



Socio-Demographic, Educational, and Attitudinal Factors Related to Comprehensive Knowledge about HIV/AIDS among Young Indonesian Women



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ABSTRACT

Aims This study aimed to determine the association of socio-demographic, educational, and attitudinal factors with knowledge about HIV/AIDS among young women aged 15-24 in Indonesia.

Instrument & Methods This quantitative study used an observational analytical and retrospective cohort study design, and was conducted on 12,632 young women aged 15 to 24 years in Indonesia. The data used were secondary data derived from the Individual Recode Dataset of the 2017 Demographic Health Survey. The univariate, bivariate (chi-square), and multivariate (binary logistic regression) tests were used to analyze the data.

Findings All parameters were found to have a significant association with knowledge about HIV/AIDS. The most influential parameter was the source of information about AIDS, comparing categories of no information versus more information ($p < 0.001$, aOR=2.53, 95%CI=2.30-2.78).

Conclusion Several socio-demographic, educational, and attitudinal factors are associated with knowledge about HIV/AIDS among young women in Indonesia.

Keywords HIV/AIDS; Knowledge; Women; Indonesia

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Introduction

Human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS) is a significant public health concern globally. Despite substantial advancements in understanding and managing the disease, a definitive cure for HIV infection has yet to be discovered [1]. Data from UNAIDS indicate a persistent increase in the number of People Living with HIV (PLWH) over the years, rising from 27.2 million in 2000 to 32 million in 2010, reaching 36.7 million in 2017, and further increasing to 39.9 million in 2023 [2, 3].

The HIV epidemic in the Asia-Pacific region has a significant impact on key population groups, particularly younger individuals between the ages of 15 and 24, who account for approximately 25% of new HIV infections. In Indonesia, this trend is even more pronounced, with nearly half of all new HIV infections occurring among young people [4]. The number of PLWH in Indonesia has increased significantly over the past decade. In 2005, the estimated number of PLWH was 290,000. This number increased rapidly, reaching 510,000 in 2010 and further increasing to 620,000 by 2016 [2].

There are three types of education: formal, informal, and non-formal. Formal education is conducted in formal educational institutions, such as schools, which are structured and promoted through direct teaching (by teachers, etc.). Non-formal education is similarly structured but occurs outside formal educational settings (field trips, etc.). Informal education describes unstructured forms of learning that are not directly taught and can be accessed by anyone, in any place. In conclusion, the concept of education extends to include access to information through various channels, including other individuals, organizations, printed materials, and mass media as parts of education [5]. Health education can be defined as an activity that aims to provide individuals with information about the nature and causes of health and disease, as well as the individual's level of risk associated with lifestyle-related behaviors, which motivates individuals to accept the necessary behavioral changes that affect their value systems, beliefs, and attitudes [6]. In this context, information about HIV/AIDS can be accessed through various sources.

Stigma, a complex social phenomenon, encompasses a range of negative attitudes, beliefs, and behaviors directed towards individuals or groups perceived as different or deviant. It involves the process of labeling and marginalizing individuals based on specific characteristics, often leading to discrimination and social exclusion. In the context of HIV/AIDS, stigma manifests in various forms, including fear, prejudice, and discrimination, resulting in devastating consequences such as social isolation, denial and silence, self-blame and guilt, and violence and discrimination. The factors contributing to AIDS

stigma are multifaceted, encompassing the nature of transmission, the impact on individuals, societal norms and beliefs, and the accessibility of healthcare services. The stigma associated with AIDS endangers the lives of others [7].

Previous studies have indicated that socio-demographic, educational, and attitudinal factors are associated with comprehensive knowledge about HIV/AIDS [8-12]. This study aimed to determine the association of socio-demographic, educational, and attitudinal factors with knowledge about HIV/AIDS among young women aged 15-24 in Indonesia. It is anticipated that this research will facilitate the Indonesian government's efforts to address the HIV/AIDS challenge, thereby enabling the realization of government initiatives aimed at achieving an HIV/AIDS-free society by 2030 [13].

Instrument and Methods

Study design and participants

This study was a quantitative research project with an observational analytical and retrospective cohort study design conducted in 2024. The data used were secondary data derived from the 2017 Indonesian Demographic Health Survey (IDHS). The total population was 49,627, derived from the Individual Recode Dataset (IR File), with the unit of study being eligible women aged 15-49.

The first inclusion criterion was young women aged 15-24 years, which comprised 14,766 individuals. After excluding missing data, a defined population of 12,632 participants was obtained for this study (Figure 1).

Instrument

The instrument used was a standardized questionnaire from the DHS 2017. It included questions about socio-demographics, education, sources of information about HIV/AIDS, attitudes toward People living with HIV (PLWH), and knowledge about HIV/AIDS.

There were 13 questions regarding sources of information about AIDS. The classification of categories was determined through the calculation of quintiles. The "no information" category indicated that the participant had no information from any source or fewer than two sources of information. The "less information" category indicated that the participant has two sources of information. The "more information" category indicated that the participant has three or more sources of information. There were nine questions regarding stigmatizing attitudes toward PLWH. The determination of "yes" and "no" was calculated based on the median response. The "yes" category indicated that the participant had a negative stigma and displayed negative behaviors toward PLWH, where the score was less than three for positive attitude responses. Conversely, the "no" category applies if the score was three or more for positive attitude responses.

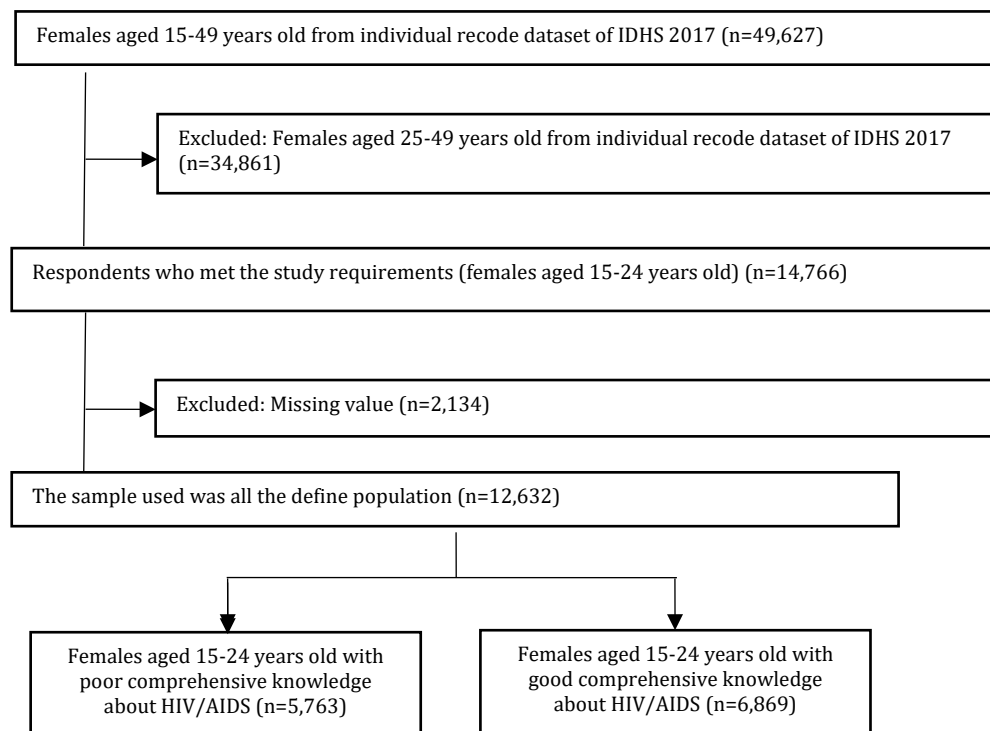


Figure 1. Sampling flowchart

Regarding knowledge about HIV/AIDS, there were ten questions. The classification of this category was determined by calculating the median. The “bad” category indicated that the participants had poor knowledge about HIV/AIDS, with fewer than eight questions answered correctly. Conversely, the “good” category indicated that the participants answered eight or more questions correctly.

In addition, there were modified parameters, specifically Internet use and contraceptive use. In this study, the categories for Internet use were “yes” and “no.” The “no” category was derived from the following options: 1) “never,” 2) “yes, before the last 12 months,” and 3) “yes, can’t establish when.” The “yes” category was derived from the option “yes, in the last 12 months.” The categories for contraceptive use were also “yes” and “no.” The “no” category was derived from the option “not using,” while the “yes” category was derived from categories other than “not using”.

Data analysis

This study utilized univariate, bivariate, and multivariate tests. The bivariate test employed the Chi-square test, and the multivariate test used binary logistic regression to identify the most influential parameter. SPSS 25 software was used to analyze the data.

Findings

A total of 12,632 young women aged 15-24 years were assessed. The univariate tests showed that participants with poor knowledge of HIV/AIDS accounted for almost half (45.6%) of the total

participants. The age groups were nearly balanced, with the age group of 15-19 years comprising 53.1%. The majority of respondents lived in urban areas (58.8%), with the richest economic level dominating at 21.7%, followed by the richer category at 20.6%. The education level was predominantly at the secondary level, comprising 71.5%. Unmarried participants accounted for 77.3%, and 65.6% were not currently working. Most participants owned a mobile phone and used the Internet, at 90.9% and 84.5%, respectively. A total of 87.3% did not use contraception. Regarding information sources, participants had multiple sources of information, with more than three sources (classified as more information) accounting for 36.8%. In terms of stigmatizing attitudes toward PLWH, the majority of participants had a positive attitude toward PLWH (61.9%; Table 1).

In terms of comprehensive knowledge about HIV/AIDS, the question with the lowest correct response was about whether HIV can be contracted by sharing food with a person who has AIDS, with only 43.9% of participants answering correctly. All participants (100%) had heard about AIDS. Regarding sources of information, most participants obtained AIDS-related information from schools/teachers, television, and the Internet, at 62.2%, 53.9%, and 35.8%, respectively. Meanwhile, the least common sources of information were religious institutions, books, and seminars/counseling, at 1%, 1.2%, and 1.3%, respectively. For stigmatizing attitudes toward PLWH, 72.9% of participants expressed a willingness

to care for relatives with AIDS. However, very few individuals were willing to take HIV tests due to concerns about others' reactions if the results were positive (7.5%), while the remainder were hesitant (92.5%). A total of six out of nine questions were answered with a positive attitude by less than 50% of participants (Table 2).

Table 1. Frequency of participants' characteristics from univariate analysis

Parameter	Values
Comprehensive knowledge about HIV/AIDS	
Bad	5763(45.6)
Good	6869(54.4)
Age (year)	
15-19	6713(53.1)
20-24	5919(46.9)
Residence status	
Rural	5209(41.2)
Urban	7423(58.8)
Working status	
No	8286(65.6)
Yes	4346(34.4)
Education level	
No education	13(1)
Primary	494(3.9)
Secondary	9038(71.5)
Higher	3087(24.4)
Wealth index	
Poorest	2262(17.9)
Poorer	2493(19.7)
Middle	2530(20.0)
Richer	2604(20.6)
Richest	2743(21.7)
Marital status	
Unmarried	9762(77.3)
Married	2870(22.7)
Owning mobile phone	
No	1144(9.1)
Yes	11488(90.9)
Internet use	
No	1975(15.6)
Yes	10657(84.4)
Contraceptive use	
No	11024(87.3)
Yes	1608(12.7)
Information sources about AIDS	
No information	3821(30.2)
Less information	4167(33.0)
More information	4644(36.8)
Stigmatization attitude	
Yes	4816(38.1)
No	7816(61.9)

All independent parameters were found to be associated with comprehensive knowledge about HIV/AIDS. Young women aged 15-19 were 1.13 times more likely to have poor knowledge about HIV/AIDS than those aged 20-24. Young women living in villages were 1.24 times more likely to have poor knowledge about HIV/AIDS. Additionally, young women who are not working were 1.09 times more likely to have poor knowledge about HIV/AIDS.

At the education level, individuals with no education, primary education, and secondary education tend to have poorer knowledge about HIV/AIDS compared to those with higher education levels, by factors of 2.22, 1.94, and 1.59 times greater, respectively. Young

women with the lowest wealth index had poorer knowledge about HIV/AIDS, with a factor of 1.51 times greater than those with the highest wealth index. Young women who were unmarried and did not use contraceptives exhibited worse knowledge, with factors of 1.06 and 1.07 times, respectively. Not having a mobile phone and not using the internet also increased the likelihood of having poor knowledge about HIV/AIDS by 1.31 and 1.32 times.

Table 2. Frequency of correct answers to comprehensive knowledge about HIV/AIDS, sources of information about AIDS, and stigmatization attitudes among females aged 15-24 years in Indonesia

Parameter	Values
Comprehensive knowledge about HIV/AIDS	
1. Ever heard of AIDS	12832(100.0)
2. Can get HIV by witchcraft or supernatural means	10778(85.3)
3. Reduce the risk of getting HIV: Always use condoms during sex	7152(56.6)
4. Reduce the risk of getting HIV: Have 1 sex partner only	10112(80.1)
5. Can get HIV from mosquito bites	6064(48.0)
6. Can get HIV by sharing food with a person who has AIDS	5540(43.9)
7. A healthy-looking person can have HIV	10591(83.8)
8. HIV transmitted during pregnancy	10353(82.0)
9. HIV transmitted during delivery	9130(72.3)
10. HIV transmitted by breastfeeding	10301(81.5)
Comprehensive knowledge about HIV/AIDS	
Bad	5763(45.6)
Good	6869(54.4)
Information sources about AIDS	
1. Information from the radio	845(6.7)
2. Information from the television	6813(53.9)
3. Information from the newspaper/magazine	1399(11.1)
4. Information from the poster	816(6.5)
5. Information from the health professional	1996(15.8)
6. Information from the religious institution	125(1.0)
7. Information from the school/teacher	7863(62.2)
8. Information from the community meeting	587(4.6)
9. Information from a friend/relative	3166(25.1)
10. Information from the workplace	388(3.1)
11. Information from the Internet	4522(35.8)
12. Information from the book	152(1.2)
13. Information from the seminar/counselling	169(1.3)
Information sources about AIDS	
No information	3821(30.2)
Some information	4167(33.0)
More information	4644(36.8)
Stigmatization attitude	
1. Would be ashamed if someone in the family had HIV	6554(51.9)
2. Would want HIV infection in the family to remain secret	5374(42.5)
3. People talk badly about people with or believed to have HIV	1671(13.2)
4. Would be afraid to get HIV from contact with saliva from an infected person	1568(12.4)
5. People hesitate to take HIV tests because of reaction of other people if positive	950(7.5)
6. Willing to care for relatives with AIDS	9209(72.9)
7. Would buy vegetables from vendors with HIV	3366(26.6)
8. Children with HIV should be allowed to attend school with children without HIV	7271(57.6)
9. People with or believed to have HIV lose respect from other people	3054(24.2)
Stigmatization attitude	
Yes	4816(38.1)
No	7816(61.9)

In terms of information sources about AIDS, young women who had fewer than two sources of information (classified as no information) were more likely to have poor knowledge about HIV/AIDS, with a factor of 1.83 compared to those with more information, while those with two sources of information (classified as some information) were 1.34 times more likely to have poor knowledge.

Negative stigma toward PLWH influenced knowledge about HIV/AIDS, making it 1.24 times worse (Table 3).

Sources of information about AIDS (no information vs. more information) were found to be the most influential parameter in poor knowledge about HIV/AIDS among young women in Indonesia (Table 4).

Table 3. Relationship between the frequency of socio-demographic, educational, and attitudinal factors and knowledge about HIV/AIDS

Parameter	Comprehensive knowledge about HIV/AIDS		RR (95%CI)	p-value
	Bad	Good		
Age (age)				
15-19	3449(51.4)	3264(48.6)	1.31(1.26-1.37)	<0.001
20-24	2314(39.1)	3605(60.9)		
Residence				
Rural	2682(51.5)	2527(48.5)	1.24(1.19-1.29)	<0.001
Urban	3081(41.5)	4342(58.5)		
Working status				
No	3889(46.9)	4397(53.1)	1.09(1.05-1.13)	<0.001
Yes	1874(43.1)	2472(56.9)		
Education level				
No education	9(69.2)	4(30.8)	2.22(1.54-3.20)	0.005
Primary	299(60.5)	195(39.5)	1.94(1.78-2.12)	<0.001
Secondary	4493(49.7)	4545(50.3)	1.59(1.51-1.69)	<0.001
Higher	962(31.2)	2125(68.8)		
Wealth index				
Poorest	1254(55.4)	1008(44.6)	1.51(1.42-1.61)	<0.001
Poorer	1250(50.1)	1243(49.9)	1.37(1.28-1.45)	<0.001
Middle	1166(46.1)	1364(53.9)	1.26(1.18-1.34)	<0.001
Richer	1086(41.7)	1518(58.3)	1.14(1.06-1.22)	<0.001
Richest	1007(36.7)	1736(63.3)		
Marital status				
Unmarried	4508(46.2)	5254(53.8)	1.06(1.01-1.11)	0.02
Married	1255(43.7)	1615(56.3)		
Owning mobile phone				
No	663(58.0)	481(42.0)	1.31(1.24-1.38)	<0.001
Yes	5100(44.4)	6388(55.6)		
Internet use				
No	1135(57.5)	840(42.5)	1.32(1.27-1.38)	<0.001
Yes	4628(43.3)	6029(56.6)		
Contraceptive use				
No	5073(46.0)	5951(54.0)	1.07(1.01-1.14)	0.02
Yes	690(42.9)	918(57.1)		
Information sources about AIDS				
No information	2342(61.3)	1479(38.7)	1.83(1.75-1.92)	<0.001
Some information	1866(44.8)	2301(55.2)	1.34(1.27-1.41)	<0.001
More information	1555(33.5)	3089(66.5)		
Stigmatization attitude				
Yes	2490(51.7)	2326(48.3)	1.24(1.19-1.28)	<0.001
No	3273(41.9)	4543(58.1)		

Table 4. Multivariate analysis results

Parameter	Beta	S.E.	Wald	aOR (95%CI)	p-value
Age	0.26	0.05	32.51	1.29(1.19-1.42)	<0.001
Residence	0.30	0.04	59.28	1.35(1.25-1.46)	<0.001
Education level (no education vs higher)	1.17	0.62	3.58	3.22(0.96-10.84)	0.06
Education level (primary vs higher)	0.79	0.11	52.18	2.21(1.78-2.74)	<0.001
Education level (secondary vs higher)	0.46	0.05	82.14	1.58(1.43-1.75)	<0.001
Marital status	0.17	0.07	6.47	1.18(1.04-1.35)	0.01
Internet use	0.21	0.06	13.67	1.23(1.10-1.38)	<0.001
Contraceptive use	0.19	0.08	6.68	1.22(1.05-1.42)	0.01
Information sources about AIDS (no information vs more information)	0.93	0.05	367.08	2.53(2.30-2.78)	<0.001
Information sources about AIDS (some information vs more information)	0.37	0.05	65.60	1.45(1.32-1.58)	<0.001
Stigmatization attitude	0.38	0.04	97.68	1.46(1.36-1.58)	<0.001

Discussion

This study aimed to determine the association of socio-demographic, educational, and attitudinal factors with knowledge about HIV/AIDS among

young women aged 15-24 in Indonesia. Socio-demographic, educational, and attitudinal factors are associated with young women's knowledge about HIV/AIDS in Indonesia. However, regarding

knowledge about HIV/AIDS, nearly half (45.5%) of the participants demonstrated a lack of knowledge. This indicates that a significant proportion of young women remain uninformed about HIV/AIDS. Adolescents, particularly those aged 15-19, are especially vulnerable to HIV infection due to the transitional nature of this period, which can lead to increased risky sexual behavior [14, 15]. It is, therefore, important to be informed about HIV/AIDS and the means of preventing it.

Young women aged 15-19 years had a relationship with knowledge about HIV/AIDS, aligning with research conducted in Indonesia using the IDHS 2012, with individuals aged 20 and older, particularly those between 25 and 39, demonstrating superior knowledge compared to the 15-19 age group. This disparity may be attributed to the ongoing education of adolescents aged 15-19, placing them at a lower educational level compared to older individuals. Additionally, limited access to information and educational resources, particularly for those who have dropped out of school, may contribute to this knowledge gap [16]. This finding is also consistent with research conducted in Malawi in 2021 [11].

We explored the relationship between rural residence and young women's knowledge of HIV/AIDS. Research conducted in low- and middle-income Asian countries has reported similar findings, with individuals residing in rural areas exhibiting lower levels of HIV/AIDS knowledge [9]. This disparity may be attributed to limited access to healthcare services, education, and mass media in rural regions [9, 17, 18].

There was a significant association between working status, marital status, and knowledge about HIV/AIDS. As demonstrated in several previous studies, there is a significant association between respondents' working status and marital status, and their knowledge about HIV/AIDS [10, 16].

Previous studies have indicated that social factors, including a higher education level and wealth, are associated with increased knowledge about HIV/AIDS [12, 19]. These findings align with our results. This social condition facilitates better access to health information [20]. In the Indonesian formal education system, the curriculum introduced in 2020 at the senior high school level (grade XI) includes instruction on HIV/AIDS [21]. In lower grade levels, typically starting from elementary school, the curriculum generally encompasses only an introduction to reproductive health [22]. At the junior high school level in 2018, an introduction to the anatomy of reproductive organs is typically provided as students enter adolescence and experience puberty [23].

The lack of mobile phone ownership and Internet usage was found to be associated with poor knowledge about HIV/AIDS. According to a study conducted in Ethiopia and Indonesia, there is a statistically significant association between mobile

phone ownership and increased knowledge about HIV/AIDS. This is related to Internet use, where ownership of a mobile phone increases the likelihood of exposure to media that can be accessed online [8, 12, 24]. Prior research has demonstrated a significant association between health literacy and internet usage, reporting that many people utilize the Internet for health-related reasons [25]. Mobile technology can facilitate improved communication, easier access to healthcare professionals, enhanced confidentiality, and increased access to information, including reminders [26].

A lack of contraceptive use was associated with poor knowledge about HIV/AIDS. This is consistent with the results of several previous studies conducted in Sub-Saharan Africa, East Africa, Ethiopia, and Bangladesh, which have demonstrated that individuals who use contraceptives tend to have more comprehensive knowledge about HIV/AIDS [8, 18, 27, 28]. Women who use contraceptives are often perceived to have a better understanding of contraceptive methods and their associated health benefits, particularly those with a history of healthcare utilization [27]. Another study indicated that women who utilize contraceptives may possess a higher level of literacy and, consequently, demonstrate a greater receptivity to information than non-users [8].

Media information also played a crucial role in shaping comprehensive knowledge about HIV/AIDS. The more exposure individuals have to HIV/AIDS-related information, the greater their understanding of the disease becomes. We revealed that 61.3% of young women with fewer than two sources of information about HIV/AIDS had inadequate knowledge. This aligns with previous research demonstrating that exposure to a wider range of information sources enhances young women's knowledge of HIV/AIDS [29-31].

Negative stigma toward PLWH influenced knowledge about HIV/AIDS. Negative stigma toward PLWH has been found to impact the level of knowledge held by individuals regarding HIV transmission, prevention methods, and treatment pathways [32-34]. Previous studies have indicated that negative perceptions and attitudes, which may be shaped by inaccurate knowledge about HIV transmission, can contribute to stigmatization [34].

The study revealed several factors associated with knowledge about HIV/AIDS among young women in Indonesia that require further attention. Any form of education about HIV/AIDS is significant for increasing the knowledge of young women, who are particularly vulnerable to HIV/AIDS infection. This is especially true for individuals with specific sociodemographic characteristics, such as those residing in rural areas, experiencing economic disadvantage, and having limited educational attainment. It is essential to utilize a range of information sources, both online and offline, and to

leverage the increasingly sophisticated technology available in the present era to reach all groups. The distribution of health facilities must also be considered to facilitate the delivery of health education. Additionally, it is necessary to address the negative stigma associated with HIV/AIDS and to provide information on how this stigma can be eliminated.

This study had some limitations. The data from 2017 IDHS had missing data in the dataset. Nevertheless, this study still had a large sample size and provided valid evidence of sociodemographic factors associated with comprehensive knowledge about HIV/AIDS among young women in Indonesia. The next limitation was related to the limited number of factors/parameters studied as it depended on the availability of data in the secondary data used in this study.

Conclusion

Several socio-demographic, educational, and attitudinal factors are associated with knowledge about HIV/AIDS among young women in Indonesia.

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