SciMedCentral

Annals of Public Health and Research

Research Article

The Adaptation and Content Validity of an Instrument to Examine the Attitudes and Perceptions of HIV Self-Testing Among the Young Population in Nigeria

Florida Uzoaru[1]*, Linda Collins[1], Levi Ross[2] and Ucheoma Nwaozuru[3]

[1]*Department of Health and Human Sciences, College of Nursing and Health Sciences, Southeastern Louisiana University, Hammond, Louisiana, USA*

[2]*Department of Kinesiology and Health Studies, College of Nursing and Health Sciences, Southeastern Louisiana University, Hammond, Louisiana, USA*

[3]*Wake Forest School of Medicine, Division of Public Health Science, Raleigh, North Carolina, USA*

***Corresponding author**

Florida Uzoaru, Department of Health and Human Sciences, College of Nursing and Health Sciences, Southeastern Louisiana University, Hammond, Louisiana, USA

Submitted: 10 November 2023
Accepted: 04 December 2023
Published: 06 December 2023

Keywords

- Attitudes
- HIV
- Self-testing
- Population
- Nigeria

Abstract

Background: The Human Immunodeficiency Virus (HIV) has been a stigmatized illness as well as a medical condition. Attitudes toward HIV/AIDS testing have been shown to suggest an individual's predisposition to test for HIV. The objectives of this study were to develop an instrument examining the attitudes towards HIV/AIDS by adapting and validating the HIV Antibody Testing Attitude Scale for use in HIV self-testing among young people in Nigeria.

Methods: The adapted HIV self-testing instrument was evaluated by subject matter experts to make a judgment on the instrument items for the essential, useful, or not necessary measurements of the instrument.

Results: Items on the instrument were modified to reflect the testing type, the adapted items were then analyzed by themes, and the amalgamated instrument incorporated key aspects that were to effectively examine the attitudes towards HIV self-testing among young people in Nigeria.

Conclusion: Developing an instrument that examines the attitudes towards HIV self-testing among young people in Nigeria, helps to reveal a true sense of perspectives, barriers, and concerns and ultimately identify ways to overcome presenting concerns.

INTRODUCTION

The Human Immunodeficiency Virus (HIV) has been a stigmatized illness as well as a medical condition [1,2]. Despite the progress in the fight against HIV/AIDS, including the development of rapid test benefits for HIV/AIDS status awareness, stigmatization against HIV, and those who may have it still exist [3]. Attitudes toward HIV/AIDS testing have been shown to suggest an individual's predisposition to test for HIV [4]. Consequently, HIV prevention efforts need, and have, focused on examining the attitude that influences perceptions about HIV and sexual behavior in general [4]. In Nigeria, as with most sub-Saharan African countries, young people are among the groups most vulnerable to HIV infection. They are also the population group with the highest incidence of HIV cases [5,6]. A number of social factors influence young people's perception of HIV, including the pressure of friends and classmates, social norms, and self-efficacy [7].

As the World Health Organization (WHO) pushes for the adoption of HIV Self-Testing (HIVST), there are no psychometrically valid tests to measure attitudes toward HIV self-testing, a gap this study seeks to fill. Over the years, many instruments have been developed and validated for measuring attitudes towards HIV/AIDS, including AIDS Impact Scale [8], AIDS Knowledge Scale (AKS) [9], AIDS Attitude Scale (AAS) [10-12], Bougardus Social Distance Scale [13], Clinical Attitude Scale (CAS) [9,14], Fear of AIDS Scale [15,16], HIV Prevention Attitude Scale [17], the Q-Sort instrument [18], and the HIV Antibody Testing Attitude Scale (HTAS). Previous HIV attitude scales have measured a variety of constructs [4,19-23].

The seven most common scales are:

1) Attitude towards HIV behavior,

2) Subjective norms of HIV behavior;

3) Perceived self-efficacy;

4) Perceived knowledge about HIV;

5) Perceived susceptibility to HIV;

6) Social support and;

7) Sexual sensation seeking.

Since the HIV-Antibody Testing Attitude Scale (HTAS) has previously been validated among young people in Nigeria who are within the age bracket this study targets [23,24], we selected the instrument to adapt for use to test young people's attitudes and perception of HIV self-testing. To adapt the scale, we measured two constructs, accepting attitude towards HIV testing and intention to use an HIV self-testing kit. These constructs are supported by the Theory of Planned Behavior [25].

According to the Theory of Planned Behavior (TPB), behavioral intention is a function of three things: attitude, subjective norm, and perceived self-efficacy [26,27]. Attitude is measured as the extent to which a person finds a behavior favorable or unfavorable [28]. Subjective norm measures social pressure on an individual to perform a behavior, and perceived self-efficacy measures how easy or difficult a person believes performing the behavior would be or is [29]. The theory has been used in measuring intention to test for HIV in the past. In the 2014 article by Meadowbrooke, et al., the indication of attitude towards testing was based on respondents' agreement with the 5-point Likert-type scale statement, "Getting an HIV test is the responsible thing to do", where strongly disagree received the lowest score [30]. The construct was also measured by a single item, "I intend to test for HIV in the next 6 months" using a 5-point probability scale, where 'very likely' received the highest score of 5 [24].

In order to maintain the content validity of a new HIVST instrument to the existing HTAS, conceptually speaking, this study will not restrict the number of items that could measure the intention to test [31]. The objectives of this study were to develop an instrument examining the attitudes towards HIV/AIDS by adapting and validating the HTAS for use in HIV Self-Testing (HIVST) among young people in Nigeria. Prior to utilizing the instrument, it was essential to evaluate its validity with Subject Matter Experts (SMEs) [32]. To inform this effort, we surveyed and interviewed Subject Matter Experts (SMEs).

METHODS

Adapting HTAS for HIVST

The 22-item HTAS was used for this study, instead of the initially developed 32-item instrument (see Appendix 1). The 22-item instrument was rearranged by Peltzer, et al. (2004) in their psychometric study which was carried out in multiple countries including Nigeria.

Content Validity

To test the validity of the adapted HTAS, a qualitative approach was employed. Subject Matter Experts (SMEs) were recruited by convenience sampling, to include individuals who had worked with at least one member of the study team in various capacities during the course of their career. A draft questionnaire of the adapted HTAS was emailed to ten academics and program specialists in sexual health, behavioral science, and HIV areas, soliciting their participation as SMEs in the study. SMEs that consented to participate in the survey were emailed the questionnaire, with the instruction to review the questionnaire and check grammar, wording, and scaling. The instruction included a request for the SMEs to make a judgment on each item for example in their estimation, would they consider the item 'essential', 'useful', or 'not necessary to measure the constructs of interest: (a) attitude towards HIV self-testing (b) intention to use an HIV self-testing kit. Further instructions included an explanation that the adapted scale was intended to examine attitudes toward HIV self-testing in young Nigerians, aged 14 to 24, and that they were free to comment on the wording of the items or suggest additional items that might better measure the constructs. Their feedback was requested within two weeks.

Data Analysis

To adapt the HTAS, all 22 items were analyzed in accordance with its use of plain language, active voice, and applicability to self-testing. Items that were assessed to have been worded inappropriately to self-testing were edited to reflect the functioning of HIVST. In place of the 5-point Likert scale used for HTAS, feedback from the SMEs was measured by whether they considered an item "Essential" (the item is vital to measuring young people's perception and attitude towards HIV self-testing), "Useful" (the item would provide important information about young people's perception and attitude towards HIV self-testing) or "Not necessary" (even without this item, the instrument could still measure young people's perception and attitude towards HIV self-testing). Items needed to receive a rating of 'Essential' or 'Useful' to be retained in the adapted scale. To reduce the length of the final instrument and make it more concise and manageable for respondents, variance in the feedback from the SMEs determined which item to retain in the adapted HIVSTS and which items would be removed. If there were disagreements with the SMEs on whether an item was essential, useful, or not necessary, a decision was made about retaining or removing the item based on which rating it received most from the SMEs. For instance, if an item was assessed as 'Essential' by three SMEs, 'Useful' by two SMEs, and 'Not necessary' by one SME, the item was retained. If an item received 'Not necessary' by most of the SMEs (≥ 50%), that item was removed. Survey responses were summarized through descriptive statistics of the SMEs' feedback.

Ethical Considerations

The study falls under the National Institute of Health (NIH) Exemption for Human Subject Research, as the adaptation of HTAS was sourced from publicly available information, and the consultation of subject experts is not considered human subject

research by the US Department of Health and Human Services [33,34]. Protocol for an Institutional Review Board was therefore not sought.

RESULTS

HTAS Adaptation

The 22-item HTAS was categorized into two sub-scales: facilitators of testing, and barriers to testing. These categories were retained in the adaptation. However, items in both sub-scales were modified to reflect the testing type the instrument was being adapted for. Six out of the eight items measuring facilitators of HIV testing were modified, while 10 out of 14 items measuring barriers to testing were modified (see Table 1). Much of the modification involved changing "HIV antibody testing" to "HIV self-testing", so test takers are not confused about which approach of HIV testing their opinion was being sought on. The item "I would be afraid to get an HIV test because people who test positive cannot get health insurance" was amended to be read, "I would be afraid to use an HIV self-testing kit because people who test positive cannot get medical treatment" because healthcare financing in Nigeria remains largely out of pocket [35-37]. The item "HIV test information is kept very confidential by the medical staff who do the testing" was not applicable to self-testing as is and was thus modified to "HIV self-testing information is kept very confidential by medical staff I share the result of the test with." The adapted items were then analyzed by themes. The item "I do not have time to get an HIV test" was removed from the adapted instrument since getting HIVST is at a person's convenience [38-40].

The draft adapted HIVST Attitude Scale (HIVSTS) consisted of a 21 Likert-type items scale. Same is with the HTAS, the 8 items on the adapted scale would measure degrees of positive attitude towards HIVST (i.e., facilitators of HIV self-testing) included statements like "my family would support me if I decided to self-test for HIV". A Likert score of 1 to 5 is assigned to the five response options: Strongly disagree = 1, Disagree = 2, Neutral = 3, Agree = 4, and Strongly Agree = 5. Similarly, 13 items would measure degrees of negative attitude towards HIVST (i.e., barriers to HIV self-testing) included statements like "people assume that everyone who is tested for HIV is infected with HIV". These items are reverse scored: Strongly disagree = 5, Disagree = 4, Neutral = 3, Agree = 2, Strongly Agree = 1. In the adapted scale, these items are to be reverse scored to have a high total score that reflects a higher degree of favorable attitude towards HIVST.

Table 1: Comparison between the validated HTAS and the adapted HIVSTS.

	Validated 22-item HIV-Antibody Testing Attitude Scale (HTAS)	Adapted 21-item HIV Self- Testing Attitude Scale (HIVSTS)
Facilitators of HIV Testing		
5-point Likert-type scale; 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	HIV test information is kept very confidential by the medical staff who do the testing	HIV self-testing information is kept very confidential by medical staff I share the result of the test with
	My family would support me if I decided to be tested for HIV	My family would support me if I decided to self-test for HIV
	I would not want anyone to know if I got an HIV test	I would not want anyone to know if I got an HIV self-test kit
	My friends would not look down on me if I were tested for HIV	My friends would not look down on me if I were to use an HIV self-testing kit
	My friends would support my decision to get an HIV test	My friends would support my decision to get an HIV self-testing kit
	HIV tests give accurate results	Results from HIV self-test are accurate
	I would be comfortable talking to an HIV counselor about personal behaviors that place me at risk for HIV infection	I would be comfortable talking to an HIV counselor about personal behaviors that place me at risk for HIV infection
	I can talk to my friends about making medical decisions	I can talk to my friends about making medical decisions
Barriers to HIV Testing		
5-point Likert-type scale (Reverse scoring); 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree	HIV-antibody testing is not really confidential	HIV self-testing is not really confidential
	Anyone who is tested for HIV is disgusting	Anyone who gets an HIV self-testing kit is disgusting
	I would be afraid to get an HIV test because people who test positive cannot get health insurance	I would be afraid to use an HIV self-testing kit because people who test positive cannot get medical treatment
	People assume that everyone who is tested for HIV is infected with HIV	People assume that everyone who is tested for HIV is infected with HIV
	My parents would be upset if they knew I was planning to get tested for HIV	My parents would be upset if they knew I was planning to use an HIV self-testing kit
	Admitting that you should be tested for HIV means that you have engaged in immoral behavior	Admitting that you should be tested for HIV means that you have engaged in immoral behavior
	I do not have time to get an HIV test	[Dropped]
	I am afraid that if I were tested for HIV, my name would go into public records	I am afraid that if I used HIV self-testing kit, the result would go into my hospital file where anyone can see
	Anyone who is tested for HIV is dirty	Anyone who gets an HIV self-testing kit is dirty
	It would be embarrassing to get tested for HIV	It would be embarrassing to get an HIV self-testing kit
	I would not consider getting an HIV test because I would be asked about things I have done that could get me in trouble	I would not consider getting an HIV self-testing kit because I would be asked about things I have done that could get me in trouble
	People would assume I have HIV if I decided to get tested	People would assume I have HIV if I decide to get an HIV self-testing kit
	I could talk to my friends about making the decision to get an HIV test	I could talk to my friends about making the decision to get an HIV self-testing kit
	My friends would look down on me if I were tested for HIV	My friends would look down on me if I were to get an HIV self-testing kit

Four themes were identified from analyzing the items: confidentiality, social support, social acceptance, and interaction with healthcare professionals or healthcare system (Table 2). Among facilitators of HIV self-testing, 4 items fell under the theme "social support", including "my family would support me if I decided to self-test for HIV. One item each was identified under the themes "confidentiality" and "social acceptance": "HIV self-testing information is kept very confidential by medical staff I share the result of the test with" and "I would not want anyone to know if I got an HIV self-test" respectively. Among barriers of HIV self-testing, 3 items were categorized under the social support theme, while 7 items were under the social acceptance theme. 2 items were categorized under the confidentiality theme.

Content Validity

We reached out to ten SMEs to participate in the study, six of them consented, while four declined, citing unavailability. The adapted HIVSTS questionnaire was subsequently emailed to the six SMEs. All six SMEs responded to the adapted questionnaire by the deadline. The names and credentials of the SMEs are detailed in (Table 3). As shown in (Table 4), six items received the highest number of votes from the SMEs are essential, including "HIV self-testing is not really confidential" (5 SMEs) and "results from HIV self-test are accurate (4 SMEs). One item, "it would be embarrassing to get an HIV self-testing kit" was voted as essential by all 6 SMEs. One SME believed the questions "my friends would not look down on me if I were to use an HIV self-testing kit" and "my friends would support my decision to get an HIV self-testing kit" measured the same thing. Likewise, "I am afraid that if I used an HIV self-testing kit, the result would go into my hospital file where anyone can see" was measuring the same thing as "anyone who gets an HIV self-testing kit is dirty". However, all four items were retained in the final draft of HIVSTS (Table 5) since other SMEs did not express the same opinion, most of whom thought the items were either essential or useful. Another SME regarded the item "anyone who gets an HIV self-testing kit is dirty" as essential in the scale, and consequently "anyone who gets an HIV self-testing kit is disgusting" was not necessary since it would reductant to have both in the scale. A different SME suggested additional 2 items, "I do not have issues getting an HIV self-test kit" and "I am confident that I can correctly interpret results from using an HIV self-test kit." Both items were to be included as facilitators of HIV self-testing.

For the finalized HIVSTS, "I can talk to my friends about making medical decisions" was removed since it was the item to receive the most votes of "Not Necessary" from the SMEs (50%). The revised 22-item HIVSTS instrument, including the additional items suggested by one of the SMEs, was developed for future face validity (Table 5).

Table 2: Themes identified from narrative analysis of the 21-item HIVSTS.

Confidentiality	Social Support	Social Acceptance	Interactive with the Healthcare Professionals or Healthcare System
Facilitators of HIV Self-Testing			
HIV self-testing information is kept very confidential by medical staff I share the result of the test with	My family would support me if I decided to self-test for HIV	I would not want anyone to know if I got an HIV self-test kit	I would be comfortable talking to an HIV counselor about personal behaviors that place me at risk for HIV infection
	My friends would not look down on me if I were to use an HIV self-testing kit		Results from HIV self-test are accurate
	My friends would support my decision to get an HIV self-testing kit		
	I can talk to my friends about making medical decisions		
Barriers to HIV Self-Testing			
HIV self-testing is not really confidential	My parents would be upset if they knew I was planning to use an HIV self-testing kit	Anyone who gets an HIV self-testing kit is disgusting	I would be afraid to use an HIV self-testing kit because people who test positive cannot get medical treatment
I am afraid that if I used HIV self-testing kit, the result would go into my hospital file where anyone can see	I could talk to my friends about making the decision to get an HIV self-testing kit	People assume that everyone who is tested for HIV is infected with HIV	
	My friends would look down on me if I were to get an HIV self-testing kit	Anyone who gets an HIV self-testing kit is dirty	
		Admitting that you should be tested for HIV means that you have engaged in immoral behavior	
		It would be embarrassing to get an HIV self-testing kit	
		I would not consider getting an HIV self-testing kit because I would be asked about things I have done that could get me in trouble	
		People would assume I have HIV if I decide to get an HIV self-testing kit	

Table 3: Subject Matter Expert (SME) participants.

SMEs Designation	Affiliated Institution	Research Area
Associate Professor (Research), Melbourne Sexual Health Centre	Monash University	Supervisor, The Innovative Tools to Expand Youth-friendly HIV Self-Testing (ITEST) research project
Senior Research Fellow (HIV/AIDS and Tuberculosis), Nigerian Institute of Medical Research	Nigerian Institute of Medical Research (NMR)	Research, The Innovative Tools to Expand Youth-friendly HIV Self-Testing (ITEST) research project
Professor and Associate Dean for Research	Saint Louis University	Social, behavioral, and geographic determinants of community health, and the intersection of public and private organizations to improve public health; sexual health
Associate Professor; Behavioral Science and Health Education	Saint Louis University	Public health intervention development and program evaluation in maternal and reproductive health
Associate Dean for Community Engagement and Partnerships, Professor, Public Health	The University of Texas at San Antonio	Global health care, health care disparities, health care safety net, and population health management
Associate Professor, Department of Prevention and Community Health, Milken Institute School of Public Health	George Washington University	Research, The Innovative Tools to Expand Youth-friendly HIV Self-Testing (ITEST) research project

Table 4: Subject Matter Expert (SME) participants.

Item	Essential N(%)	Useful N(%)	Not Necessary N(%)
Facilitators of HIV Self-Testing			
HIV self-testing information is kept very confidential by medical staff I share the result of the test with	3 (50%)	2 (33%)	1 (17%)
My family would support me if I decided to self-test for HIV	3 (50%)	3 (50%)	0 (0%)
I would not want anyone to know if I got an HIV self-test kit	2 (33%)	3 (50%)	1 (17%)
My friends would not look down on me if I were to use an HIV self-testing kit [i]	2 (40%)	1 (20%)	2 (40%)
My friends would support my decision to get an HIV self-testing kit [i]	2 (40%)	3 (60%)	0 (0%)
Results from HIV self-test are accurate	4 (67%)	2 (33%)	0 (0%)
I would be comfortable talking to an HIV counselor about personal behaviors that place me at risk for HIV infection	0 (0%)	4 (67%)	2 (33%)
I can talk to my friends about making medical decisions	0 (0%)	3 (50%)	3 (50%)
Barriers to HIV Self-Testing			
HIV self-testing is not really confidential	5 (83%)	1 (17%)	0 (0%)
Anyone who gets an HIV self-testing kit is disgusting	3 (50%)	1 (17%)	2 (33%)
I would be afraid to use an HIV self-testing kit because people who test positive cannot get medical treatment	4 (67%)	2 (33%)	0 (0%)
People assume that everyone who is tested for HIV is infected with HIV	3 (50%)	3 (50%)	0 (0%)
My parents would be upset if they knew I was planning to use an HIV self-testing kit	4 (67%)	2 (33%)	0 (0%)
Admitting that you should be tested for HIV means that you have engaged in immoral behavior	4 (67%)	2 (33%)	0(0%)
I am afraid that if I used HIV self-testing kit, the result would go into my hospital file where anyone can see ii	2 (40%)	1 (20%)	2 (40%)
Anyone who gets an HIV self-testing kit is dirty ii	2 (40%)	1 (20%)	2 (40%)
It would be embarrassing to get an HIV self-testing kit	6 (100%)	0 (0%)	0 (0%)
I would not consider getting an HIV self-testing kit because I would be asked about things I have done that could get me in trouble	1 (17%)	5 (83%)	0 (0%)
People would assume I have HIV if I decide to get an HIV self-testing kit	2 (33%)	3 (50%)	1 (17%)
I could talk to my friends about making the decision to get an HIV self-testing kit	1 (17%)	3 (50%)	2 (33%)
My friends would look down on me if I were to get an HIV self-testing kit	2 (33%)	3 (50%)	1 (17%)

i:One SME believed the two items were measuring the same thing.
ii: The same SME as above believed these two items were measuring the same thing.

DISCUSSION

Attitude towards HIVST Instrument

Despite the amalgamated development of the instrument, it was evident that it had key aspects that could effectively examine the attitudes towards HIV self-testing among young people in Nigeria. The adapted tool has the potential to examine the attitude of young people towards HIV self-testing as it relates to four themes: confidentiality of self-testing, the social support from family and friends, social acceptance, and the perception of interacting with healthcare professionals or the healthcare system. The SMEs provided clear insight into what items should be included in the instrument. All SMEs involved in the study agreed that it was essential for an HIVSTS to measure whether young people in Nigeria considered that it would be embarrassing to get an HIV self-test. Although not by mutual consensus among all SMEs, the item measuring the perception of young people of whether they can talk to their friends about making medical decisions was regarded as not necessary to include in an HIVSTS.

SMEs are co-collaborators providing expert knowledge and objective perspectives [41]. Lack of HIV/AIDS knowledge and preventative testing is recognized as having critical implications for public health interventions to control infection and promote treatment and care [42]. Despite the continuous efforts to

Table 5: Final draft of the adapted HIVSTS.

Sub Scale	Questionnaire Items
Facilitators of HIV self-testing 5-point Likert-type scale 1 = Strongly Disagree 2 = Disagree 3 = Neutral 4 = Agree 5 = Strongly Agree	HIV self-testing information is kept very confidential by medical staff I share the result of the test with.
	My family would support me if I decided to self-test for HIV.
	I would not want anyone to know if I got an HIV self-test kit.
	My friends would not look down on me if I were to use an HIV self-testing kit.
	My friends would support my decision to get an HIV self-testing kit.
	Results from HIV self-test are accurate.
	I would be comfortable talking to an HIV counselor about personal behaviors that place me at risk for HIV infection.
	I do not have issues getting an HIV self-test kit.
	I am confident that I can correctly interpret results from using HIV self-test kit.
Barriers to HIV self-testing (Reverse Scoring) 5-point Likert-type scale 1 = Strongly Agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly Disagree	HIV self-testing is not really confidential.
	Anyone who gets an HIV self-testing kit is disgusting.
	I would be afraid to use an HIV self-testing kit because people who test positive cannot get medical treatment.
	People assume that everyone who is tested for HIV is infected with HIV.
	My parents would be upset if they knew I was planning to use an HIV self-testing kit.
	Admitting that you should be tested for HIV means that you have engaged in immoral behavior.
	I am afraid that if I used an HIV self-testing kit, the result would go into my hospital file where anyone can see.
	Anyone who gets an HIV self-testing kit is dirty.
	It would be embarrassing to get an HIV self-testing kit.
	I would not consider getting an HIV self-testing kit because I would be asked about things I have done that could get me in trouble.
	People would assume I have HIV if I decide to get an HIV self-testing kit.
	I could talk to my friends about making the decision to get an HIV self-testing kit.
	My friends would look down on me if I were to get an HIV self-testing kit.

improve HIV/AIDS understanding and using preventative testing, the stigma remains and discrimination against people with HIV/AIDS in Sub-Sahara Africa continues to be a challenge [43]. It was evident that there were positive attitudes toward the HIVST instrument which contributed to the collaborative formation of the tool. Wisdom, Chor, et al., also highlight that positive attitudes towards the development of a novel instrument are associated with an increased likelihood of adoption and subsequent use [44]. There is evidence that suggests the successful implementation of an instrument is dependent on attitudes, influencing factors related to the intervention (e.g., content and structure), and the context in which the instrument may be delivered [45]. In this case, developing an instrument that examines the attitudes towards HIV self-testing among young people in Nigeria, helps to reveal a true sense of perspectives, barriers, and concerns and ultimately identify ways to overcome presenting concerns.

Implications for Practice

Depending on the outcome data on attitudes towards HIV self-testing among young people in Nigeria, healthcare professionals and educationalists should be prepared to provide additional knowledge and insight on preventative interventions that promote positive health outcomes. Engaging the young people of Nigeria through educational seminars and workshops could promote awareness of perceived thoughts that could hinder or promote positive attitudes.

LIMITATIONS

The HTAS being adapted for HIV self-testing may not be generalizable to other settings. As Peltzer, et al., (2003) found in their study, there are country differences in the results from their scale. Another study limitation is the use of convenience sampling which has a main drawback of lacking generalizability due to the selection bias of the sample [46]. Researchers from other settings who may wish to use this instrument should consider culturally adapting it to make it appropriate to their context [31,47-50].

CONCLUSION

Developing an instrument that examines the attitudes towards HIV self-testing among young people in Nigeria, helps to reveal a true sense of perspectives, barriers, and concerns and ultimately identify ways to overcome presenting concerns. SMEs are valuable co-collaborators providing expert knowledge and insight into the development of the instrument. Engaging the young people of Nigeria through educational seminars and workshops could promote awareness of perceived thoughts that could hinder or promote positive attitudes.

REFERENCES

1. Herek GM, Capitanio JP. Public reactions to AIDS in the United States: a second decade of stigma. Am J Public Health. 1993; 83(4): 574-577. doi: 10.2105/ajph.83.4.574. PMID: 8460738; PMCID: PMC1694493.

2. Letteney S, LaPorte HH. Deconstructing stigma: perceptions of HIV-seropositive mothers and their disclosure to children. Soc Work Health Care. 2004; 38(3): 105-123. doi: 10.1300/J010v38n03_06. PMID: 15149914.

3. Yahaya LA, Jimoh AA, Balogun OR. Factors hindering acceptance of HIV/AIDS voluntary counseling and testing (VCT) among youth in Kwara State, Nigeria. Afr J Reprod Health. 2010; 14(3): 159-164. PMID: 21495608.

4. Frias AMA, Sim-Sim MMSF, Chora MAFC, Caldeira EDCV. Adaptação e validação para português da HIV Antibody Testing Attitude Scale. Acta Paulista de Enfermagem. 2016; 29(1): 77-83.

5. UNAIDS. The Gap Report. Geneva: Joint United Nations Programme

on HIV/AIDS (UNAIDS); 2014.

6. WHO. Adolescents: Health risks and solutions [Fact sheet]. World Health Organisation; 2018.

7. Karimy M, Niknami S, Heidarnia AR, Hajizadeh I, Montazeri A. Prevalence and determinants of male adolescents' smoking in iran: an explanation based on the theory of planned behavior. Iran Red Crescent Med J. 2013; 15(3): 187-193. doi: 10.5812/ircmj.3378. Epub 2013 Mar 5. PMID: 23983996; PMCID: PMC3745745.

8. Bennett L, Kelaher M, Ross MW. The impact of working with HIV/AIDS on health care professionals: Development of the AIDS Impact Scale. Psychology and Health. 1994; 9(3): 221-232.

9. Leasure R, McKenney LA, Merrill A. Factors influencing baccalaureate nursing students' attitudes towards persons living with AIDS. J Prof Nurs. 1995; 11(5): 299-305. doi: 10.1016/s8755-7223(05)80011-0. PMID: 7593974.

10. Yarber WL, Torabi MR, Veenker CH. Development of a three-component sexually transmitted diseases attitude scale. Journal of Sex Education and Therapy. 1989; 15(1): 36-49.

11. Bruce KE, Reid BC. Assessing the construct validity of the AIDS Attitude Scale. AIDS Educ Prev. 1998; 10(1): 75-89. PMID: 9505100.

12. Shrum JC, Turner NH, Bruce KE. Development of an instrument to measure attitudes toward acquired immune deficiency syndrome. AIDS Educ Prev. 1989; 1(3): 222-230. PMID: 2641242.

13. Bogardus ES. A social distance scale. Sociology & Social Research. 1933; 17: 265-271.

14. Veach T, Brunner RL, Larson TA. A comparison of change in medical students' attitudes toward AIDS patients and non-AIDS patients. 1996.

15. Akande A, Ross MW. Fears of AIDS in Nigerian students: dimensions of the fear of AIDS Scale (FAIDSS) in west Africa. Soc Sci Med. 1994; 38(2): 339-342. doi: 10.1016/0277-9536(94)90403-0. PMID: 8140460.

16. Arrindell WA, Ross MW, Bridges KR, Van Hout W, Hofman A, Sanderman R. Fear of AIDS: are there replicable, invariant questionnaire dimensions? Advances in behaviour research and therapy. 1989; 11(2): 69-115.

17. Development of HIV Prevention Attitude Scale. 1993; 1993: 775.

18. Prasad RS. Development of the HIV/AIDS Q-sort instrument to measure physician attitudes. Fam Med. 2001; 33(10): 772-778. PMID: 11730295.

19. Bruce KE, Walker LJ. College students' attitudes about AIDS: 1986 to 2000. AIDS Educ Prev. 2001; 13(5): 428-437. doi: 10.1521/aeap.13.5.428.24140. PMID: 11718442.

20. Darabi F, Farahani FK, Yaseri M. Psychometric Analysis of the HIV Behaviors Questionnaire for Female Adolescents (HBQFA) in Iran. J Psychiatry. 2017; 20: 5.

21. Ajzen I, Madden TJ. Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control. Journal of experimental social psychology. 1986; 22(5): 453-474.

22. Ajzen I. The theory of planned behaviour: reactions and reflections. Taylor & Francis; 2011; 26(9): 1113-1127.

23. Peltzer K, Mpofu E, Baguma P, Lawal B. Attitudes towards HIV-antibody testing among university students in four African countries. International Journal for the advancement of counselling. 2002; 24(3): 193-203.

24. Ayodele O. The Theory of Planned Behavior as a Predictor of HIV Testing Intention. Am J Health Behav. 2017; 41(2): 147-151. doi: 10.5993/AJHB.41.2.5. PMID: 28452691.

25. Schifter DE, Ajzen I. Intention, perceived control, and weight loss: an application of the theory of planned behavior. J Pers Soc Psychol. 1985; 49(3): 843-851. doi: 10.1037//0022-3514.49.3.843. PMID: 4045706.

26. Abamecha F, Godesso A, Girma E. Intention to voluntary HIV counseling and testing (VCT) among health professionals in Jimma zone, Ethiopia: the theory of planned behavior (TPB) perspective. BMC Public Health. 2013; 13: 140. doi: 10.1186/1471-2458-13-140. PMID: 23414398; PMCID: PMC3599811.

27. Mirkuzie AH, Sisay MM, Moland KM, Astrøm AN. Applying the theory of planned behaviour to explain HIV testing in antenatal settings in Addis Ababa - a cohort study. BMC Health Serv Res. 2011; 11: 196. doi: 10.1186/1472-6963-11-196. PMID: 21851613; PMCID: PMC3169463.

28. Young HM, Lierman L, Powell-Cope G, Kasprzyk D, Benoliel JQ. Operationalizing the theory of planned behavior. Res Nurs Health. 1991; 14(2): 137-144. doi: 10.1002/nur.4770140208. PMID: 2047535.

29. Broadhead-Fearn D, White KM. The role of self-efficacy in predicting rule-following behaviors in shelters for homeless youth: a test of the theory of planned behavior. J Soc Psychol. 2006; 146(3): 307-325. doi: 10.3200/SOCP.146.3.307-325. PMID: 16783984.

30. Meadowbrooke CC, Veinot TC, Loveluck J, Hickok A, Bauermeister JA. Information Behavior and HIV Testing Intentions Among Young Men at Risk for HIV/AIDS. J Assoc Inf Sci Technol. 2014; 65(3): 609-620. doi: 10.1002/asi.23001. PMID: 25346934; PMCID: PMC4207124.

31. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. J Clin Epidemiol. 1993; 46(12): 1417-1432. doi: 10.1016/0895-4356(93)90142-n. PMID: 8263569.

32. Monjok E, Smesny A, Mgbere O, Essien EJ. Routine HIV testing in health care settings: the deterrent factors to maximal implementation in sub-Saharan Africa. J Int Assoc Physicians AIDS Care (Chic). 2010; 9(1): 23-29. doi: 10.1177/1545109709356355. PMID: 20071594.

33. Health NIo. Final Rule Human Subjects Research Exemptions. 2020.

34. Health NIo. Human Subjects Involvement Codes.

35. Titus OB, Adebisola OA, Adeniji AO. Health-care access and utilization among rural households in Nigeria. Journal of development and agricultural economics. 2015; 7(5): 195-203.

36. Akpomuvie OB. Poverty, access to health care services and human capital development in Nigeria. African Research Review. 2010; 4(3): 41-55.

37. Onwujekwe O, Hanson K, Ichoku H, Uzochukwu B. Financing incidence analysis of household out-of-pocket spending for healthcare: getting more health for money in Nigeria? Int J Health Plann Manage. 2014; 29(2): e174-e185. doi: 10.1002/hpm.2166. Epub 2013 Feb 7. PMID: 23390079.

38. Harichund C, Karim QA, Kunene P, Simelane S, Moshabela M. HIV self-testing as part of a differentiated HIV testing approach: exploring urban and rural adult experiences from KwaZulu-Natal, South Africa using a cross-over study design. BMC Public Health. 2019; 19(1): 53. doi: 10.1186/s12889-018-6366-9. PMID: 30634943; PMCID: PMC6329077.

39. Hlongwa M, Mashamba-Thompson T, Makhunga S, Murararaneza C, Hlongwana K. Men's perspectives on HIV self-testing in sub-Saharan Africa: a systematic review and meta-synthesis. BMC Public Health. 2020; 20(1): 66. doi: 10.1186/s12889-020-8184-0. PMID: 31941479; PMCID: PMC6964071.

40. Qin Y, Han L, Babbitt A, Walker JS, Liu F, Thirumurthy H, et al. Experiences using and organizing HIV self-testing. AIDS. 2018; 32(3): 371-381. doi: 10.1097/QAD.0000000000001705. PMID: 29194120; PMCID: PMC5758403.

41. Shrestha KM, Wood K, Goodman D, Mistica M. Do We Need Subject Matter Experts? A Case Study of Measuring Up GPT-4 Against Scholars in Topic Evaluation. InProceedings of the Seventh Workshop on Natural Language for Artificial Intelligence (NL4AI 2023) co-lo

42. Alwano MG, Bachanas P, Block L, Roland M, Sento B, Behel S, et al. Increasing knowledge of HIV status in a country with high HIV testing coverage: Results from the Botswana Combination Prevention Project. PLoS One. 2019; 14(11): e0225076. doi: 10.1371/journal.pone.0225076. PMID: 31765394; PMCID: PMC6876886.

43. Mach BS. HIV/AIDS knowledge, attitudes and practices among women in South Sudan based on multiple indicator cluster survey, 2010. Journal of Health Research. 2017.

44. Wisdom JP, Chor KH, Hoagwood KE, Horwitz SM. Innovation adoption: a review of theories and constructs. Adm Policy Ment Health. 2014; 41(4): 480-502. doi: 10.1007/s10488-013-0486-4. PMID: 23549911; PMCID: PMC3894251.

45. Durlak JA, DuPre EP. Implementation matters: a review of research on the influence of implementation on program outcomes and the factors affecting implementation. Am J Community Psychol. 2008; 41(3-4): 327-350. doi: 10.1007/s10464-008-9165-0. PMID: 18322790.

46. Emerson RW. Convenience sampling revisited: Embracing its limitations through thoughtful study design. Journal of Visual Impairment & Blindness. 2021; 115(1): 76-77.

47. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. Spine (Phila Pa 1976). 2000; 25(24): 3186-3191. doi: 10.1097/00007632-200012150-00014. PMID: 11124735.

48. Ferraz MB. Cross cultural adaptation of questionnaires: what is it and when should it be performed? J Rheumatol. 1997; 24(11): 2066-2068. PMID: 9375861.

49. Kamitani E, Chen JL, Portillo C, Tokumoto J, Dawson-Rose C. Shortened and Culturally Appropriate HIV Stigma Scale for Asians Living with HIV in the United States: Psychometric Analysis. J Assoc Nurses AIDS Care. 2018; 29(4): 560-569. doi: 10.1016/j.jana.2018.02.007. Epub 2018 Feb 19. PMID: 29544965.

50. Morrison SD, Rashidi V, Banushi VH, Barbhaiya NJ, Gashi VH, Sarnquist C, et al. Cultural adaptation of a survey to assess medical providers' knowledge of and attitudes towards HIV/AIDS in Albania. PLoS One. 2013; 8(3): e59816. doi: 10.1371/journal.pone.0059816. Epub 2013 Mar 27. PMID: 23544101; PMCID: PMC3609723.