March 5). *Human papillomavirus and cancer*. World Health Organization. <https://www.who.int/news-room/fact-sheets/detail/human-papilloma-virus-and-cancer>

- Wijayanti, K. E., Schütze, H., MacPhail, C., & Braunack-Mayer, A. (2021). Parents' knowledge, beliefs, acceptance, and uptake of the HPV vaccine in members of the Association of Southeast Asian Nations (ASEAN): A systematic review of quantitative and qualitative studies. *Vaccine*, 39(17), 2335–2343. <https://doi.org/10.1016/j.vaccine.2021.03.049>
- Yi, Y., Shixin Xiu, Shi, N., Huang, Y., Zhang, S., Wang, Q., Yang, L., Cui, T., Wang, Y., Yuan, S., & Jin, H. (2023). Perceptions and acceptability of HPV vaccination among parents of female adolescents 9–14 in China: A cross-sectional survey based on the theory of planned behavior. *Human Vaccines & Immunotherapeutics*, 19(2). <https://doi.org/10.1080/21645515.2023.2225994>
- Zhou, W., Guo, X., Lu, J., Lu, X., Fu, X., & Lu, Y. (2024). Parental willingness to accept and pay human papillomavirus vaccine for boys aged 9–14 in a metropolis area of China: Evidence for developing a vaccination strategy. *Vaccine*, 42(9), 2246–2253. <https://doi.org/10.1016/j.vaccine.2024.02.076>

9. Appendices

A. Approval Letter from Research Ethics Committee



10. Author(s) Biography

Ms. Jaja Loren L. Salarda, a Bachelor of Science in Nursing student from Lorma Colleges, leads a team of dedicated researchers alongside their research adviser, Mrs. Guerly M. Acosta, in exploring the parental knowledge, attitudes, and acceptance regarding Human Papillomavirus (HPV) vaccination among parents of female students aged 9–14 years in Lorma Colleges Basic Education. Together, they demonstrate commitment and passion in advancing public health research, particularly in the promotion of cervical cancer prevention and adolescent healthcare awareness. Through their collaborative efforts, the researchers contribute meaningful insights regarding HPV vaccination awareness, vaccine acceptance, and the factors influencing parental decision-making, emphasizing the importance of strengthening health education and preventive healthcare practices within the community.