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Knowledge and Attitudes of Female Students at Stikes Sehat Medan on Human Papillomavirus Infection and Vaccination

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ABSTRACT

Cervical cancer is a malignancy that can occur in a woman's cervix and has a fairly high mortality rate. The virus that causes cervical cancer is Human Papillomavirus (HPV). One way to prevent HPV infection is to get the HPV vaccination. The purpose of this research is to analyze the relationship between knowledge and attitudes of STIKes Sehat Medan students regarding Human Papillomavirus infection and vaccination. The method used is descriptive analytical research with a cross-sectional approach, sampling using a total sampling method of 124 STIKes Sehat Medan students in 2024. Data analysis used the Spearman correlation test. The results of this study showed that of the 124 respondents, 95 students (76.6%) of STIKes Sehat Medan students had good knowledge about HPV infection and 102 people (82.3%) had a good attitude about HPV infection. Furthermore, as many as 118 people (95.2%) of STIKes Sehat Medan students had good knowledge about HPV vaccination and as many as 102 people (82.3%) had a good attitude about HPV vaccination. Based on the results of the Spearman correlation test, the relationship between knowledge and attitudes of STIKes Sehat Medan students regarding HPV infection in 2024, the value of p=0.010 was obtained, which means that there is a significant relationship between the knowledge and attitudes of STIKes Sehat Medan students regarding HPV infection and the value of p=0.015 was obtained, which is This means that there is a significant relationship between the knowledge and attitudes of STIKes Sehat Medan students regarding HPV vaccination.

Keywords: *Human papillomavirus infection, Human papillomavirus vaccination, cervical cancer, knowledge, attitude*

I. INTRODUCTION

World Health Organization(WHO) in 2020, metake notesmany 604,000 new cases and 342,000 toprescribed deathbabkan oleh kanker serviks who teit happened becausena there is contact sesexual [39]. On nebecause of thatrpeearn money againgood to meneNah, the cancer caser serviks a lot terhappened. Sedangkan on nebecause of thatgara advanced, cancer screeningr serviks is generally done serta pencegahan methrough Human vaccination*Papilloma Virus* (HPV) [39]. In nebecause of AmeRika, Tethat's itcarry out the National Bre program*ast and Cervical Cancerr Eary Detection Program*(NBCCEDP) who was assisted by Oleh C*enters for Disease Control and Prevention*(CDC) for mehelp mereyou are the onerpeearn money againgood for meget accesss screening services, diagnostics, serta petreatment for cancerr breast and cancerr serviks [8].

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Information Center Tomequeue Tosehatan ReIndonesian publicSuck mestate in 2013 tergot 98,692 peNdeRita Kanker serviks in Indonesiavain [39]. Tribune berita mereport toprescribed deathcause the consequences of cancerr serviks mereached 18,279 per years. Bemean seabout 50 Indonesian womenSuck medied becausena kanker serviks.

In the case of cervical cancer, the World Health Organization (WHO) together with the European Research Organization in 1996 stated that HPV is an important factor that causes cervical cancer. HPV is divided into 180 different variant types, 15 of which are oncogenic.

One of the preventive treatments in preventing the incidence of cervical cancer is by vaccinating against the Human Papilloma Virus (HPV). HPV vaccination in adolescents is one of the efforts to prevent cervical cancer. Since 2009, WHO has recommended that HPV vaccination be included in the national immunization program of each country (Ministry of the Republic of Indonesia, 2013). The HPV vaccination program has been implemented in Indonesia since 2016. This program will continue in the following years, and in 2023-2024, the HPV vaccination program will be expanded to all national territories [23].

The first vaccine approved was the Quadrivalent, which targets HPV 6, 11, 16, and 18. One year later, the Bivalent vaccine targeting HPV 16 and 18 was also approved, followed by the approval of nonavalent vaccines targeting HPV 6, 11, 16, 18, 31, 33, 45, 56, and 58. Of the three vaccines, all target HPV 16 and 18 [9]. The HPV vaccination program has proven effective in reducing the incidence of cervical cancer by up to 90% [36] HPV vaccination can reduce the incidence of cervical cancer by 86% and 68% in girls vaccinated at age less than 16 years or age 17-19 years [22]. The effectiveness of the HPV vaccine is better when given at a younger age compared to women who are 20 years or older or who have been exposed to HPV before being vaccinated [22].

Based on the description above and the need for research regarding the relationship between knowledge and attitudes of STIKes Sehat Medan students towards HPV infection and vaccination, researchers are interested in investigating the "Relationship between Knowledge and Attitudes of STIKes Sehat Medan Students towards HPV Infection and Vaccination". This research will be carried out at STIKes Sehat Medan because female students there have an interest and desire to participate in research regarding HPV infection and vaccination related to cervical cancer in the future.

The aim of this research is to determine the level of knowledge and attitudes of STIKes Sehat Medan female students regarding HPV infection and vaccination in 2024. This research also aims to: a) identify the level of knowledge of STIKes Sehat Medan female students regarding HPV infection and vaccination, b) evaluate female students' attitudes STIKes Sehat Medan regarding HPV infection and vaccination, and c) analyzing the relationship between the level of knowledge and attitudes of STIKes Sehat Medan students regarding HPV infection and vaccination.

II. THEORETICAL BASIS

Vaccines can be described as a mixture of microorganisms or microbial substances that are used to stimulate an immune response through an immunization procedure. Immunization, also known as vaccination, is a method of increasing a person's immunity against various pathogens or toxins. Active vaccination aims to induce the body's immune response against certain pathogens or toxins using harmless or non-toxic antigens. Active vaccination is carried out by administering a vaccine containing killed or weakened microorganisms, so that the body can produce its own antibodies [3].

After two decades, in 2006, the first prophylactic vaccine against HPV was introduced. The first vaccine approved was a quadrivalent vaccine that protected against HPV 11, 16, and 18. A year later, a bivalent vaccine that protected against HPV 16 and 18 was also approved [9].

There are two types of HPV vaccine, namely bivalent and nonavalent, which can prevent human papillomavirus (HPV) infection. The bivalent vaccine can prevent infection with HPV types 16 and 18 and has been shown to provide protection and reduce the risk of cervical cancer. The effectiveness of bivalent vaccines reaches a success rate of more than 90%. The nonavalent vaccine is able to prevent infection with HPV types 6, 11, 16 and 18 with an efficacy of between 70 – 100% and can reduce the incidence of cervical cancer cases by up to 90% [3]. In 2014, the newest HPV vaccine was introduced, namely the nonavalent (nine valence) vaccine. Development of the 9-valent HPV vaccine began with clinical trials in 2009 and was approved by the FDA in 2014. The 9-valent HPV vaccine provides protection against 9 types of HPV: 2 low-risk HPV types (HPV 6 and 11) and 7 high-risk HPV types (16, 18, 31, 33, 45, 52, 58). The 9-valent HPV vaccine can prevent genital warts and cancer caused by HPV. In the United States, the quadrivalent vaccine has been withdrawn from circulation since 2016 and replaced by the non-avalent HPV vaccine [20].

The age recommendation for HPV vaccination is for women aged 10 to 26 years to get effective results. However, research results show that the vaccine still provides benefits in women up to the age of 55 years.

Therefore, it is important for women of various age groups to consider HPV vaccination as a preventive measure to protect their health [3].

Human Papilloma Virus(HPV) is a non-involving double-stranded DNA virus and has a genome length of approximately 8,000 base pairs (bp). The HPV genome consists of eight open reading frames (ORFs), including an early gene and two late genes. Of the 16 genera in the Papillomaviridae family, there are five genera that infect humans: Alphapapillomavirus, Apapillomavirus, Gammapapillomavirus, Mupapillomavirus, and Nupapillomavirus. There are several types of HPV, and some of them can cause cervical cancer and

other anogenital cancers, as well as head and cervical cancers. The two most common types considered "high risk" are HPV 16 and 18, which cause about 70% of all cases of cervical cancer. Additionally, there are two "low risk" types (HPV 6 and 11) that cause genital warts [35].

Human papilloma virus(HPV) is classified based on the level of malignancy in the host. The first group is low-risk HPV (LR-HPV), which consists of HPV types 6, 11, 40, 43, 44, and 55, which often cause genital warts and other benign conditions. The second group is High Risk Potential HPV (pHr-HPV), which consists of HPV types 26, 51, 66, 67, 68, 70, 73, and 82 which have high risk potential. The final group is High-Risk HPV (HR-HPV), consisting of HPV types 16, 18, 31, 32, 33, 35, 39, 45, 51, 52, 56, 58, and 59. This type is directly related to cancer , especially the incidence of cervical cancer [35].

A. Knowledge

Knowledge is the result of human understanding or the impact of the learning process on an object through the five senses, such as sight, smell and hearing. In other words, knowledge is the accumulation of information and understanding obtained through experience and learning [17].

Broadly speaking, knowledge is divided into 6 levels of knowledge:

1. Know: Refers to the ability to remember existing information after observing something.
2. Understanding (comprehension): More than just knowing the object, but also being able to explain correctly about the object.
3. Application: If a person understands an object, he can use known principles or apply other principles to other situations.
4. Analysis: Analysis is a person's ability to describe or separate and then find relationships between known components of a problem or object.
5. Synthesis: Shows a person's ability to summarize or combine the components of the knowledge they have in a logical relationship. In other words, synthesis is a person's ability to build new formulas from existing formulas.
6. Evaluation (evaluation): Evaluation involves a person's ability to prove or evaluate certain objects [17].

Factors influencing knowledge can be classified as follows:

1. Education: Education is an effort to develop knowledge through formal and non-formal approaches throughout life. The higher a person's education, the more knowledge they can gain.
2. Information and Social Media: Information is what someone knows about an object. Social media and technology play an important role in disseminating information and expanding knowledge.
3. Social, Cultural, and Economic Context: Customs, traditions, and social norms in a particular environment influence an individual's knowledge. Economic status also influences access to facilities and learning opportunities.
4. Environment: The physical, biological, and social environment surrounding an individual plays an important role in the knowledge acquisition process.
5. Experience: Past experiences shape knowledge. Repeating knowledge gained in facing problems strengthens understanding.
6. Age: The older you get, the more a person's understanding and thinking patterns develop. Knowledge can continue to develop along with life experience [31].

B. Attitude

Attitude or willingness to act is not the implementation of a particular motive. In other words, the function of attitudes is not overt action or activity, but rather the continuation of behavior. Attitude is a person's closed response to a particular stimulus or object, involving opinions and related emotional factors (such as happy, unhappy, agree, disagree, good, or bad). Attitudes involve thoughts, feelings, worries and other psychological symptoms [29].

Attitude consists of several levels, namely:

1. Through (Receiving): Is a person's willingness to pay attention to a given object.

2. Responding: Involves providing a response when given an object, solving a problem, or a given task.
3. Appreciating (Valuing): Appreciating the actions, events, or opinions of other individuals.
4. Responsible: Take responsibility for everything you have chosen, by understanding the risks involved.
5. Practice or Action (Proactive): Facilities and support from other parties are supporting factors for turning attitudes into real actions [29].

Factors that can influence attitudes are as follows:

1. Personal Experience: Individual experience plays an important role in shaping attitudes. When someone experiences or has experienced something, that experience becomes part of their memory and knowledge.
2. Important Others: Important people around us influence the formation of our attitudes. Our attitudes are often influenced by the examples and guidance of people we respect.
3. Culture: Culture has a significant influence in shaping individual attitudes. Each person is born into a unique cultural environment, and the cultural diversity in each region provides individuals with different experiences.
4. Mass Media: Mass media has a major influence in shaping individual attitudes and beliefs. Various forms of media such as television, newspapers, magazines, and others play an important role in conveying information and influencing individual views and opinions.
5. Educational Institutions and Religious Institutions: Basic understanding and moral counseling from educational institutions and religious institutions play an important role in forming attitudes. Educational and religious institutions instill moral values, norms and principles that shape an individual's character and worldview [29].

In general, attitude formation is strongly influenced by a number of factors, including previous experience, other people who are considered important, culture, knowledge obtained from mass media, knowledge obtained from educational institutions/institutions, religion, and a person's emotional influence. Readiness to prevent disease is influenced by three things: knowledge, skills, and beliefs [29].

In previous research it was said that there was a relationship between knowledge of young women and attitudes towards HPV vaccination, this is in line with the view that the higher the level of knowledge, the better a person's attitude towards an object, including health-related issues. Someone with less knowledge about HPV vaccination and HPV infection tends to have a less favorable attitude towards cervical cancer prevention. Meanwhile, someone with better knowledge has a lower chance of falling behind in cervical cancer prevention [29].

III. RESEARCH METHODS

This research is a cross-sectional study with data collection carried out at STIKes Sehat Medan. The aim was to see whether there was a relationship between the knowledge and attitudes of STIKes Sehat Medan students towards HPV infection and vaccination. The time and location of this research was carried out from August 2023 to May 2024, with the research location at STIKes Sehat Medan. The population of this study were all STIKes Sehat Medan students consisting of nursing, midwifery and pharmacy students.

The research sample was taken using a total sampling technique, namely all 124 STIKes Sehat Medan students from the nursing, midwifery and pharmacy departments. The inclusion criteria for participation in this research were female students who were willing to fill out a questionnaire and were active as STIKes Sehat Medan students. Exclusion criteria included questionnaires that were not filled in completely and female students who were taking competency tests at STIKes Sehat Medan.

The data for this research instrument uses primary data obtained from a previous research questionnaire with the title "The Relationship between Knowledge and Attitudes of Young Women regarding Human Papilloma Virus Infection and Vaccination in Bulian Village, Tebing Tinggi City" by Aulia Fitri in 2019. The questionnaire was then retested by researchers against 22 respondents at the Ministry of Health's Health Polytechnic, Jl. Jamin Ginting, Km 12, Medan.

The knowledge variable measurement method uses the Guttman scale, where respondents are given a score of 1 for the answer "YES" and a score of 0 for the answer "NO" for each question. There are a total of 10 questions, and the highest score that can be obtained from all questions is 10. The maximum score is used to draw conclusions. Answer conditions: a If the answer is between 76-100% of the maximum score, then knowledge is categorized as good. b. If the answer is between 56-75% of the maximum score, then knowledge is categorized as quite good. c. If the answer is between 40-55% of the maximum score, then knowledge is categorized as poor. d. If the answer is less than 40% of the maximum score, then knowledge is categorized as not good.

Attitudes are measured based on a Likert scale. The highest score for each question is 4 and the total number of questions is 10. The highest score for all questions is 40. The weight of each question is as follows: a. If the answer is between 76-100% of the maximum score, then the attitude is categorized as good. b. If the answer is between 56-75% of the maximum score, then the attitude is categorized as quite good. c. If the answer is between 40-55% of the maximum score, then the attitude is categorized as poor. d. If the answer is less than 40% of the maximum score, then the attitude is categorized as not good.

In this study, data analysis was used using univariate statistical methods to analyze the independent variables, namely the knowledge of STIKes Sehat Medan students about HPV virus infection and vaccination, and the dependent variable, namely the attitudes of STIKes Sehat Medan students regarding HPV virus infection and vaccination.

Bivariate analysis in this research is that all data obtained from the questionnaire results will be processed using SPSS to determine whether or not there is a significant relationship between these variables. The method used in this research is the Spearman test, because it consists of verifying whether or not there is a correlative relationship between the two research variables.

IV. RESULTS AND DISCUSSION

A. Research result

1. Demographic Data Based on Medan Healthy STIKes Student Majors in 2024

Table 1. Demographics of Medan Healthy STIKes Students based on majors in 2024

Major	Total (f)	Percentage (%)
Pharmacy	28	22.6
Midwifery	63	50.8
Nursing	33	26.6
Total	**124**	**100.0**

Based on table 1, it shows that the respondents in this study were 124 people, with the largest group being midwifery majors with 63 people (50.8%), followed by nursing majors with 33 people (26.6%) and pharmacy majors with 28 people (22.6%).

2. Frequency Distribution of Knowledge Level of Medan Healthy STIKes Students Regarding HPV Infection in 2024

Table 2. Frequency distribution of the level of knowledge of STIKes Sehat Medan female students regarding HPV infection in 2024

Major	Total (f)	Percentage (%)
Not good	2	1.6
Not good	3	2,4
Pretty good	24	19.4
Good	95	76.6
Total	**124**	**100.0**

Based on table 2, it shows that the highest level of knowledge of STIKes Sehat Medan female students regarding HPV infection is in the good category with a total of 95 people (76.6%), then the quite good category is 24 people (19.4%), the not so good category is 3 people. (2.4%) and the unfavorable category was 2 people (1.6%).

3. Frequency Distribution of the Attitudes of Medan Healthy STIKes Students Regarding HPV Infection in 2024

Table 3. Frequency distribution of attitudes of STIKes Sehat Medan female students regarding HPV infection in 2024

Major	Total (f)	Percentage (%)
Not good	2	1.6
Not good	0	0.0
Pretty good	22	17.7
Good	100	80.6
Total	**124**	**100.0**

Based on table 3, it shows that the attitude of STIKes Sehat Medan students regarding HPV infection is mostly in the good category with 100 people (80.6%). Next, there were 22 people in the fair category (17.7%), 2 people in the not good category (1.6%) and 0 or nil in the bad category.

4. Frequency Distribution of Knowledge Level of Medan Healthy STIKes Students Regarding HPV Vaccination in 2024

Table 4. Frequency distribution of the level of knowledge of STIKes Sehat Medan female students regarding HPV vaccination in 2024

Major	Total (f)	Percentage (%)
Not good	0	0.0
Not good	2	1.6
Pretty good	4	3,2
Good	118	95.2
Total	**124**	**100.0**

Based on table 4, it shows that the highest level of knowledge of STIKes Sehat Medan female students regarding HPV vaccination is in the good category with a total of 118 people (95.2%). Furthermore, the quite good category had 4 people (3.2%), the poor category had 2 people (1.6%) and the not good category had 0 or nil.

5. Frequency Distribution of Medan Healthy STIKes Students' Attitudes Regarding HPV Vaccination in 2024

Table 5. Frequency distribution of attitudes of STIKes Sehat Medan female students regarding HPV vaccination in 2024

Major	Total (f)	Percentage (%)
Not good	0	0.0
Not good	2	1.6
Pretty good	8	6.5
Good	114	91.9
Total	**124**	**100.0**

Based on table 5, it shows that the attitude of STIKes Sehat Medan students regarding HPV infection is mostly in the good category with a total of 114 people (91.9%). Followed by the quite good category with 8 people (6.5%), the poor category with 2 people (1.6%) and the not good category with 0 or nil.

6. Relationship between Knowledge and Attitudes of Medan Healthy STIKes Students Regarding HPV Infection in 2024

Table 6. Results of the Spearman Correlation Test on the relationship between knowledge and attitudes of STIKes Sehat Medan students regarding HPV infection in 2024

Variable	Attitude		
	n	r	p
Knowledge	124	0.229	0.010

Based on the table above, the results of the Spearman correlation test were obtained from the relationship between knowledge and attitudes of STIKes Sehat Medan students regarding HPV infection with the sig value. (2-tailed) is 0.010 or smaller than 0.05, so it can be concluded that there is a relationship between the knowledge and attitudes of STIKes Sehat Medan students regarding HPV infection. In the table above, a correlation coefficient value of 0.229 is obtained, which means that the level of correlation strength of the relationship between knowledge and attitudes of STIKes Sehat Medan students regarding HPV infection is quite strong.

7. Relationship between Knowledge and Attitudes of Medan Healthy STIKes Students Regarding HPV Vaccination in 2024

Table 7 Spearman Correlation Test Results of the relationship between knowledge and attitudes of STIKes Sehat Medan female students regarding HPV vaccination in 2024

Variable	Attitude		
	n	r	p
Knowledge	124	0.218	0.015

Based on the table above, the results of the Spearman correlation test were obtained from the relationship between knowledge and attitudes of STIKes Sehat Medan students regarding HPV vaccination with the sig value. (2-tailed) is 0.015 or smaller than 0.05, so it can be concluded that there is a relationship between the knowledge and attitudes of STIKes Sehat Medan students regarding HPV vaccination. In the table above, a correlation coefficient value of 0.218 is obtained, which means that the level of strength of correlation between knowledge and attitudes of STIKes Sehat Medan students regarding HPV vaccination is weak.

B. Discussion

Based on the use of the total sampling method for sampling taking into account the research inclusion and exclusion criteria, the total number of respondents (table 4.1) was 124 people, with 63 people majoring in midwifery (50.8%), nursing majors totaling 33 people (26, 6%) and nursing majors with a total of 28 people (22.6%). Based on table 4.2 which contains the frequency distribution results regarding the level of knowledge of STIKes Sehat Medan female students regarding HPV infection, it is known that the good knowledge category is the most dominant with a total of 95 people (76.6%). Furthermore, the quite good category includes 25 people (19.4%), the not so good category consists of 3 people (2.4%), and the not good category consists of 2 people (1.6%). In another study conducted by Yu Yang, et al. (2015) of 305 respondents who were adult women in Shandong City, China, it was found that 45 people (14.7%) had poor knowledge about HPV infection. Followed by 179 people (58.6%) having poor knowledge and 81 people (26.5%) having good knowledge about HPV infection [32].

Based on the results of Yu Yang's research, it was concluded that there was a difference in the number of respondents, the largest in the study were respondents in the poor knowledge category, while in table 4.2 the largest category was respondents in the good category. In another study conducted by Febriyanti and Annisa in 2023, which was conducted on 80 PKK mothers in Medan City District, it was found that the results of the frequency distribution for the level of knowledge about HPV infection were 24 people (30.0%) categorized as not good, 35 people (43.8%) were categorized as poor, 7 people (8.8%) were categorized as quite good and 14 people (17.5%) had good knowledge about HPV infection (Febriyanti. R and Annisa, 2023). There were differences regarding the results of the level of knowledge about HPV infection, where the majority were in the poor category with 35 people (43.8%).

Based on table 4.3 which contains the results of the frequency distribution regarding the attitudes of STIKes Sehat Medan female students regarding HPV infection, the good category is the largest with 100 people (80.6%), the quite good category is 22 people (17.7%), the not good category is 22 people (17.7%), not good is the number 2 people (1.6%) and the unfavorable category was 0, or nil. However, in research conducted by Biyazin, T., et. al. (2020) in Jimma City, Ethiopia, research was conducted on 366 people regarding the attitudes of women aged 16 – 20 years and over 20 years regarding HPV infection. The results showed that 12 people (3%) had an unfavorable attitude about HPV infection, 240 people (65.6%) had a neutral attitude, and 114 people (31.4%) had a good attitude about HPV infection. This is not in line with the frequency distribution table in table 4.3 where the largest category is knowledge about HPV infection with the good category. Differences in results can occur due to differences in the number of different samples, namely 124 versus 366 people. This can cause differences in the frequency distribution results regarding attitudes about HPV infection [6]. Based on the theory of Notoadmodjo, S. in the 2013 book Health Behavior Science, knowledge is influenced by several factors, including socio-cultural, environmental and educational contexts. Geographical and demographic differences cause differences in health behavior and people's views regarding the socio-cultural context which will ultimately cause differences in people's attitudes about HPV infection. The environment and education obtained by each individual can also influence knowledge which ultimately changes the mindset and perspective of an individual in taking a stance [28]. In another study conducted by Gomes. JNDR and Suariyani.

NLP (2023) of 85 teenagers in Cimoro Dili City, Timor-Leste, found that 28 people (32.9%) had quite good attitudes about sexually transmitted infections, in this case HPV infection. Furthermore, it was found that 57 people (67.1%) had a good attitude and for the less good category it was found to be 0 or nil [18]. This is in line with table 4.3, where the largest category is the good attitude category regarding HPV infection.

Based on table 4.4 which contains the frequency distribution results regarding the level of knowledge of STIKes Sehat Medan female students regarding HPV vaccination, it is known that the good category is the most dominant with a total of 118 people (95.2%). Furthermore, the quite good category includes 4 people (3.2%), the not so good category consists of 2 people (1.6%) and the not good category is 0 or nil. In another study conducted by Mulia, et. al. (2021) at the Faculty of Nursing, Syah Kuala University on 82 nursing students, where the results showed that 41 people (50.0%) of respondents had good knowledge about HPV vaccination, 37 people (45.1%) of respondents had fairly good knowledge and 4 people (4.9%) respondents had poor knowledge about HPV infection [27]. This is not in line with research conducted by Astuti, D. et al (2024) which was conducted on 109 nursing students in Jayapura City. The results obtained from the frequency distribution of the level of knowledge of nursing students in Jayapura City regarding HPV vaccination were mostly in the poor category with 67 people (61.5%), the very poor category with 14 people (12.8%), the sufficient category with 15 people (13, 8%), the good category was 13 people (11.9%) and the very good category was 0 or nil. This can happen because there are demographic differences that allow differences in the information obtained. The lack of equal distribution of socialization regarding HPV vaccination can also cause differences in results from the frequency distribution of female students' level of knowledge about HPV vaccination. This is supported by the theory presented in the book health behavior science by Notoadmodjo, S. in 2013 which states that many factors can influence knowledge, including the education obtained, socio-cultural context and the environment. In another study conducted by Rahmayanti, S. et al. (2018) of 100 respondents who were women of childbearing age who were in the working area of the Sidomulyo Inpatient Health Center in Pekanbaru City, it was found that 27 respondents (27.0%) had good knowledge about HPV vaccination, 39 people (39.0%) %) with sufficient knowledge and 34 people (34.0%) had insufficient knowledge about HPV vaccination [30].

Based on table 4.5 which contains the frequency distribution results regarding the attitudes of STIKes Sehat Medan students regarding HPV vaccination, it is known that the good category is the most dominant with 114 people (91.9%), followed by the quite good category with 8 people (6.5%), 2 people (1.6%) were unfavorable and 0 or nil for unfavorable attitudes towards HPV vaccination. There were differences regarding the results of the level of knowledge about HPV vaccination, where the largest was in the insufficient category with 39 people (39.0%). In another study conducted by Abdelaliem, SMF, et al. (2023) conducted on 307 people who were nursing students in Saudi Arabia, it was found that 77 people (25.1%) had a low attitude about HPV vaccination, 175 people (57.0%) were categorized as moderate and 55 people (17.9%) had a good attitude about HPV vaccination (Abdelaliem. SMF et al., 2023). There are differences in results where the sufficient category is the largest category with a total of 175 respondents (57.0%). In another study conducted by Aryanian, Z. et al. (2022) of 248 female students in Iran, it was found that 59 people (24.1%) had a fairly good attitude about HPV vaccination, 186 people (75.9%) were categorized as good, and the bad category was 0 or nil. This is in line with table 4.5, where the good category is the largest with 186 people (75.9%) (Aryanian.

Z. et al., 2022). This is in line with the HPV prevention theory based on the book Fitzpatrick's Dermatology in General Medicine, where preventing HPV infection depends on an individual's attitude in avoiding risk factors that can cause HPV infection [37]. Prevention that can be done to prevent HPV infection includes giving the HPV vaccine which was approved by the US Food and Drugs Administration in 2006 which states that HPV vaccination has high effectiveness if given to women aged 9 to 26 years [37]

A Spearman test was carried out between the 2 variables (table 4.6) and the test result was p=0.010, where there was a significant relationship between knowledge and attitudes of STIKes Sehat Medan students regarding HPV infection. This is in line with research conducted by Saenong, RH in 2020 on medical faculty students at Muhammadiyah University, Jakarta to see the relationship between level of knowledge and attitudes towards sexually transmitted infections, in this case HPV infection. The Fisher exact test was carried out and the result was a p value = 0.000 < 0.005, so it could be concluded that there was a significant relationship (Saenong, RH, 2020). This is in line with table 4.6, where there is a significant relationship between knowledge and attitudes about HPV infection. This is also in line with the theory presented by Notoadmodjo, S. in the book Health Behavior Science which states that the higher a person's level of knowledge, the better a person's attitude towards an object [28]. In another study conducted by Wong. LP (2011) on 449 rural women in Southeast Asia who were women of Malaysian, Chinese and Indian nationalities regarding the relationship between knowledge and attitudes about HPV infection, an ANOVA (Analysis of Variance) test was carried out and found a value of p=0.013, where there was a significant relationship regarding the relationship between knowledge and attitudes about HPV infection. This is in line with table 4.6, where there is a significant relationship between knowledge and attitudes about HPV infection [38].

In table 4.7, a Spearman test was carried out between 2 variables and the test result was p=0.015, which means there is a significant relationship between the knowledge and attitudes of STIKes Sehat Medan students regarding HPV vaccination. This is in line with research by Mulia, VD, et. al (2021) conducted on 82 nursing students at Syah Kuala University in 2021 to see the relationship between level of knowledge and attitudes about HPV vaccination. A Fisher exact test bivariate analysis was carried out and the result was p = 0.000, which means there is a significant relationship between the knowledge and attitudes of Syah Kuala University nursing students in 2021 regarding HPV vaccination [27]. This is also in line with other research conducted by Febriyanti and Annisa in 2023 on 80 respondents who were PKK mothers in Medan City District to see the relationship between knowledge and attitudes about the HPV vaccine. A chi-square test was carried out and the p value = 0.001 was obtained, so it can be concluded that there is a significant relationship between the relationship and attitudes of PKK mothers regarding the HPV vaccine (Febriyanti. R and Annisa, 2023). This is in line with the view that the higher the level of knowledge, the better a person's attitude towards an object, including health-related issues. Someone with less knowledge about HPV vaccination and HPV infection tends to have a less favorable attitude towards cervical cancer prevention. Meanwhile someone with better knowledge has a lower chance of falling behind in preventing HPV infection [11]

V. CONCLUSION

Based on the analysis and findings from this research, the conclusions that can be drawn are as follows:

1. Based on the results of the frequency distribution of the level of knowledge of STIKes Sehat Medan female students regarding HPV infection, it is known that the majority are in the good knowledge category, namely 95 people (76.6%). Furthermore, 25 people (19.4%) had fairly good knowledge, 3 people (2.4%) were in the poor knowledge category, and 2 people (1.6%) were in the not good knowledge category.
2. Based on the frequency distribution results regarding the attitudes of STIKes Sehat Medan female students regarding HPV infection, the good category was the most dominant with 102 people (82.3%). Furthermore, 20 people (16.1%) were in the fairly good attitude category, and 2 people (1.6%) had a bad attitude.
3. Based on the frequency distribution results regarding the level of knowledge of STIKes Sehat Medan female students regarding HPV vaccination, it is known that the good knowledge category dominates with a total of 118 people (95.2%). Meanwhile, there were 4 female students (3.2%) who had fairly good knowledge, and only 2 students (1.6%) were classified as having poor knowledge.
4. Based on the frequency distribution results regarding the attitude of STIKes Sehat Medan female students regarding HPV vaccination, the majority of female students showed a good attitude with a total of 102 people (82.3%). Furthermore, 19 people (15.3%) showed an unfavorable attitude, and only 1 person (0.8%) showed an unfavorable attitude regarding HPV vaccination.

5. The Spearman test results between the two variables show a p value = 0.010. This indicates that there is a significant relationship between the level of knowledge and attitudes of STIKes Sehat Medan students regarding HPV infection.
6. The Spearman test was carried out between the two variables with the result p=0.015. These results indicate a significant relationship between the level of knowledge and attitudes of STIKes Sehat Medan students regarding HPV vaccination.

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