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Determinants of HIV Knowledge among Married Women in Indonesia: Evidence from the 2017 Indonesia Demographic and Health Survey

Alifia Rizky Almadani[1], Yuni Asri[2], Alfunnafi Fahrul Rizzal[3]*

[1,2,3]Institute of Technology Science and Health dr Soepraoen Kesdam V/Brawijaya Hospital, Malang, Indonesia
Coresponding author: fahrulrizzal@itsk-soepraoen.ac.id

ABSTRACT

Background: Human Immunodeficiency Virus (HIV) remains a major public health problem among married women in Indonesia. Inadequate HIV knowledge increases women's vulnerability to HIV infection and hinders preventive behaviors. However, evidence on factors associated with HIV knowledge among married women in Indonesia remains limited. **Objective:** This study aimed to analyze factors associated with HIV knowledge among married women in Indonesia. **Methods:** A cross-sectional study was conducted using secondary data from the 2017 Indonesia Demographic and Health Survey (IDHS) Individual Recode dataset (IDIR71FL). A total of 21,643 married women aged 15–49 years were included. Sampling weights were applied to account for the complex survey design. Data were analyzed using Chi-square tests and multivariable logistic regression were performed. Results are presented as adjusted odds ratios (AORs) with 95% confidence intervals (CIs). **Results:** Overall, 60.2% of respondents had high HIV knowledge. Higher HIV knowledge was significantly associated with older age, secondary and higher education, higher wealth status, urban residence, older age at first sexual intercourse, mobile telephone ownership, internet use, and media exposure ($p<0.05$). Women living outside the Jawa–Bali region and in rural areas were less likely to have high HIV knowledge. Educational attainment was the strongest predictor. **Conclusion:** HIV knowledge among married women in Indonesia is influenced by sociodemographic and information-access factors. Strengthening HIV education through digital platforms, mass media, and community-based interventions is needed, particularly for women with lower educational attainment and socioeconomic status.

Keywords: HIV, knowledge, married women, media exposure, internet use

Background

Human Immunodeficiency Virus (HIV) remains a major global public health challenge, particularly among women of reproductive age (1)(2). Women are biologically and socially more vulnerable to HIV infection because of gender inequality, limited reproductive autonomy, and inadequate access to sexual health information. Furthermore, millions of women worldwide continue to experience substantial HIV-related morbidity and mortality. In Indonesia, HIV cases among women have shown an increasing trend in recent years, especially among married women who are often considered a low-risk population despite being vulnerable to HIV transmission from their spouses. Moreover, demographic and socioeconomic disparities have been shown to influence women's HIV knowledge and attitudes, thereby increasing their vulnerability to HIV infection (3)(4). Similarly, married women continue to face a high risk of HIV transmission because HIV-related preventive knowledge and practices remain inadequate (5)(6).

Adeate HIV knowledge is an essential component of HIV prevention because it influences awareness, attitudes, and preventive behaviors. Women with better HIV knowledge are more likely to adopt safer sexual practices, seek HIV testing, and demonstrate less stigmatizing attitudes toward people living with HIV. However, previous studies have shown that HIV knowledge among women in developing countries remains unevenly distributed across sociodemographic groups. Furthermore, comprehensive HIV knowledge among women in sub-Saharan Africa remained low and was strongly associated with educational level, wealth status, media exposure, and urban residence (2)(7). Similarly, educational attainment, urban residence, and access to media were found to significantly influence HIV/AIDS

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knowledge among women in Somalia (7). In Indonesia, media exposure and sociodemographic characteristics were also reported to substantially influence HIV/AIDS-related knowledge among women (3) (8).

Several studies in Indonesia have examined HIV knowledge among women; however, important research gaps remain. Previous Indonesian studies primarily focused on women of reproductive age in general populations, adolescents, or specific regional settings without specifically emphasizing married women at the national level. For example, determinants of HIV knowledge among women of childbearing age in South Sumatra were previously examined among Indonesian women (8)(9). Meanwhile, urban–rural disparities in HIV knowledge among male adolescents in Indonesia were also investigated in previous studies (10). In addition, other studies explored HIV knowledge among married women only in selected regions with high and low HIV prevalence in Indonesia (5)(11). Therefore, evidence regarding determinants of HIV knowledge among married women using nationally representative Indonesian data remains limited. Moreover, previous studies in Indonesia predominantly focused on sociodemographic determinants of HIV knowledge and rarely incorporated digital information-access variables, such as internet use, mobile telephone ownership, and media exposure, simultaneously within a multivariate analytical framework (12)(3)(13).

This study addresses these gaps by analyzing factors associated with HIV knowledge among married women in Indonesia using nationally representative data from the 2017 Indonesia Demographic and Health Survey (IDHS). Unlike previous studies, this research specifically focuses on married women, a population often overlooked in HIV prevention programs despite increasing HIV vulnerability within marital relationships. Furthermore, this study simultaneously examines sociodemographic characteristics, socioeconomic status, regional disparities, sexual behavior, and information-access factors, including mobile telephone ownership, internet use, and media exposure. The findings of this study are expected to provide updated evidence for policymakers and healthcare professionals in designing targeted HIV education and prevention strategies among married women in Indonesia.

Methods

This study employed a cross-sectional design using secondary data derived from the 2017 Indonesia Demographic and Health Survey (IDHS). The IDHS is a nationally representative survey conducted as part of the global Demographic and Health Survey (DHS) Program, aimed at collecting information related to demographic characteristics, reproductive health, maternal and child health, and health behaviors among the Indonesian population. The present study utilized the Individual Recode dataset (IDIR71FL), which contains data on women of reproductive age. The study used data from the 2017 IDHS conducted across all provinces in Indonesia, covering both urban and rural areas. Data collection for the IDHS was carried out from July to September 2017 by trained field interviewers using standardized DHS procedures. The target population in this study consisted of married women aged 15–49 years included in the 2017 IDHS dataset. The IDHS employed a stratified two-stage cluster sampling technique to obtain nationally representative data. In the first stage, census blocks were selected using probability proportional to size sampling. In the second stage, households were selected systematically from each census block. Respondents with complete information on HIV knowledge and all independent variables were included in the analysis. After the data cleaning process, a total of 21,643 married women were analyzed in this study.

The dependent variable in this study was HIV knowledge, categorized into low and high HIV knowledge based on respondents' scores on HIV-related questions available in the IDHS dataset. The independent variables included age, educational level, occupational status, wealth index, residence, province, age at first sexual intercourse, mobile telephone ownership, internet use, and media exposure. Age was categorized into 15–24 years, 25–34 years, and 35–49 years. Educational level was classified as no education, primary, secondary, and higher education. Wealth index was divided into poorest, poorer, middle, richer, and richest categories according to the DHS wealth index classification. Residence was categorized as urban and rural areas, while province was grouped into Jawa–Bali, Sumatra, and other regions. Data were obtained from the DHS Program database after receiving official permission to access the IDHS dataset. The IDHS data were collected through face-to-face interviews using standardized and validated DHS questionnaires administered by trained interviewers. HIV knowledge was measured using

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several questions related to HIV transmission and prevention available in the IDHS questionnaire. Sociodemographic variables, including age, education, occupation, residence, and wealth index, were collected through household and individual questionnaires. Information access variables, such as mobile telephone ownership, internet use, and media exposure, were obtained from respondents' self-reported answers during the interview process. Prior to statistical analysis, sampling weights were applied to account for the complex survey design and unequal probabilities of selection, thereby ensuring nationally representative estimates.

Data analysis was conducted using descriptive statistics were used to describe respondents' characteristics and HIV knowledge, presented as frequencies and percentages. Bivariate analysis using the chi-square test was performed to examine associations between independent variables and HIV knowledge.

Variables with p-values less than 0.05 in the bivariate analysis were included in the multivariate logistic regression analysis to identify factors independently associated with HIV knowledge. The results were reported as crude odds ratios (COR), adjusted odds ratios (AOR), and 95% confidence intervals (CI). Statistical significance was established at $p<0.05$.

Results

Table 1.Sociodemographic Characteristics and HIV Knowledge among Married Women in Indonesia

Variable	Frequency (n)	Percent (%)
Age (Years)		
15–24	2,324	10.7
25–34	7,379	34.1
35–49	11,940	55.2
Education Level		
No education	118	0.5
Primary	5,668	26.2
Secondary	13,079	60.4
Higher	2,778	12.8
Occupational		
No	8,099	37.4
Yes	13,544	62.6
Wealth Index		
Poorest	3,913	18.1
Poorer	4,438	20.5
Middle	4,707	21.7
Richer	4,747	21.9
Richest	3,838	17.7
Residence		
Urban	11.600	53.6
Rural	10,043	46.6
Province		
Jawa-Bali	8,220	38.0
Sumatra	5,564	25.7
Other	7,859	36.3
Age at First Sexual Intercourse		
≤19 years old	2,349	10.9
≥20 years old	4,250	19.6
At age first married	15,044	69.5
Mobile Telephone		
No	4,573	21.1
Yes	17,070	78.9
Use Internet		

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Variable	Frequency (n)	Percent (%)
No	13,670	63.2
Yes	7,973	36.8
Media Exposure		
No	5,484	25.3
Yes	16,159	74.7
HIV Knowledge		
Low	8,624	39.8
High	13,019	60.2

Table 1 shows the characteristics of respondents based on sociodemographic factors, access to information, and HIV knowledge levels. The majority of respondents were in the 35–49 age group (55.2%), while the 15–24 age group had the smallest proportion (10.7%). In terms of education, the majority of respondents had secondary education (60.4%), while respondents without formal education only comprised 0.5% of the total sample. The majority of respondents were known to be employed (62.6%). The distribution of the wealth index showed a relatively balanced proportion in each category, with the richer group dominating at 21.9%, while the richest group had the lowest proportion (17.7%). Based on residential area, more than half of the respondents lived in urban areas (53.6%), with the remainder in rural areas (46.4%). Geographically, the majority of respondents came from the Java–Bali region (38.0%), followed by other regions (36.3%) and Sumatra (25.7%).

Regarding sexual behavior, the majority of respondents reported first having sexual intercourse during marriage (69.5%). Meanwhile, 10.9% and 19.6% of respondents reported first having sexual intercourse at ages ≤19 and ≥20, respectively.

In terms of access to information and communication, the majority of respondents owned mobile phones (78.9%) and received media exposure (74.7%). However, internet usage remained relatively low, as most respondents did not use the internet (63.2%). Based on HIV knowledge levels, more than half of respondents had high levels of HIV knowledge (60.2%), while the remaining 39.8% had low levels of knowledge.

Table 2. Bivariate Analysis of Factors Associated with HIV Knowledge Among Married Women in Indonesia

Variable	HIV Knowledge		p-value
	Low	High	
	N (%)		
Age (Years)			<0.001
15–24	1,012(4.7)	1,312(6.1)	
25–34	2,937(13.6)	4,442(20.5)	
35–49	4,675(21.6)	7,265(33.6)	
Education Level			<0.001
No education	73(0.3)	45(0.2)	
Primary	2,918(13.5)	2,750(12.7)	
Secondary	4,953(22.9)	8,126(37.5)	
Higher	680(3.1)	2,098(9.7)	
Occupational			0.859
No	3,221 (14.9)	4,878(22.5)	
Yes	5,403(25.0)	8,141(37.6)	
Wealth index			<0.001
Poorest	1,973(9.1)	1,940(9.0)	
Poorer	2,015(9.3)	2,423(11.2)	
Middle	1,951(9.0)	2,756(12.7)	
Richer	1,642(7.6)	3,105(14.3)	
Richest	1,043(4.8)	2,795(12.9)	
Residence			<0.001
Urban	3,981(18.4)	7,619(35.2)	

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Variable	HIV Knowledge		p-value
	Low	High	
	N (%)		
Rural	4,643(21.5)	5,400(25.0)	
Province			<0.001
Jawa-Bali	2,633(12.2)	5,587(25.8)	
Sumatra	2,594(12.0)	2,970(13.7)	
Other	3,397(15.7)	4.462(20.6)	
Age at First Sexual Intercourse			<0.001
≤19 years old	1,113 (5.1)	1,236(5.7)	
≥20 years old	1,564 (7.2)	2,686(12.4)	
At first married	5,947(27.5)	9,097(42.0)	
Mobile Telephone			<0.001
No	2,232(10.3)	2,341(10.8)	
Yes	6,392(29.5)	10,678(49.3)	
Use Internet			<0.001
No	6,198(28.6)	7,472(34.5)	
Yes	2,426(11.2)	5,547(25.6)	
Media Exposure			<0.001
No	2,584 (11.9)	2,900(13.4)	
Yes	6,040(27.9)	10,119(46.8)	

Note: Data are presented as frequencies and percentages. The chi-square test was used to assess associations between variables. Statistical significance was set at $p<0.05$

Table 2 presents the bivariate analysis between respondents' characteristics and HIV knowledge. The findings showed that the proportion of respondents with high HIV knowledge increased with age. Respondents aged 35–49 years had the highest proportion of high HIV knowledge (33.6%), whereas those aged 15–24 years had the lowest proportion (6.1%). Statistical analysis demonstrated a significant association between age and HIV knowledge ($p<0.001$).

Educational attainment was also significantly associated with HIV knowledge ($p<0.001$). Respondents with higher education had the greatest proportion of high HIV knowledge (9.7%), while respondents without formal education were more likely to have low HIV knowledge. In general, the proportion of respondents with high HIV knowledge increased alongside educational level.

Based on occupational status, respondents who were employed tended to have a higher proportion of high HIV knowledge (37.6%) compared to unemployed respondents (22.5%). However, no statistically significant association was found between occupational status and HIV knowledge ($p=0.859$).

A significant relationship was identified between wealth index and HIV knowledge ($p<0.001$). Respondents in the richest category had the highest proportion of high HIV knowledge (12.9%), whereas respondents in the poorest category showed relatively lower proportions. The findings suggest that higher socioeconomic status was associated with better HIV knowledge. Regarding place of residence, respondents living in urban areas demonstrated a higher proportion of high HIV knowledge (35.2%) compared with those residing in rural areas (25.0%). The association between residence and HIV knowledge was statistically significant ($p<0.001$). Similarly, regional distribution was significantly related to HIV knowledge ($p<0.001$), with respondents from the Jawa–Bali region showing the highest proportion of high HIV knowledge (25.8%). Age at first sexual intercourse was significantly associated with HIV knowledge ($p<0.001$). Respondents who reported first sexual intercourse at marriage accounted for the largest proportion of high HIV knowledge (42.0%), compared with those who initiated sexual intercourse at ≤19 years or ≥20 years.

Access to communication technology and information sources was also significantly associated with HIV knowledge. Respondents who owned a mobile telephone had a substantially higher proportion of high HIV knowledge (49.3%) compared to those without mobile telephones (10.8%) ($p<0.001$). Likewise, internet users demonstrated a greater proportion of high HIV knowledge (25.6%) than non-users (34.5%), with a statistically significant association observed between internet use and HIV

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knowledge (p<0.001). Media exposure was similarly associated with HIV knowledge (p<0.001). Respondents exposed to media had a markedly higher proportion of high HIV knowledge (46.8%) compared to those without media exposure (13.4%).

Table 3. Multivariate Logistic Regression Analysis of Factors Associated with HIV Knowledge among Married Women in Indonesia

Variables	Model 1	Model 2
	COR (95% CI)	AOR(95% CI)
Age (Years)		
15–24	Reference	Reference
25–34	1.16(1.06-1.28)**	1.16(1.05-1.28)**
35–49	1.19(1.09-1.31)***	1.33(1.20-1.47)***
Education Level		
No education	Reference	Reference
Primary	1.52(1.05-2.22)*	1.32(0.90-1.94)
Secondary	2.66(1.83-3.86)***	2.16(1.47-3.17)***
Higher	5.00(3.41-7.32)***	3.64(2.45-5.40)***
Occupational		
No	Reference	Reference
Yes	0.99(0.94-1.05)	0.92(0.87-0.98)*
Wealth Index		
Poorest	Reference	Reference
Poorer	1.22(1.12-1.33)***	0.99(0.90-1.08)
Middle	1.43(1.31-1.56)***	1.01(0.92-1.11)
Richer	1.92(1.76-2.09)***	1.15(1.04-1.27)**
Richest	2.72(2.47-2.99)***	1.24(1.11-1.40)***
Residence		
Urban	Reference	Reference
Rural	0.60(0.57-0.64)***	0.84(0.78-0.89)***
Province		
Jawa-Bali	Reference	Reference
Sumatra	0.54(0.50-0.57)***	0.52(0.48-0.56)***
Other	0.61(0.58-0.66)***	0.63(0.58-0.68)***
Age at Fisrt Sexual Intercourse		
≤19 years old	Reference	Reference
≥20 years old	1.54(1.39-1.71)***	1.16(1.04-1.29)**
At age fisrt married	1.37(1.26-1.50)***	1.07(0.98-1.18)
Mobile Telephone		
No	Reference	Reference
Yes	1.59(1.49-1.70)***	1.12(1.04-1.21)**
Use Internet		
No	Reference	Reference
Yes	1.89(1.78-2.01)***	1.33(1.24-1.43)***
Media Exposure		
No Exposure	Reference	Reference
Exposure	1.49(1.40-1.58)***	1.25(1.17-1.34)***

Note: Crude Odds Ratio; AOR = Adjusted Odds Ratio; CI = Confidence Interval; Ref = reference category. Statistical significance was set at *p<0.05, **p<0.01, and **p<0.001.

Table 3 presents the results of binary logistic regression analysis examining factors associated with HIV knowledge. In the adjusted model (Model 2), age remained significantly associated with HIV knowledge. Respondents aged 25–34 years were 1.16 times more likely to have high HIV knowledge compared with those aged 15–24 years (AOR=1.16; 95%CI: 1.05–1.28). The likelihood was even higher among respondents aged 35–49 years (AOR=1.33; 95%CI: 1.20–1.47).

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Educational attainment demonstrated a strong positive association with HIV knowledge. Respondents with secondary education had 2.16 times higher odds of possessing high HIV knowledge compared with those without formal education (AOR=2.16; 95%CI: 1.47–3.17). Furthermore, respondents with higher education were more than three times as likely to have high HIV knowledge (AOR=3.64; 95%CI: 2.45–5.40). However, primary education was no longer statistically significant after adjustment. Occupational status also showed a significant relationship in the multivariable model. Respondents who were employed had slightly lower odds of high HIV knowledge than unemployed respondents (AOR=0.92; 95%CI: 0.87–0.98). In terms of socioeconomic status, respondents in the richer and richest wealth categories were more likely to have high HIV knowledge compared with those in the poorest category. The odds increased by 15% among respondents in the richer category (AOR=1.15; 95%CI: 1.04–1.27) and by 24% among those in the richest category (AOR=1.24; 95%CI: 1.11–1.40). Meanwhile, the poorer and middle wealth categories were not significantly associated with HIV knowledge after adjustment.

Place of residence remained a significant predictor of HIV knowledge. Respondents residing in rural areas were less likely to have high HIV knowledge compared with urban residents (AOR=0.84; 95%CI: 0.78–0.89). Similarly, regional disparities were identified, where respondents from Sumatra (AOR=0.52; 95%CI: 0.48–0.56) and other regions outside Jawa–Bali (AOR=0.63; 95%CI: 0.58–0.68) had significantly lower odds of high HIV knowledge compared with respondents living in Jawa–Bali. Age at first sexual intercourse was also associated with HIV knowledge. Respondents who initiated sexual intercourse at the age of ≥20 years were more likely to have high HIV knowledge than those who initiated at ≤19 years (AOR=1.16; 95%CI: 1.04–1.29). However, initiating sexual intercourse at first marriage was not significantly associated with HIV knowledge in the adjusted model.

Access to communication technology and information sources significantly influenced HIV knowledge. Respondents who owned a mobile telephone were more likely to have high HIV knowledge compared with those without mobile telephones (AOR=1.12; 95%CI: 1.04–1.21). Likewise, internet users had 1.33 times higher odds of possessing high HIV knowledge than non-users (AOR=1.33; 95%CI: 1.24–1.43). Media exposure was also positively associated with HIV knowledge, as respondents exposed to media were 1.25 times more likely to demonstrate high HIV knowledge compared with those without media exposure (AOR=1.25; 95%CI: 1.17–1.34).

Discussion

This study found that although the majority of married women in Indonesia had high HIV knowledge, a considerable proportion still demonstrated inadequate understanding regarding HIV transmission and prevention. Limited HIV knowledge among married women remains an important public health concern because women within marital relationships are increasingly vulnerable to HIV infection (14)(13). Furthermore, HIV knowledge among Indonesian women continues to be strongly influenced by sociodemographic disparities, particularly educational attainment and access to information (3). Similarly, (17). inadequate HIV knowledge has been shown to negatively affect HIV prevention practices among women in Indonesia and the Philippines (5)(6).

Age was significantly associated with HIV knowledge in this study. Women aged 35–49 years were more likely to possess higher HIV knowledge compared with younger women. Older women may have broader exposure to healthcare services, reproductive health counseling, and HIV-related information throughout their lives. Furthermore, increasing age has been positively associated with comprehensive HIV knowledge among women in sub Saharan Africa (2) (14)

Similarly, older women of reproductive age in Gambia were reported to have significantly better HIV knowledge compared with younger women (15). Therefore, age-related differences should be considered when developing HIV education and prevention programs targeting women (16).

Educational attainment emerged as one of the strongest determinants of HIV knowledge. Women with secondary and higher education were significantly more likely to possess high HIV knowledge compared with women without formal education. Education may improve literacy, critical thinking skills, and the ability to understand health-related information, including HIV prevention messages. Furthermore, education was identified as a major predictor influencing HIV knowledge and attitudes among Indonesian women (3) (17). Similarly, higher educational attainment was strongly associated with

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better HIV/AIDS-related knowledge among women in Indonesia (18). Therefore, improving women's access to education may contribute substantially to strengthening HIV awareness and prevention efforts (8).

Socioeconomic status was also associated with HIV knowledge. Women from wealthier households demonstrated greater odds of possessing adequate HIV knowledge compared with women from poorer households. Better economic conditions may facilitate access to healthcare services, communication technologies, educational opportunities, and HIV-related information. Furthermore, women from wealthier households were more likely to possess comprehensive HIV knowledge compared with those from lower-income households (2)(18). Similarly, higher socioeconomic status was reported to significantly increase HIV/AIDS knowledge among women in Somalia Consistent with the present findings, poorer wealth status was also significantly associated with lower HIV knowledge among ever-married women (18). Therefore, socioeconomic disparities remain an important factor influencing women's access to HIV-related information and preventive knowledge (3)(19).

Place of residence was significantly associated with HIV knowledge, where women living in rural areas were less likely to possess high HIV knowledge compared with those residing in urban settings. Rural communities often experience limited access to healthcare services, reduced exposure to HIV-related information, and fewer health promotion programs. Previous studies using Indonesian Demographic and Health Survey (IDHS) data similarly reported that women residing in urban areas were more likely to have better HIV knowledge than women living in rural areas (3)(20). Furthermore, this disparity may be explained by differences in educational opportunities, healthcare accessibility, and exposure to mass media and internet-based health information between urban and rural populations (13)(16).

Regional disparities were also identified in this study. Women living outside the Jawa–Bali region had lower HIV knowledge compared with those residing in Jawa–Bali. These disparities may reflect unequal healthcare infrastructure, educational access, and HIV prevention programs across Indonesian regions. Furthermore, significant differences in HIV knowledge were identified among married women living in regions with varying HIV prevalence levels in Indonesia (11). Similarly, geographical and regional differences were reported to contribute to unequal distribution of HIV knowledge among Indonesian women (3)(21).

This study further demonstrated that women who initiated sexual intercourse at older ages had higher HIV knowledge. Delayed sexual initiation may be associated with better educational attainment, improved reproductive health literacy, and greater awareness regarding HIV prevention. Furthermore, open communication regarding sexuality and reproductive health was found to be positively associated with comprehensive HIV knowledge among Indonesian youth (13)(19). In addition, women's reproductive decision-making capacity was also suggested to contribute to HIV awareness and prevention behaviors (11). These findings indicate that reproductive health literacy and communication play important roles in improving HIV knowledge among women(20).

Access to communication technology and information sources significantly influenced HIV knowledge in this study. Women who owned mobile telephones, used the internet, and had media exposure were more likely to possess high HIV knowledge. Digital media and communication technologies facilitate rapid dissemination of HIV-related information and increase public awareness regarding HIV/AIDS. Consistent with the present findings, previous studies reported that media exposure significantly improved HIV/AIDS-related knowledge among Indonesian (22). Similarly, exposure to media, healthcare providers, and social networks positively contributed to comprehensive HIV knowledge among Indonesian women (23). Previous studies also showed that exposure to television, radio, newspapers, and internet-based information was associated with higher HIV knowledge among women in Indonesia (24). Therefore, improving access to communication technologies may help strengthen HIV education and promote preventive behaviors among women, particularly those with limited healthcare access (24) (16).

Interestingly, occupational status showed a small but significant negative association with HIV knowledge in the adjusted model. Employment status alone may not necessarily guarantee better access may vary substantially among women. Furthermore, varying associations between occupational status and HIV knowledge among Indonesian women were also reported in previous studies (3). Similarly, complex relationships between employment status and sexual health outcomes among women in Indonesia have

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also been identified (21). These findings suggest that occupational status may interact with other sociodemographic and information-access factors in influencing HIV knowledge among women (10) (25).

The findings of this study highlight the importance of developing targeted HIV education programs for married women in Indonesia, particularly among women with lower educational attainment, lower socioeconomic status, rural residence, and limited access to media and internet services. Furthermore, community-based interventions, digital health promotion strategies, and the integration of HIV education into maternal and reproductive health services may help improve HIV knowledge among vulnerable women. In addition, strengthening equitable access to health information across regions should become a national priority to support HIV prevention efforts in Indonesia.

However, several limitations should be considered when interpreting the findings of this study. The use of cross-sectional secondary data limited the ability to establish causal relationships between the independent variables and HIV knowledge. Moreover, the analysis relied on self-reported responses, which may be subject to recall bias and social desirability bias. In addition, several potentially important variables related to HIV knowledge, such as cultural beliefs, stigma, partner communication, and access to HIV counseling services, were not available in the dataset and therefore could not be included in the analysis.

Conclusions and Recommendations

This study demonstrated that HIV knowledge among married women in Indonesia was significantly associated with age, educational level, wealth index, residence, province, age at first sexual intercourse, mobile telephone ownership, internet use, and media exposure. Women with higher education, better socioeconomic status, urban residence, and greater access to information technology were more likely to possess high HIV knowledge. These findings indicate that disparities in sociodemographic and information-access factors continue to influence HIV knowledge among married women in Indonesia.

Targeted HIV education programs should prioritize married women with lower educational attainment, lower socioeconomic status, rural residence, and limited access to information sources. Strengthening community-based education, digital health promotion, and media-based HIV campaigns may improve HIV knowledge among married women. Future studies are recommended to explore.

Ethical Consideration and Competing Interest

This study used secondary data from the 2017 Indonesia Demographic and Health Survey (IDHS), which were obtained with official permission from The DHS Program. The original IDHS survey protocol was reviewed and approved by the ICF Institutional Review Board (IRB) and the National Ethics Committee in Indonesia before data collection. The dataset is fully anonymized and contains no personally identifiable information. Therefore, no additional ethical approval or informed consent was required for this secondary data analysis. The authors declare that they have no competing interests. The Institutional Review Board (IRB) approved the initial IDHS survey through the ICF IRB Review Board (FWA00000845

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