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Social media and social capital as risk of voluntary counseling and testing for human immunodeficiency virus

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ABSTRACT

Teenagers are more susceptible to contracting human immunodeficiency virus (HIV). Of the 34 provinces in Indonesia, East Java continues to have the highest rate of new HIV diagnoses. One tactic for HIV prevention and control is voluntary counseling and testing (VCT). The purpose of this study is to examine the risk factors associated with the uptake of VCT for HIV among adolescents in the general population of East Java. A cross-sectional study design, a quantitative technique, and an observational methodology are all used in this research. 329 individuals in total, selected at random, took part in this study. The prevalence ratio (PR) with a 95% confidence interval was examined in order to determine the level of risk. Out of all the parameters that were found, social media access (PR = 10.133; 95%CI 1.293 - 79.422) and social capital (PR = 10.741; 95% 3.240 - 35.601) were found to have a substantial impact on VCT for HIV. Thus, it's critical to enhance social capital and implement educational initiatives on VCT for HIV using social media in order to improve teenagers' favorable perceptions of the treatment.

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1. INTRODUCTION

An infection with the human immunodeficiency virus (HIV) causes an infectious immune system disease that has the potential to be fatal [1]. Globally, 1.65 million (1.18-2.19 million) teenagers between the ages of 10 and 19 are projected to have HIV by 2022. Approximately 4% of HIV-positive individuals are adolescents. Asia and Latin America have the highest rates of HIV-positive teenagers [2]. The highest number of HIV positive cases in Indonesia is ranked second in the age group of adolescents 20–24 years (16.9%) and fourth in adolescents aged 15–19 years (3.1%). Meanwhile, out of 34 Indonesian provinces, East Java has always had the highest rate of new HIV cases, even though the trend in the number of new cases from 2019 (8,935) to 2021 (5,872) has decreased. The teenage age groups of 15–19 and 20–24 years old had the largest number of HIV cases in East Java in 2021, ranking second in terms of total HIV cases [3]. The

number of new HIV case findings in East Java in 2022 increased by 9,208 cases, with adolescents aged 15–19 years in fourth place (2%), while 20–24 years ranked second (11%).

Adolescents are more vulnerable to HIV infection due to pubertal development, sexual maturation, autonomy, and social changes [4]-[6]. HIV is an incurable infection, but with strict adherence to antiretroviral therapy (ART), it has become a manageable chronic disease, and HIV-infected people can now live long, healthy, and productive lives [7]. There is a need to increase awareness of HIV prevention and care in adolescents [7]. Adolescents are less likely than adults to be diagnosed with HIV, to participate in care, and to have their virus suppressed, even with the widespread use of ART medication [8], [9].

According to the World Health Organization (WHO), hazardous conduct, inadequate access to reproductive health services, and a lack of accurate health information make young people more susceptible to HIV infection. Adolescence is recognized as a possible barrier to stopping the spread of HIV/acquired immunodeficiency syndrome (AIDS) [10]. One tactic for HIV prevention and control is voluntary counseling and testing (VCT) [11]. Unfortunately, there is a stigma associated with HIV that makes a person feel unaccepted in the community. This stigma has a detrimental impact on HIV testing, treatment, and service utilization. It is well established that misperceptions about how the virus spreads and what it means to live with HIV are the main causes of HIV-related stigma [11], [12]. The purpose of this study is to examine the risk related to HIV voluntary counseling and testing among East Java's general teenage population. In the preventive and early detection phase in the teenage age group, this study contributes to the achievement of the third sustainable development goal (SDG) 2030: ending the HIV/AIDS epidemic by 2030.

2. METHOD

This study employed a cross-sectional observational design using quantitative methods, conducted in July 2024 in East Java, Indonesia, targeting adolescents domiciled in the region. A sample size of 329 was determined using a sample size formula for a large population (N = 3,055,236 adolescents based on 2022 BPS East Java data) and selected through random sampling with the inclusion criteria of East Java residency and willingness to participate. resulting in a calculated sample size of at least 100 participants with a 10% margin of error.

$$n = \frac{\mathrm{N}}{1+N(e)^2}$$

The research sample was all respondents who met the inclusion criteria and filled out the questionnaire completely. The recruitment process by distributing questionnaires using Google Forms links on social media (WhatsApp and Instagram) by considering media that are of great interest to teenagers. On Google Form write a narrative explanation of the purpose and benefits of the study, as well as consent to become a respondent. The data collected measured independent variables including age, gender, parental income (equal, and above the city minimum wage), VCT knowledge (moderate and good categories), HIV symptoms (none, present), social media (bad, good), institutional support (support provided by institutions or schools with bad and supportive categories), social capital (measured by trust, norms, and networks with bad and supportive categories), stigma (negative, positive). The dependent variable was attitude towards VCT for HIV (with negative and positive categories) [13]. The questionnaire used was tested for validity and reliability on 20 adolescents with the same characteristics, with a calculated r-value > than r-table (0.423), and a reliability value with an alpha Cronbach value > 0.6. Cross-tables (contingency tables), that depict the relationship between the independent and dependent variables. The level of risk was assessed by looking at the prevalence ratio (PR) with a 95% confidence interval [14]. Data analysis involved cross-tabulations and Chi-square tests to examine associations between variables, with prevalence ratios (PR) and 95% confidence intervals calculated to assess risk levels; a p-value of <0.05 was considered statistically significant.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Characteristics of respondents

This study used data collected from 329 adolescents in East Java. Table 1 shows the characteristics of teenagers in the East Java region. The majority of respondents were 20-24 years old (65.3%), female (84.8%), and their parents' income was at or above the minimum wage (70.2%). Most respondents also had good knowledge of VCT for HIV (56.2%), received support from school/college (98.3%), had supportive social capital (90.0%), still had negative stigma towards people with HIV (58.4%), and lacked social media access to VCT for HIV information (53.5%).

3.1.2. Risk factors for attitudes towards VCT for HIV

Risk factors for VCT for HIV attitudes in Table 2 show that social media access has a significant association with a prevalence ratio (PR) of 10.133 (95% CI; 1.293–79.422), and social capital has a significant association with a prevalence ratio (PR) of 10.741 (95% CI; 3.240–35.601). This shows that lack of social media access and less supportive social capital have a significant effect on the risk of negative attitudes towards VCT for HIV in adolescents.

Table 1. Characteristics of adolescents in East Java

Characteristic		n	%
Age	18-19 years	114	34.7
	20-24 years	215	65.3
Gender	Male	50	`15.2
	Female	279	84.8
Parents' income	Below the city minimum wage	98	29.8
	At or above the city minimum wage	231	70.2
VCT knowledge	Fair	144	43.8
	Good	185	56.2
HIV symptoms	None	273	83.0
	Available	56	17.0
Social media	Less	176	53.5
	Good	153	46.5
School/college support	Less supportive	157	47.7
	Support	172	52.3
Social capital	Less supportive	33	10.0
	Support	296	90.0
Stigma	Negative	192	58.4
	Positive	137	41.6
Attitudes towards VCT for HIV	Negative	12	3.6
	Positive	317	96.4

Table 2. Attitudinal risk of VCT for HIV in adolescents

Characteristic		Attitudes toward VCT for HIV		PR (95% CI)
		Negative n (%)	Positive n (%)	
Age	<20 years	6 (5.3)	108 (94.7)	1.935 (0.610–6.143)
	20–24 years	6 (2.8)	209 (97.2)	
Gender	Male	1 (2.0)	49 (98.0)	0.497 (0.063–3.939)
	Female	11 (3.9)	268 (96.1)	
Parents' income	Below the city minimum wage	5 (5.1)	93 (94.9)	1.720 (0.532–5.559)
	At or above the city minimum wage	7 (3.0)	224 (97.0)	
VCT knowledge	Fair	7 (4.9)	137 (95.1)	1.839 (0.571–5.920)
	Good	5 (2.7)	180 (97.3)	
HIV symptoms	None	11 (4.0)	262 (96.0)	2.309 (0.292–18.257)
	Available	1 (1.8)	55 (98.2)	
Social media	Less	11 (6.3)	165 (93.8)	10.133 (1.293–79.422)*
	Good	1 (0.7)	152 (99.3)	
School/college support	Less supportive	9 (5.7)	148 (94.3)	3.426 (0.910–12.890)
	Support	3 (1.7)	169 (98.3)	
Social capital	Less supportive	6 (18.2)	27 (81.8)	10.741 (3.240–35.601)*
	Support	6 (2.0)	290 (98.0)	
Stigma	Negative	5 (2.6)	187 (97.4)	0.497 (0.154–1.599)
	Positive	7 (5.1)	130 (4.9)	

3.1.3. Spatial analysis of VCT for HIV attitudes

Figure 1 illustrates the distribution of the number of respondents with attitudes towards VCT for HIV by social capital. The dark green color indicates that the region has a high positive attitude towards VCT for HIV with a range of 12–105 adolescents. Social capital is indicated by a larger blue circle, indicating greater social capital support in the area. Figure 2 illustrates the distribution of the number of respondents who have attitudes towards VCT for HIV based on social media. The dark purple color indicates that the region has a high positive attitude towards VCT for HIV with a range of 12–105 adolescents. Yellow circles represent good social media, with larger yellow circles indicating greater use of good social media in the region.

3.2. Discussion

Adolescence is a time of transition marked by quick development, independence, and the acquisition of social and behavioral skills that set the stage for long-term health and wellbeing [15]. There are positive and negative sentiments among adolescents regarding VCT for HIV. A positive attitude towards VCT for

HIV is an individual's willingness to participate in voluntary HIV counseling and testing, a belief that VCT provides important benefits such as health information that can assist in HIV prevention and management, and a reduction in HIV-related social stigma. Individuals with positive attitudes see HIV testing as a responsible and important act, without fear of discrimination or negative judgment [16]. One study showed that those who are stigma-free post-counseling can improve their social relationships with family and community members [17]. They also had confidence that test results and personal information would be kept confidential [18]. A negative attitude towards VCT for HIV is the unwillingness to participate in HIV counseling and testing, often due to fear of test results and potential social stigma [19]. Individuals with this attitude feel anxious or fear discrimination and negative judgment if the test results show that they are HIV positive [20]. They may also doubt the confidentiality of their test results and personal information. So, they tend to avoid HIV testing and refuse to know their health status.

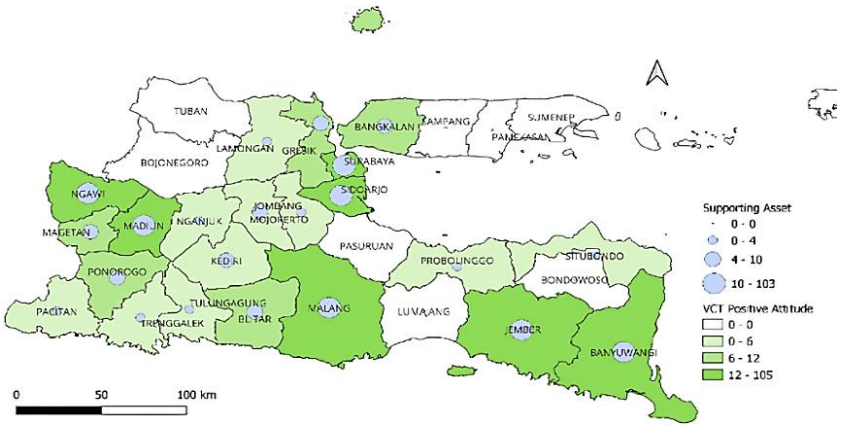

Figure 1. Spatial analysis of VCT for HIV attitudes and social capital among adolescents in East Java, Indonesia

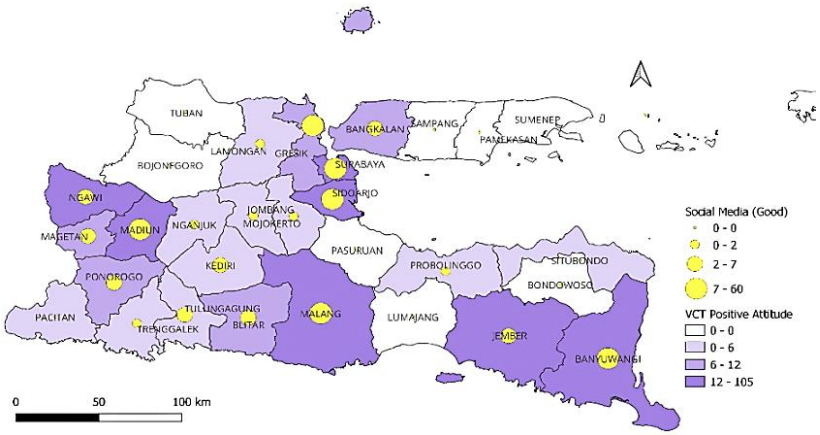

Figure 2. Spatial analysis of VCT for HIV attitudes and social media among adolescents in East Java, Indonesia

This study showed a positive attitude towards VCT for HIV was seen in the age group of 20–24 years with 97.2%. This is supported by previous research, that adolescents show a positive attitude towards VCT for HIV because they realize that VCT for HIV can help determine their HIV status and can be an early diagnosis step to help prevent the consequences of HIV/AIDS progression [10]. Similarly, those who came from families with income above the minimum wage showed a high positive attitude of 97.0%. A Chinese study, however, revealed something quite different. Because they typically hold a greater stigma against those who are HIV/AIDS positive, those who earn more money each month have a tendency to be less supportive of VCT for HIV [21]. It's crucial to have solid understanding of VCT for HIV. A comprehensive understanding of HIV/AIDS can help prevent the rapid spread of HIV and reduce stigma and discrimination

against those affected [22]. Institutional support was also important, with 98.3% of those adolescents who felt supported by their institutions showing positive attitudes. This support is in the form of information on HIV risk factors and VCT for HIV, and usually has the potential to influence positive attitudes as it comes in the form of doctrinal knowledge, familiarity, and habits [23]. Negative stigma towards HIV does not seem to have much effect on attitudes towards VCT for HIV, as 97.4% of those with negative stigma towards HIV sufferers still showed positive attitudes towards VCT for HIV. According to studies conducted in Nigeria, the majority of persons who wish to receive HIV services from VCT generally do so despite the stigma and discrimination that HIV/AIDS sufferers face [24].

Adolescent girls were the majority of those with a negative attitude about VCT for HIV. According to earlier studies based on a study from the Ethiopian Federal Department of Health, women are particularly susceptible to HIV infection, and most of them have a difficult time making decisions about having children [25]. Those who do not have HIV symptoms also tend to show negative attitudes. There is a perception that they are not at risk or do not need testing because they feel healthy. One study showed that an important first step in HIV disease management is case finding or symptoms, yet most individuals are diagnosed with HIV infection asymptomatically [26]. Therefore, teenagers are prone to have a negative attitude about VCT for HIV since they do not exhibit particular HIV symptoms and are not conscious of their health.

This study demonstrates that the risk of VCT for HIV attitudes is significantly impacted by social capital support and social media availability. Adolescents with less supportive social capital characteristics have a risk of 10,741 negative attitudes towards VCT for HIV. In contemporary public health, social capital is a key notion. The term "social capital" refers to the connections that might give an individual or a community access to networks of nearby resources and assistance [27]. A family's, neighborhood's, school's, and organizations' roles in networks, relationships, norms, coherence, and trust are all important aspects of social capital [28]. Social capital assesses the belief that there are rules in religion that support to act properly and accordingly in maintaining health, believe that doing VCT for HIV is a social responsibility for each individual, believe in the support that can be obtained from family, religious leaders, community leaders and surrounding people have a positive impact on him, believe that the norms in their environment support to undergo positive activities including in disease prevention [23], [28]. Social capital can be a foundation to provide adolescents with boundaries, especially in sexual behavior and in making decisions to take precautions, because adolescents who have high levels of self-esteem and confidence can mostly make their own decisions. On the other side, in adolescents who are exploratory, vulnerable, and going through a life change, higher self-esteem can occasionally result in hazards [28]. Therefore, the role of social is very important in the formation of supportive social capital so that adolescents have a higher risk of positive attitudes towards disease prevention behavior, especially in conducting VCT for HIV.

Poor social media access indicates a high risk of negative attitudes in adolescents towards VCT for HIV. Adolescents who get social media network interventions are more likely to acquire critical knowledge, particularly about HIV/AIDS and other reproductive health concerns. Adolescents more often get HIV/AIDS-related information from social media, television, and print media than other sources [29]. Our study shows that adolescents who access social media to get information about HIV disease or VCT for HIV are still lacking. Less use of social media by adolescents to access HIV information or VCT for HIV has a 10.133 times greater risk of having a negative attitude towards VCT for HIV. This was assessed by how often adolescents accessed social media to find information about VCT for HIV, information about HIV that passed on their social media home screen, experiencing obstacles in accessing information about HIV on social media, using social media to discuss sexual behavior and awareness of HIV testing, and finding social media accounts containing HIV sufferer communities and accounts about VCT for HIV. This evaluation is consistent with earlier studies on the usage of social media to obtain health information [30].

Adolescents use social media more than three platforms both actively and passively, which are often used namely Instagram, WhatsApp, Twitter, and Facebook [31], [32]. The lowest purpose of social media use is accessing information about health (3.5%), adolescents prefer to use social media to connect with family or close people, posting photos or media, self-expression, comedy, and laughter [32]. Given the increasing adoption of the internet by adolescents, the government should urge its development partners (non-governmental organizations, communities, and advertising partners) to publish up-to-date and engaging HIV-specific health information on their websites. By encouraging intervention programs to use social media networks, it can have the ability to attract adolescents to their various websites in order for adolescents to get important information about HIV/AIDS and other reproductive health issues.

There are various restrictions on our study. First, information bias may arise since the data depends on the recollection and honesty of the interviewees. Second, due to time and resource constraints that constrained the study's data collection and analytical depth, the sample might not be entirely representative of East Java's teenage population. As a result, the study's findings should be evaluated cautiously. Additional research is required to validate and deepen our understanding of Indonesian teenagers' attitudes concerning VCT.

4. CONCLUSION

This study shows that less social media access and less supportive social capital significantly increase the risk of negative attitudes towards VCT for HIV. The findings suggest that enhancing social capital and utilizing social media for educational interventions can significantly improve adolescents' views on VCT, promoting more favorable engagement in HIV prevention efforts. Despite these insights, the study's cross-sectional design and reliance on self-reported data pose limitations, calling for future longitudinal research to confirm these associations and to develop more tailored, context-specific interventions. A multi-faceted approach involving healthcare providers, educators, and social media platforms is essential for addressing the diverse needs of adolescents and ensuring effective HIV prevention and treatment strategies. These results emphasize how crucial it is to build social capital and conduct educational interventions on VCT for HIV through social media in order to improve teenagers' favorable attitudes toward the treatment. So, that it can encourage HIV prevention and treatment with an approach according to the needs of adolescents.

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AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

Authors state no conflict of interest.

ETHICAL APPROVAL

This study received ethical approval from the Ethics Commission of the Faculty of Public Health, Universitas Airlangga, with ethical number 151/EA/KEPK/2024. It also complied with the principles of research ethics, including respect via informed consent.

DATA AVAILABILITY

The authors confirm that the data supporting the findings of this study are available within the article.

REFERENCES

[1] B. Derebew *et al.*, "Determination of knowledge, attitude and practice of voluntary counseling testing on HIV among youths from Tepi Town, Ethiopia," *PEC Innovation*, vol. 2, p. 100102, Dec. 2023, doi: 10.1016/j.pecinn.2022.100102.
[2] UNICEF, "HIV in adolescents." [Online]. Available: https://data.unicef.org/topic/hivaids/adolescents-young-people/
[3] S. Q. Khairunisa *et al.*, "Characterization of spatial and temporal transmission of HIV infection in Surabaya, Indonesia: Geographic information system (GIS) cluster detection analysis (2016–2020)," *Heliyon*, vol. 9, no. 9, 2023, doi: 10.1016/j.heliyon.2023.e19528.
[4] T. A. I. Kusumaningrum and H. Pratiwi, "Intention to use voluntary counseling and testing services among college students," *Jurnal Promosi Kesehatan Indonesia*, vol. 17, no. 1, pp. 35–45, Jan. 2022, doi: 10.14710/jpki.17.1.35-45.

[5] A. Perez *et al.*, "HIV-related stigma and psychological adjustment among perinatally HIV-infected youth in Cape Town, South Africa," *AIDS and Behavior*, vol. 26, no. 2, pp. 434–442, Feb. 2022, doi: 10.1007/s10461-021-03398-3.
[6] A. B. Costa, L. H. Viscardi, M. Feijo, and A. M. V. Fontanari, "HIV voluntary counseling and testing (VCT-HIV) effectiveness for sexual risk-reduction among key populations: A systematic review and meta-analysis," *eClinicalMedicine*, vol. 52, p. 101612, Oct. 2022, doi: 10.1016/j.eclinm.2022.101612.
[7] B. G. Kapogiannis *et al.*, "The HIV continuum of care for adolescents and young adults attending 13 urban US HIV care centers of the NICHD-ATN-CDC-HRSA SMILE collaborative," *JAIDS Journal of Acquired Immune Deficiency Syndromes*, vol. 84, no. 1, pp. 92–100, May 2020, doi: 10.1097/QAI.0000000000002308.
[8] V. Perumal *et al.*, "Public perception on importance of screening for HIV in voluntary counselling and testing (VCT)," *Journal of Pharmaceutical Negative Results*, vol. 13, no. 08, p. 2022, 2022, doi: 10.47750/pnr.2022.13.S08.340.
[9] A. Z. Alem, A. B. Teshale, A. M. Liyew, G. A. Tesema, A. K. Tesema, and Y. Yeshaw, "Determinants of HIV voluntary counseling and testing: a multilevel modelling of the Ethiopian demographic and health survey," *BMC Women's Health*, vol. 22, no. 1, p. 7, Jan. 2022, doi: 10.1186/s12905-021-01590-0.
[10] I. F. Ndubuisi, I. O. Maduakolam, N. P. Ogbonnaya, and C. J. Mbadugha, "Knowledge of HIV/AIDS, attitude and use of voluntary counselling and testing among adolescents in senior secondary schools, Enugu North Local Government Area, Enugu State," *Journal of Nursing and Women's Health*, vol. 4, no. 157, pp. 2577–1450, 2020, doi: 10.29011/2577-1450.100157.
[11] E. A. Armstrong-Mensah, A. K. Tetteh, E. Ofori, and O. Ekhosuehi, "Voluntary counseling and testing, antiretroviral therapy access, and HIV-related stigma: global progress and challenges," *International Journal of Environmental Research and Public Health*, vol. 19, no. 11, p. 6597, May 2022, doi: 10.3390/ijerph19116597.
[12] C. D. Mathers, "History of global burden of disease assessment at the World Health Organization," *Archives of Public Health*, vol. 78, no. 1, p. 77, Dec. 2020, doi: 10.1186/s13690-020-00458-3.
[13] B. Derebew *et al.*, "Determination of knowledge, attitude and practice of voluntary counseling testing on HIV among youths from Tepi Town, Ethiopia," *PEC Innovation*, vol. 2, p. 100102, Dec. 2023, doi: 10.1016/j.pecinn.2022.100102.
[14] M. A. Aduk *et al.*, "Voluntary HIV counseling and testing (VCT): Knowledge, attitudes, hinderances, and practices of adults seeking treatment at Gulu Regional Referral Hospital on the spread of HIV in Northern Uganda. A cross-sectional study." Dec. 15, 2021. doi: 10.21203/rs.3.rs-1173983/v1.
[15] T. Avedissian and N. Alayan, "Adolescent well-being: A concept analysis," *International Journal of Mental Health Nursing*, vol. 30, no. 2, pp. 357–367, Apr. 2021, doi: 10.1111/inm.12833.
[16] A. E. Oguzie, E. N. Ezunu, A. Aigbokhaode, and O. E. Ezunu, "Socio-demographic determinants of attitude towards voluntary counselling and testing (VCT) in Delta State, Nigeria," *Journal of Guidance and Counselling*, vol. 4, no. 1, pp. 44–60, 2020.
[17] M. H. M. Ali, O. B. Osman, and A. Dawria, "Attitudes of patients attending Omdurman teaching hospital VCT center, Sudan toward HIV/AIDS voluntary counseling and testing services," *Sudan Journal of Medical Sciences*, vol. 18, no. 2, 2023, doi: 10.18502/12106.
[18] A. Masrie *et al.*, "Implementation evaluation of HIV/AIDS voluntary counseling and testing (VCT) service at public health facilities of Akaki Kality Sub-City, Addis Ababa, Ethiopia," *HIV/AIDS - Research and Palliative Care*, vol. 15, pp. 503–518, Sep. 2023, doi: 10.2147/HIV.S422516.
[19] U. S. Inam and J. J. Umoinyang, "HIV/AIDS: Knowledge of existence, attitude towards VCT and effect on income of workers in Akwa Ibom State," *International Journal of Humanities, Social Sciences and Education*, vol. 9, no. 1, pp. 31–57, 2022, doi: 10.20431/2349-0381.0901004.
[20] A. N. Erena, G. Shen, and P. Lei, "Factors affecting HIV counselling and testing among Ethiopian women aged 15–49," *BMC Infectious Diseases*, vol. 19, no. 1, p. 1076, Dec. 2019, doi: 10.1186/s12879-019-4701-0.
[21] Q. Zhang, Y.-S. Fu, X.-M. Liu, Z.-Q. Ding, M.-Q. Li, and Y.-G. Fan, "HIV prevalence and factors influencing the uptake of voluntary HIV Counseling and testing among older clients of female sex workers in Liuzhou and Fuyang Cities, China, 2016-2017: a cross-sectional study," *BioMed Research International*, vol. 2020, Jan. 2020, doi: 10.1155/2020/9634328.
[22] C. Mandiwa, B. Namondwe, and M. Munthali, "Prevalence and correlates of comprehensive HIV/AIDS knowledge among adolescent girls and young women aged 15–24 years in Malawi: evidence from the 2015–16 Malawi demographic and health survey," *BMC Public Health*, vol. 21, pp. 1–9, Dec. 2021, doi: 10.1186/s12889-021-11564-4.
[23] I. F. E. Manurung, A. Probandari, C. U. Wahyuni, and H. S. W. Nugroho, "The role of religious leader support on voluntary counseling and testing (VCT) behavior of individuals at risk of HIV/AIDS in Kupang City, Indonesia," *Indian Journal of Forensic Medicine & Toxicology*, vol. 13, no. 4, pp. 1527–1532, 2019, doi: 10.5958/0973-9130.2019.00519.X.
[24] A. N. Erena, G. Shen, and P. Lei, "Factors affecting HIV counselling and testing among Ethiopian women aged 15-49," *BMC Infectious Diseases*, vol. 19, pp. 1–12, 2019, doi: 10.1186/s12879-019-4701-.
[25] S. Prabhu, J. I. Harwell, and N. Kumarasamy, "Advanced HIV: diagnosis, treatment, and prevention," *The Lancet HIV*, vol. 6, no. 8, pp. e540–e551, Aug. 2019, doi: 10.1016/S2352-3018(19)30189-4.
[26] M. K. Ananga, R. K. Agbefu, P. N. Doku, A. Manu, D. O. Alangea, and J. K. Ganle, "The influence of social capital in the utilisation of sexual reproductive health services among the youth in Ghana. A community-based cross-sectional study," *PLOS Global Public Health*, vol. 3, no. 10, p. e0001225, Oct. 2023, doi: 10.1371/journal.pgph.0001225.
[27] R. S. Banstola, T. Ogino, and S. Inoue, "Self-esteem, perceived social support, social capital, and risk-behavior among urban high school adolescents in Nepal," *SSM - Population Health*, vol. 11, p. 100570, Aug. 2020, doi: 10.1016/j.ssmph.2020.100570.
[28] R. Nugraheni, B. Murti, M. E. Irawanto, E. S. Sulaiman, and E. P. Pamungkasari, "The social capital effect on HIV/AIDS preventive efforts: a meta-analysis," *Journal of Medicine and Life*, vol. 15, no. 10, pp. 1212–1217, Oct. 2022, doi: 10.25122/jml-2021-0348.
[29] M. Banyeh, T. Kankpi, K. E. Zogli, and S. Mohammed, "Determinants of voluntary HIV/AIDS counseling and testing among university students in Ghana," *Asian Journal of Advanced Research and Reports*, vol. 16, no. 1, pp. 46–56, 2022, doi: 10.9734/ajarr/2022/v16i130448.
[30] M. S. C. Lim, A. Molenaar, L. Brennan, M. Reid, and T. McCaffrey, "Young adults' use of different social media platforms for health information: insights from web-based conversations," *Journal of Medical Internet Research*, vol. 24, no. 1, p. e23656, Jan. 2022, doi: 10.2196/23656.
[31] I. Beyens, J. L. Pouwels, I. I. van Driel, L. Keijsers, and P. M. Valkenburg, "The effect of social media on well-being differs from adolescent to adolescent," *Scientific Reports*, vol. 10, no. 1, p. 10763, Jul. 2020, doi: 10.1038/s41598-020-67727-7.
[32] M. Plaisime, C. Robertson-James, L. Mejia, A. Núñez, J. Wolf, and S. Reels, "Social media and teens: A needs assessment exploring the potential role of social media in promoting health," *Social Media+Society*, vol. 6, no. 1, Jan. 2020, doi: 10.1177/2056305119886025.

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