Intention to Use Voluntary Counseling and Testing Services in College Students

**Tanjung Anitasari Indah Kusumaningrum1\*, Handini Pratiwi2**

1,2 Department of Public Health, Faculty of Health Science, Universitas Muhammadiyah Surakarta

Jl. A. Yani, Mendungan, Pabelan, Kecamatan Kartasura, Kabupaten Sukoharjo, 0271 717 417

Corresponding author: [tanjung.anitasari@ums.ac.id](mailto:tanjung.anitasari@ums.ac.id)

***ABSTRACT***

***Background****: HIV is a health problem of global concern. The large number of HIV cases in Surakarta is due to various factors such as the characteristics of adolescents, knowledge, attitudes and beliefs to reduce HIV prevention through the use of VCT services. This study aims to analyze the relationship between age, gender, type of study program, information exposure, organizational participation, knowledge, attitudes, and beliefs in using VCT with the intention of using Voluntary Counseling and Testing (VCT) services for college students.* ***Method****: This research was a quantitative study with a cross sectional approach. The study population was all students at one university in Surakarta in the 2016-2017 class as many as 12,457 students, while the research sample was 500 students who were taken using proportional random sampling technique. Data analysis used Chi Square test and logistic regression.*

***Results****: The results of the multivariate analysis showed that students' knowledge of HIV / AIDS and VCT had an effect on the intention to use VCT services with an OR = 1.776 (CI = 1.170-2.695). The bivariate test results showed that there was a relationship between information exposure (p-value = 0.001), attitude (p-value = 0.006) and belief (p-value = 0.013) with the intention to use VCT services. Meanwhile, there was no relationship between age (p-value = 0.118), gender (p-value = 0.579), type of study program (p-value = 1,000), organizational participation (p-value = 0.352) with the intention of using VCT services Students' knowledge of HIV / AIDS and VCT was the most dominant in relation to VCT intention. Therefore, providing information about VCT to students is necessary in order to increase students' knowledge and confidence in using VCT services.*

***Keywords:*** *Intention to use VCT services, intention to HIV testing, VCT and students*

**INTRODUCTION**

HIV / AIDS case is shown above only appears small, while the conditions under the bigger one are undetectable. Since it was first discovered in 1987 to December 2017, HIV-AIDS cases that have been reported are 421 (81.9%) cases from 51 districts / cities in all provinces in Indonesia. The cumulative number of HIV infections reported until December 2017 was 280,623 cases 1. The cumulative number of AIDS cases reported from 1987 to December 2017 was 102,667 cases. The highest percentage of HIV cases was in the province of DKI Jakarta at 18.52% followed by East Java 14.12%, Papua 10.36%, West Java 10.32% and Central Java 7.94%. HIV / AIDS cases in Indonesia based on the age group 15-19 years (early adolescent category) have a percentage of HIV infection of 4%. Age 20-24 years (late adolescence category) have an HIV percentage of 16.7%. The percentage of HIV in the age group 20-24 years is the second highest after the age group 25-49 years at 69.2% 1.

The percentage of new HIV cases in 2017 in Central Java was 6.74%, higher than 2016 which was 4.52%. Most cases of HIV based on age groups were as follows: 25-49 years old at 69.34%, then 20-24 years old at 14.97%. The age group 20-24 years is the most productive late adolescents and the age group 15-19 years (4.05%) is included in the early adolescent age group which in the 15-19 year age group adolescents need special HIV prevention because they are included in the category susceptible group [2]. HIV / AIDS cases in Surakarta until June 2018 occupied the 4th position in Central Java. The highest cases were in Central Java, respectively, Semarang (20.59%), Banyumas (13.52%), Grobogan (12.27%) and Surakarta (12.04%). There are still many HIV cases, so the government is trying various activities to combat HIV / AIDS 3.

HIV / AIDS prevention is carried out through five activities, namely: health promotion, prevention of HIV / AIDS transmission, examination of HIV / AIDS diagnosis, treatment, care and support, and rehabilitation. VCT as an effort to combat HIV / AIDS. VCT is included in five HIV / AIDS prevention activities, including prevention of HIV / AIDS transmission and examination of HIV / AIDS diagnosis 4. VCT services refer to the five basic principles that have become a reference for Indonesia to be developed nationally regarding the global handling of HIV, namely: informed consent, confidentiality, counseling, correct test results, and connections to care, treatment and prevention services 5. Therefore it can be said that HIV testing is useful for reducing the spread of HIV transmission 6.

VCT is an important effort in the prevention of HIV but the number of VCT visits in Surakarta City from January to June 2018 was 10,291 people and the highest was the high risk group for HIV. VCT visits also included a population of 6,544 pregnant women, 1,044 MSM (men sex with men), and 719 Tuberculosis (TB) patients. However, there are no data that specifically categorizes the use of VCT services in the general population and adolescent age groups 3. There were 27 positive HIV / AIDS sufferers in the 15-19 age group, 214 in 20-24 years old and 1812 in 25-49 years old 3. Student is adolescents with ages range from 18-25 years. Age 18-25 years is the second highest age group after the age group 25-49 with 123 cases of HIV. There were more HIV cases than AIDS cases, namely 91 cases 3,7. Therefore, the age group of students needs to get special attention in the HIV / AIDS prevention program.

Efforts to prevent HIV / AIDS have been intensively carried out by the government among adolescents. This effort is necessary considering the percentage of male adolescents accepting sexual relations before marriage is higher (7%) than that of women (2%) 8. Lack of understanding of sexual behavior in adolescents is very detrimental, because at this time adolescents experience important developments, namely cognitive, emotional, social and sexual 9. The need for education and understanding of HIV / AIDS in adolescents / students in order to avoid activities that trigger HIV disease. VCT can help increase knowledge about HIV / AIDS prevention and treatment and can help reduce stigma and discrimination against people living with HIV / AIDS 8.

There are several factors that influence the use of VCT services. The driving factors for the use of VCT services include age, gender and occupation 10. There was a relationship between age and VCT planning. The higher a person's age, the better their attitude towards VCT. The age of 19 years is an age that is ripe or old enough to think and make decisions. The more old enough, the level of maturity and strength of a person will be more mature in thinking and working 11.

Another factor associated with VCT services is gender. Male students tend to take advantage of VCT. This is because boys are usually more sexually active than girls. Male students were 1.8 times more likely to volunteer for HIV testing than women 12. Men who have sex with men (MSM) are at high risk of HIV transmission 13.

The type of study program where students take education and information exposure are things that can be related to a person's intention to behave. Exposure to information is directly related to a person's intention to seek VCT services. The health information that individuals get from schools, or other media can affect a person's knowledge about VCT so that it is also indirectly related to the intention to use VCT services 14.

Knowledge is one of the factors that also influences a person to do VCT. Knowledge about HIV / AIDS and the use of VCT had a positive relationship. Students with knowledge of HIV were 3.69 times more likely to use VCT services than those with no knowledge of HIV 15. This can be explained by the fact that knowledgeable students could be more aware of the benefits of testing and prevention in reducing the transmission of HIV infection. The results of other studies also indicate that 81.7% of well-informed respondents who have positive attitudes towards VCT and positive attitudes towards VCT are also indicated by the respondent's plan to do VCT as much as 52.5% 11. Knowledge about HIV can be obtained from various sources, both formal and informal. It is also hoped that the participation of a person in the organization will increase one's access to information about HIV / AIDS and VCT.

Another factor is attitude. Attitudes are among the factors that influence the use of VCT services. Students with a positive attitude towards VCT were more likely to take an HIV test than those with a negative attitude. This is because students who have a positive attitude understand better about HIV prevention. Students who felt they were at risk of HIV were 6.3 times more likely to test than those who did not 12. However, another research in Jember which shows that there is no relationship between attitude and intention (intention) to use VCT services in adolescents 16.

Based on the Theory of Planned Behavior (TPB) beliefs related to a person's behavior, such as doing VCT but research in Jember Indonesia showed that there is no relationship between beliefs and attitudes using VCT services 16. Other studies have also stated that students are less confident about the VCT test. This is because students are afraid of the perceived consequences of a positive HIV result, fear of losing everything and everything changes 17. Beliefs about the spread of HIV and preventive behavior including intentional measures in the prevention of the HIV virus 18.

This study is different from previous studies. Previous research for students at Bahir Dar University discussed the assessment of factors related to the use of VCT services but did not discuss the beliefs, knowledge, attitude and respondent characteristics with intentions of using VCT services 12. Therefore, the purpose of this study is to analyze the relationship between age, type of study program, information exposure, organizational participation, gender, knowledge, attitudes, beliefs about the use of VCT and the intention to use Voluntary Counseling and Testing (VCT) services. The results of this study are expected to provide input to students in the use of VCT services as an effort to prevent HIV / AIDS early.

**METHOD**

This type of research is analytic quantitative with a cross-sectional approach. This research was conducted in 2019. The population in this study were all students at one of the universities in Surakarta, especially the 2016-2017 class, totaling 12,457 students. The sampling technique in this study used a proportional random sampling technique. The sample in this study was calculated using the Lemeshow minimum sample formula. The number of samples in the study were 500 students who had never visited a VCT service.

Age, gender, field of study, exposure to information about HIV and VCT, organizational participation, knowledge, attitudes, and behavioral beliefs are independent variables in the study with the intention for VCT as the dependent variable. The categorization of the independent variables in the study, namely age was categorized into 18-19 years, and 20-25 years, sex was categorized into female and male. Other variables, namely exposure to information related to HIV and VCT, were categorized as have had information before and never. Then the fields of study are categorized into health and non-health. In addition, there are organizational participation variables which are categorized as joining organizations and not joining organizations on campus. In the study, there was also a knowledge variable which was a student's understanding of HIV / AIDS and VCT which was categorized as low knowledge if <mean, and good if ≥ mean (8.69). In addition to knowledge, students' attitudes towards HIV and VCT were also independent variables in the study with a negative attitude if <mean, and a positive attitude if ≥ mean (11.64). Then, belief in the use of VCT is categorized into low behavioral trust if <mean, and high behavioral belief if ≥ mean (6.04). While the categorization of the dependent variable in the form of students' intention to use VCT services is categorized as intending to do VCT if students intend to use VCT services to seek HIV information, HIV testing, and take HIV test counseling within the next 1 month, while it is stated that they do not intend to use VCT services if students do not want to take advantage of these services in the next 1 month.

Researchers collected data by distributing questionnaires to students of each faculty with the criteria and number of respondents that had been determined by involving enumerators who had previously explained about the data collection process. The time needed to collect research data was 3 weeks (18 March 2019 - 6 April 2019). This study used instruments that have been tested for validity and reliability in Sukoharjo. The results of the knowledge variable reliability test were 0.7311, attitudes were 0.7498, and behavioral beliefs were 0.7011. Invalid question items were not used in this study. After the data is obtained, then data analysis is carried out. Data analysis was used to determine the relationship between the independent variables with dependent variable, namely the intention to use VCT services using chi-square statistical analysis and using the Contingency Coefficient test that used to determine the closeness of the relationship between the independent variable and the dependent variable. Meanwhile, the multivariate analysis in this study used logistic regression test. And last, this research was declared to have passed ethics by the Health Research Ethics Commission (KEPK) Medical School Universitas Muhammadiyah Surakarta.

**RESULT AND DISCUSSION**

The results of the distribution of respondent characteristics can be seen in Table 1.

**Table 1.** Description of Respondent Characteristics (N=500)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Characteristics** | **Frequency** | **%** | **Mean** | **St. Dev** |
| **Age**  18  19  20  21  22  23 | 12  108  212  136  28  4 | 2.4  21.6  42.4  27.2  5.6  0.8 | 20.14 | 0.928 |
| **Gender**  Female  Male | 265  235 | 53  47 |  |  |
| **Year of study**  2016  2017 | 245  255 | 49  51 |  |  |
| **Get HIV Information**  No  Yes | 99  401 | 19.8  80.2 |  |  |
| **Join the Organization on Campus**  Don’t join organization  Join organization | 105  395 | 21  79 |  |  |
| **Type of Study Program**  Health  Non-health | 74  426 | 14.8  85.2 |  |  |
| **Knowledge**  Low  Good | 230  270 | 46  54 | 8.69 | 1.744 |
| **Attitude**  Negative  Positive | 194  306 | 38.8  61.2 | 11.64 | 2.066 |
| **Behaviour Belief**  Low  High | 187  313 | 37.4  62.6 | 6.04 | 1.559 |
| **Intention**  No intention of VCT  Intention of VCT | 331  169 | 66.2  33.8 |  |  |

In Table 1, the description of the age of the respondents is that the majority are 20 years old as many as 212 students (42.4%). More than half of the respondents were female, namely 265 students (53%). The description of the year of entry of respondents is that the most respondents are students of class 2017 as many as 255 students (51%). In the aspect of exposure to information on HIV / AIDS, the majority of respondents had received information on HIV as many as 401 students (80.2%). Meanwhile, in the aspect of participation in campus organizations, the most respondents took part in organizations on campus, namely 395 students (79%). Other information, namely regarding the origin of the study program to the respondents, the majority of research respondents took education in non-health study programs, namely 426 (85.2%).

Students who have good knowledge are 270 respondents (54%) more than students who have less knowledge. In the attitude variable about HIV / AIDS and VCT, students had more positive attitudes as many as 306 respondents (61.2%). Students who have high behaviour belief in VCT services are 313 (62.6%). The majority of students did not intend to do VCT of 331 students (66.2%).

The results of testing the hypothesis of the relationship between each variable of age, gender, type of study program, information exposure, organizational participation in campus, knowledge, and beliefs with the intention to use VCT services can be seen in Table 2.

**Table 2.** The Relationship between Age, Gender, Type of Study Program, Information Exposure, Organizational Participation, Knowledge, Attitudes, and Behaviour Beliefs with Student Intention to Use VCT Services

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **Intention to VCT services** | | | | | | **p value** | **Contingency Coefficient** |
| No intention | | Intention | | Total | |
| N | % | N | % | **∑** | % |
| **Age**  18-19 years  20-25 years | 87  244 | 72.5  64.2 | 33  136 | 27.5  35.8 | 120  380 | 100  100 | 0.118 | - |
| **Gender**  Female  Male | 172  159 | 64.9  67.7 | 93  76 | 35.1  32.3 | 265  235 | 100  100 | 0.579 | - |
| **Type of study progam**  Health  Non Health | 49  282 | 66.2  66.2 | 25  144 | 33.8  33.8 | 74  426 | 100  100 | 1.000 | - |
| **Information exposure**  Not yet  Already | 81  250 | 81.8  62.3 | 18  151 | 18.2  37.7 | 99  401 | 100  100 | 0.001 | 0.162 |
| **Join organization on campus**  Don’t join organization  Join organization | 266  65 | 67.3  61.9 | 129  40 | 32.7  38.1 | 395  105 | 100  100 | 0.352 | - |
| **Knowledge**  Low  Good | 147  184 | 63.9  68.1 | 83  86 | 36.1  31.9 | 230  270 | 100  100 | 0.237 | - |
| **Attitude**  Negative  Positive | 143  188 | 73.3  61.4 | 51  118 | 26.3  38.6 | 194  306 | 100  100 | 0.006 | 0.125 |
| **Behaviour Belief**  Low  High | 137  194 | 73.3  62.0 | 50  119 | 26.7  38.0 | 187  313 | 100  100 | 0.013 | 0.115 |

Table 2 shows that, on the information exposure variable (p-value = 0.0001), attitude (p value = 0.006) and belief (p value = 0.013) so there is a relationship between information exposure, attitudes and beliefs with the intention to use VCT services to students. Variable age (p value = 0.118), gender (p value = 0.579), type of study program (p-value = 1,000), organizational participation (0.352), and knowledge (p value = 0.237) so variable age, gender, type of study program, organizational participation, and knowledge had no relationship with intention to use VCT services.

**Table 3.** Multivariate Analysis Results

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Variable** | **p-value** | **OR**  **95%CI** |
| 1 | Information exposure | 0.001 | 0.371  (0.210-0.654) |
| 2 | Knowledge | 0.061 | 1.776  (1.170-2.695) |
| 3 | Attitude | 0.026 | 0.604  (0.387-0.943) |
| 4 | Behavior belief | 0.039 | 0.641  (0.420-0.979) |
| Constant |  |  |  |

Based on the multivariate results in Table 3, it can be shown that the variables that affect students' intention to do VCT are information exposure, knowledge, attitudes, and beliefs in behavior. The independent variable that has the greatest influence on VCT intention in students is knowledge. This means that students who have good knowledge of HIV / AIDS and HIV testing services will have 1.776 times the opportunity to take advantage of VCT services.

Knowledge is the most dominant variable influencing VCT intention in students (p-value = 0.007). Students who have good knowledge of HIV / AIDS and VCT are more likely to intend to use VCT services 1.776 times than students with less knowledge of HIV / AIDS. When analyzed from the answers to the questionnaire regarding knowledge, there were 66.6% of students who already knew about HIV transmission. Students (97.4%) know that HIV is a virus that attacks the immune system. However, on the question about the use of VCT services to reduce the spread of the HIV virus, only 15.2% of students knew about it. Therefore, it can be seen that students only know about HIV / AIDS but do not understand the definition of VCT, and the use of VCT. Efforts are used to overcome this problem, namely by providing detailed information about VCT services through social media, or through the student organization engaged in the health sector.

Knowledge is a variable that affects the use of VCT services for students. The results of this study are in line with other studies in Ethiopia which stated that knowledge about HIV / AIDS and the use of VCT had a positive relationship. Students with knowledge of HIV were 3.69 times more likely to use VCT services than those with no knowledge of HIV [15]. Research from India also stated that education has a direct relationship with the level of awareness of respondents about HIV transmission [19]. Another research conducted in Semarang Indonesia also stated that respondents with good knowledge of HIV / AIDS were less likely to engage in risky behavior 20. This may indicate that students who have good knowledge can be more aware of the benefits of testing and prevention in reducing the transmission of HIV infection 19. The results of other studies also indicate that 81.7% of respondents who have good knowledge and who have a positive attitude towards VCT will show a plan to do VCT as much as 52.5%. Almost all respondents who have good knowledge of HIV / AIDS know the modes of transmission of HIV / AIDS so they better understand the risks of HIV 11.

However, the results of this study are different with research from Nigeria stating that high knowledge of VCT is not always willing to do VCT, some students are worried about the money spent on VCT [21]. Student concerns about the cost of VCT are a matter of concern. Students need to get accurate information about VCT services, both the VCT flow, the benefits of VCT, the VCT process and the costs incurred for VCT. In addition, there are still students who only know that VCT services are only for HIV testing without getting HIV information, namely 116 students (23.2%). whereas information about HIV AIDS can also be obtained in VCT.

In addition to knowledge, behavioral beliefs are variables that also affect VCT intentions in students. Students who have high belief in the use of VCT services tend not to intend to use VCT services 0.641 times than students with low beliefs. Students in this study actually believed that by using VCT services students would get information about HIV / AIDS. In this study it was also found that 92.4% of students believed that going to VCT services could prevent HIV / AIDS transmission. However, the beliefs held by students may not necessarily make them intend to do VCT.

Based on the results of this study, it was found that 41.8% of students believed about the obligation to test HIV. Students have the knowledge that HIV testing is mandatory. It can be said that students already know that VCT services can provide information but do not yet know that VCT is voluntary or not mandatory. Students only know basic HIV information and still lack information about HIV testing so they do not understand VCT service procedures. Students' ignorance about the nature of VCT makes students reluctant to take advantage of VCT services. Students only know that VCT is compulsory even though VCT is voluntary. Everything that is done is forced to make someone think again about doing that.

This research is in line with research in Jember Indonesia stated that the respondents' confidence factors in using VCT services included being confident and being positive about using VCT services 16. The results of this study indicate that there is no relationship between beliefs and attitudes using VCT services. The students did not want to use VCT services because they were unsure about the issue of the confidentiality of their HIV test results. Students worry that counselor may reveal their status to those who come for HIV testing and fear being ostracized by everyone 17. This study also found the same thing. Students have negative beliefs about the behavior of using VCT services. Students think that visiting VCT services will make them think that they have HIV / AIDS by their peers (62.6%). Students are also less sure of the confidentiality guaranteed by VCT services, students are sure that their friends will also know the results of their HIV test (69.4%). This is an inaccurate assumption because someone who does VCT is guaranteed confidentiality. Students also only assumed that VCT services were only for HIV testing and were not given any information about HIV / AIDS (66.6%). This is also a belief in the behavioral benefits of using VCT services that are not appropriate. In VCT services, a person will be provided with basic HIV / AIDS information before VCT and at the end of VCT a person will also be given information about HIV / AIDS.

Based on the results of this research, it can be found that students still have negative behavioral beliefs about VCT. Students still believe that doing VCT does not get HIV information, and students are also less sure about the confidentiality of their HIV test results. Student beliefs were also negative because of the student's thinking about the label that would receive if someone tested for HIV. Students fear being mistaken for HIV / AIDS if they go to VCT services. This may occur because there is still community stigma against people with HIV / AIDS and on people who go to VCT services. Therefore it is necessary to provide information to students about VCT procedures, especially on the aspect of confidentiality when doing VCT. The provision of this information also needs to be accompanied by socialization of HIV / AIDS and the benefits of VCT to the community so that a person does not feel afraid of being stigmatized if he uses VCT services. Other efforts that can be made to increase student confidence are by providing education or understanding with the aim of building self-awareness in order to guard against risky sexual behavior, explaining HIV & VCT to the community so that people do not discriminate or stigmatize people living with HIV / AIDS 22.

Attitude is also a variable that affects students' intention to use VCT services. Students who have a positive attitude tend not to intend to use VCT services for 0.604 times. Another researce also showed the same thing, there is no relationship between attitude and intention to use VCT services for high school adolescents in Jember district 16. People with negative attitudes towards VCT have misconceptions about the benefits of VCT services. They think the VCT service made them know their HIV status and that made them afraid. Students were afraid of knowing their HIV test results and they thought that knowing their status meant knowing how quickly they would die 17.

The results of different studies stated that students with a positive attitude towards VCT were more likely to take an HIV test than those with a negative attitude 12. Students who have a positive attitude understand better about HIV prevention. Students who felt they were at risk of HIV were 6.3 times more likely to use VCT services than those who did not. Research from Nigeria also stated that students' awareness of VCT services was very good and acceptance of VCT was quite high, more than 90% of respondents would be willing to keep infected family members living in the same house 23. People's attitudes can change to a positive direction, they see AIDS as something serious, so they must understand about the prevention of the HIV virus 24.

Based on the Theory of Planned Behavior, a person's attitude is influenced by belief in behavior 25. Students still have the attitude that VCT testing is not important for adolescents because adolescents are not at risk of HIV / AIDS (89%). This assumption is incorrect because the VCT test is intended for all age groups and the VCT test is voluntary. In addition, students also do not know about the confidentiality of VCT test results. The students considered that the results of the HIV test could be shared with all relatives of the patients (39%). The results of the HIV test are confidential and will be kept confidential. In this study, it was found that students actually understand VCT, but students are afraid that if they use VCT services, the results will be known to others. The confidential nature of VCT needs to be emphasized to students so that students can have a positive attitude towards VCT.

In this study, it was also found that there were still negative views of students towards PLWHA, such as the question about HIV sufferers needing to be quarantined by 47.2% so they thought that PLWHA needed a separate place and not with other healthy people. At the point of the question about students not wanting to share utensils with HIV sufferers, it was found that 75.8% did not want to share utensils with PLWHA. Therefore, it can be seen that the stigma of students is still high against PLWHA. The stigma that students have will influence their thinking about VCT. Students feel afraid of being mistaken for HIV if they go to VCT services.

A person's desire to use VCT services is usually associated with a sense of vulnerability, perceived barriers, and perceived benefits. If students have high perceptions of vulnerability but are accompanied by perceptions of obstacles that are also felt by students, then the students' willingness to undergo VCT is low. On the other hand, students with a high perceived benefit of VCT will also have a high willingness to undergo VCT 26.

Information exposure is also a variable that affects students' intention to use VCT services. Students who are more exposed to HIV / AIDS information will experience a decrease in the intention to use VCT services by 0.371 times compared to students with low exposure to HIV information. Students in this study who received HIV / AIDS information at college were 40 students (10.10%), 202 students (51.01%) at high school (51.01%), and 154 students (38.88%) at junior high school. The majority of students received HIV / AIDS information while in high school. At high school, adolescents received less detailed information on HIV / AIDS. This can be synchronized with the answers to the student knowledge questionnaire. There are 80.4% students stated that sexual intercourse once will not transmit HIV. HIV can be transmitted to someone if they have sexual risk 27. This means that a person can get HIV if they engage in risky sexual behavior even once. Even though students have received information about HIV / AIDS continuously, the information received is incomplete, making students' knowledge about HIV / AIDS and VCT also incomplete so that it will affect their intention to use VCT services. The information that was less accessible to students was about the modes of transmission and prevention of HIV / AIDS 28. It is necessary to have a direct approach to students to provide detailed information on HIV / AIDS and VCT so that it is hoped that students will know complete information on HIV and VCT. Providing information about HIV / AIDS and VCT to students can be done in collaboration with local health services to provide education to students. Providing information to students can also involve student organizations engaged in HIV / AIDS prevention through peer educators*.* Parents can also provide information about reproductive health, sexuality, and VCT to adolescent with comprehensive reproductive health and sexuality information because information about VCT can increase adolescents' intention to do VCT 29.

In this study, it was also found that age, gender, type of study program, and participation of organizations on campus were not related to the intention of using VCT services for students. In the age variable, the results showed that there were 33 students (27.5%) who intend to use VCT services (18-19 years). Meanwhile, final year students (20-25 years) who intend as many as 136 students (35.8%). There is no relationship between age and intention to use VCT services (p value = 0.118). The statistical results show that there are more final year students who intend to use VCT services than entry-level students.

Based on students' answers to research questions about VCT, it was found that 88.3% of students had knowledge that VCT could be carried out by populations at risk of HIV. They agree that those who do VCT are people who are at risk of HIV so that any age at risk will use VCT services. So they think age is not a problem if they are not at risk, so there is no relationship between age and intention to use VCT services. Respondents who felt a high risk of becoming infected with HIV were significantly associated with high risk factors and were 17 times more likely to be infected with HIV than those who were judged to be at low risk 30.

The results of other studies in Yogyakarta Indonesia shows that there is no significant relationship between age and VCT behavior among housewives at Puskesmas Tegalrejo Yogyakarta 31. But not in line with research in midwifery students showed that there was a relationship between age and VCT planning 11. The higher a person's age, the better their attitude towards VCT. Another research among high school student in Cameroon showed that there was a relationship between age and VCT planning. The higher a person's age, the better their attitude towards VCT 32.

Although in Indonesia there are no guidelines that define the age range for taking an HIV test, the Centers for Disease Control and Prevention (CDC) recommends at least once that all people aged 13 to 64 are required to have an HIV test [33]. Meanwhile, the Preventive Services Task Force in the United States recommends that HIV detection should be carried out as early as possible, at least at 15 years 34.

Meanwhile, in the gender variable, in this study, the results of the Chi Square test with the intention of using VCT services were p value 0.579, women who intended to use VCT services were 93 students (35.1%). Meanwhile, there were 76 students (32.3%) who intended to use VCT services. So that Ho is accepted, there is no sex relationship with the intention to use VCT services for students. Results of cross tabulation of the gender with balanced VCT intentions. There is no significant difference between female students and male students who intend to use VCT services.

There were 84.5% of female students who had received information about HIV / AIDS and 75.3% of male students also stated that they had received information about HIV / AIDS. Most of the students received HIV information from junior high and high school. So there is no relationship between gender and the intention to use VCT services because men and women both get information from school and the same as age, they do not see their gender but who are at risk of contracting HIV who should be tested for HIV. However, female students tended to get more information from health seminars than men so that they had a higher intention to use VCT services.

Another study explained that there was no significant difference between gender and the intention to use VCT services. Some of the students stated that they wanted to go for an HIV test with their partner because then they would know their HIV status together 17. Utilizing VCT services in the company of a partner means that social support is needed to go to VCT services. The existence of this support can make someone more confident to use VCT services. Meanwhile, based on research among college students shows that male students are more likely to intend to use VCT services due to the fact that boys are usually more sexually active than girls and thus realize a greater risk 12. Male students were 1.8 times more likely to volunteer for HIV testing than women. Students who visit bars or dance clubs and use ecstasy or other drugs are more likely to be diagnosed with the new HIV virus 35.

In this study, it was also found that the type of study program and student participation in organizations on campus were not related to the intention of using VCT services for students, namely a p-value of 1.000 for the type of study program and a p-value of 0.352 for organizational participation. These two variables are related to student access to information about HIV / AIDS. If a person takes education in a health-related department, hopes that they will be more exposed to HIV information. Likewise for someone who joins an organization, if someone joins the organization, the greater the link or access to information about HIV / AIDS. However, in this study, it was found that both of them were not related to the intention to use VCT services. Students will take advantage of VCT services if they know the VCT process, the principles of confidentiality of VCT, and are sure of the benefits obtained from VCT. Students will also take advantage of VCT services if the community stigma regarding HIV / AIDS decreases. Therefore, it is necessary to provide information about HIV / AIDS and VCT to the public. The provision of this information can be done through Warga Peduli AIDS (WPA), as well as community associations in the community by involving health workers. For further research could investigate VCT intentions using the cohort method. It can be done to see whether students who intend VCT have used VCT services in accordance with the utilization time they have conveyed during the research.

**CONCLUSION**

Respondents who were involved were 24% initial level students and 76% final year students. Based on gender, 53% of women and 47% of men. The year of entry of respondents, class 2017 was 51% and class 2016 was 49%. The exposure of students to HIV / AIDS information was 80.2% and 19.8% had not received information about HIV / AIDS. The majority of students join organizations on campus (79%), and 85.2% of students study at non-health faculties.Knowledge is the variable that most influences students in relation to the intention to use VCT services with an OR of 1.776 (CI = 1.170-2.695). Therefore, it is hoped that students can increase their knowledge about HIV / AIDS and VCT either through seminars or other sources of information.

**Acknowledgments:**

This study did not get a research grant.

**Conflict of Interest:**

“The authors declare no conflict of interest." First and second author conceptualize this research, the first writer as data processing,analysis, and writing. The second author as data collector from this research.

**References**

1. Kemenkes RI. Laporan Perkembangan HIV-AIDS & Infeksi Menular Seksual (IMS) Triwulan IV Tahun 2017. Jakarta; 2018.

2. Dinas Kesehatan Provinsi Jawa Tengah. Profil Kesehatan Provinsi Jawa Tengah Tahun 2017. Semarang; 2018.

3. KPA Kota Surakarta. Capaian Screening Kelompok Sasaran Risti Jan-Jun 2018. 2018.

4. Permenkes RI. Permenkes RI No 21 Tahun 2013 tentang Penanggulangan HIV dan AIDS. 2013.

5. Kemenkes RI. Infodatin: Situasi Kesehatan Reproduksi Remaja. Jakarta; 2015.

6. Wusu O. The role of HIV counselling and testing in sexual health behavior change among undergraduates in Lagos , Nigeria. Tanzan J Health Res. 2011;13(1):32–9.

7. Santrock JW. Perkembangan Anak. 7th ed. Jakarta: Erlangga; 2011.

8. Kemenkes RI. Pedoman Nasional Tes dan Konseling HIV dan AIDS. Jakarta; 2013.

9. Sarwono. Psikologi Remaja, edisi Revisi. Jakarta: PT. Raja Grafindo Persada; 2010.

10. Suriyani, Mappeaty Nyorong SN. Faktor Pendorong Terhadap Pemanfaatan Layanan VCT HIV & AIDS DI KABUPATEN JAYAPURA. Universitas Hasanuddin Makassar; 2014.

11. Pebrianti F, Sukamto IS, Musfiroh M. Hubungan Antara Pengetahuan tentang HIV/AIDS dan Sikap terhadap VCT pada Mahasiswa DIII Kebidanan. Maternal. 2017;II(2):75–81.

12. Tewabe T, Destaw B, Admassu M, Abera B. Assessment of factors associated with voluntary counseling and testing uptake among students in Bahir Dar University : A case control study. Ethiop J Heal Dev. 2010;26(1):16–21.

13. J LTF. Prevalence And Associated Factors of Intention to Participate in HIV Voluntary Counseling and Testing for The First Time Among Men Who Have Sex With Men in Hong Kong, China. J Prev Med. 2013;57(6):813–8.

14. Meadowbrooke CC, Veinot TC. Information Behavior and HIV Testing Intentions Among Young Men at Risk for HIV/AIDS. J Assoc Inf Sci Technol. 2014;65(3):609–20.

15. Tsegay G, Edris M, Meseret S. Assessment of voluntary counseling and testing service utilization and associated factors among Debre Markos University Students , North West Ethiopia : a cross-sectional survey in 2011. BMC Public Health. 2013;13:243.

16. Laila A. Perilaku Pelajar SMA yang Telah Terpapar Informasi HIV/AIDS Terhadap Intensi Penggunaan Layanan VCT di Kecamatan Puger Kabupaten Jember. FKM Universitas Jember; 2017.

17. Meda L. Assessing factors influencing university students to uptake voluntary counselling and testing ( VCT ) of human immune deficiency virus / acquired immune deficiency syndrome ( HIV / AIDS ). J AIDS HIV Res. 2013;5(6):173–80.

18. Abraham. Health beliefs and promotion of HIV-preventive intentions among teenagers: A Scottish perspective. J Health Psychol. 2016;11(6):363–70.

19. Bhanu Mehra, Sonali Bhattar, Preena Bhalla DR. HIV/AIDS Awereness among VCT Clients: A Cross Sectional Study from Delhi, India. Biomed Res Int. 2014;

20. Sukendra NANDM. Analisis Pengetahuan dan Sikap Narapidana Kasus Narkoba Terhadap Perilaku Berisiko Penularan HIV/AIDS. J Heal Educ. 2017;2(1):11–9.

21. B, Uzochukwu, Uguru N, Ezeoke U, Onwujekwe O ST. Voluntary counseling and testing (VCT) for HIV/AIDS: A study of the knowledge, awareness and willingness to pay for VCT among students in tertiary institutions in Enugu State Nigeria. J Heal Policy. 2011;99(3):277–84.

22. Cahyo Nugroho TAIK. Isyarat Bertindak sebagai Faktor Pendorong Lelaki Seks Lelaki dalam Melakukan Voluntary Counseling and Testing. J Promosi Kesehat Indones. 2018;13(2).

23. Daniyam CA, Agaba PA, Agaba EI. Original Article Acceptability of voluntary counselling and testing among medical students in Jos , Nigeria. J Infect Dev Ctries. 2010;4(6):357–61.

24. Hermanus A, Zeth M, Penyakit R, Hermanus A, Zeth M, Asdie AH, et al. Perilaku dan Risiko Penyakit HIV-AIDS di Masyarakat Papua Studi Pengembangan Model Lokal Kebijakan HIV-AIDS. J Manaj Pelayanan Kesehat. 2010;13(04):206–19.

25. Glanz K, Rimer BK, Viswanath K. Health Behavior: Theory, Research, and Practice. San Fransisco: Jossey-Bass; 2015.

26. Abebe A, Mitikie G. Perception of High School Students towards Voluntary HIV Counseling and Testing, using Health Belief Model in Butajira, SNNPR. 2009;23(2):148–53.

27. Ng’eno BN, Kellogg TA, Kim AA, Mwangi A, Mwangi M, Wamicwe J, et al. Modes of HIV Transmission among Adolescents and Young Adults Aged 10-24 Years in Kenya. Int J STD AIDS. 2018;29(8):800–5.

28. Kusumaningrum TAI, Sholekhah BA. Akses Informasi Mengenai HIV/AIDS pada Mahasiswa Universitas Muhammadiyah Surakarta. In: Seminar nasional kesehatan masyarakat UMS [Internet]. 2019. p. 73–85. Available from: https://publikasiilmiah.ums.ac.id/bitstream/handle/11617/11854/9.pdf?sequence=1&isAllowed=y

29. Kusumaningrum TAI, Rohmawaty N, Selena H. Reproductive Health Information from Parents : A Dominant Factor of Voluntary Counselling and Testing ( VCT ) HIV Intention on Adolescents. J Med Chem Sci. 2021;4:172–82.

30. Koh KC, Yong LS. HIV Risk Perception , Sexual Behavior , and HIV Prevalence among Men-Who-Have-Sex-with-Men at a Community-Based Voluntary Counseling and Testing Center in Kuala Lumpur , Malaysia. J Interdiscip Perspect Infect Dis. 2014;2014.

31. Oktaviani R& ANL. Faktor-faktor yang Berhubungan dengan Perilaku VCT (Voluntary Counseling and Testing) HIV/AIDS pada Ibu Rumah Tangga di Puskesmas Tegalrejo Yogjakarta. Universitas ‘Aisyiyah Yogyakarta; 2018.

32. Eposi Christiana Haddison, Georges Nguefack-Tsagué, Michel Noubom, Wilfried Mbatcham, Peter Martins Ndumbe F-XM-K. Voluntary counseling and testing for HIV among high school students in the Tiko health district, Cameroon. Pan Afr Med J. 2012;2102:13–8.

33. Chao TT, Sheffield JS, Jr GDW, Ansari MQ, Mcintire DD, Roberts SW. Risk Factors Associated with False Positive HIV Test Results in a Low-Risk Urban Obstetric Population. J Pregnancy. 2012;2012:1–4.

34. Chomba E, Allen S, Kanweka W, Tichacek A, Cox G, Shutes E, Zulu I, Kancheya N, Sinkala M, Stephenson R HA. Evolution of Couples’ Voluntary Counseling and Testing for HIV in Lusaka, Zambia. J Acquir Immune Defic Syndr. 2008;47(1):108–15.

35. Hightow L, MacDonald P, Pilcher C, Kaplan A, Foust E, Nguyen T.Q, Leone P A. The Unexpected Movement of the HIV Epidemic in the Southeastern United States: Transmission Among College Students. J Acquir Immune Defic Syndr. 2005;38(5):531–7.