Special Issue: School and Community Health in Low-and-Middle Income Nations

Journal of INTERNATIONAL MEDICAL RESEARCH

Journal of International Medical Research
0(0) 1–6

DOI: 10.1177/0300060519854635
journals.sagepub.com/home/imr
SAGE

Impact of an educational digital storytelling intervention on HIV risk perception among Nigerian adolescents

Theresa Onyema Ofoegbu[1], Mkpoikanke Sunday Otu[2], Ibenegbu Christopher[1], Asogwa Uche[1], Linus Okechukwu Nwabuko[4], Ibe Ebere[3], Ibiwari Caroline Dike[5], Obiyo Ngozi[2], Uwakwe Chinedozie[1] and Abdullahi Muhammed[1]

Abstract

Objective: The study objective was to investigate the impact of an educational digital storytelling intervention (EDSI) on human immunodeficiency virus (HIV) risk perception and knowledge among Nigerian adolescents.

Methods: Using a randomized controlled trial design procedure, we recruited 98 Nigerian adolescents who were college students. Data were collected using the Perceived Risk of HIV Scale and the HIV Knowledge Questionnaire and were analysed using repeated measures analysis of variance.

Results: The results showed that the EDSI was effective in increasing HIV risk perception and knowledge among adolescents in the treatment group compared with those in the no-treatment control group.

[1]Department of Arts Education, University of Nigeria, Nsukka, Nigeria
[2]Department of Educational Foundations, University of Nigeria, Nsukka, Nigeria
[3]Department of Science Education, University of Nigeria, Nsukka, Nigeria
[4]Department of Adult Education and Extra Moral Studies, University of Nigeria, Nsukka, Nigeria
[5]Department of Educational Foundations (Childhood Education), University of Nigeria, Nsukka, Nigeria

Corresponding author:
Mkpoikanke Sunday Otu, Department of Educational Foundations, University of Nigeria, Nsukka, Nigeria.
Email: mkpoikanke.otu@unn.edu.ng

Conclusion: The EDSI is a useful tool to help adolescents to increase their HIV risk perception and knowledge. Further research and policy changes are needed to support the full implementation of the EDSI in different sectors of Nigerian society and in other parts of the world.

Keywords
Educational digital storytelling intervention, HIV, risk perception, knowledge, Nigeria, college students, adolescents

Date received: 12 April 2019; accepted: 13 May 2019

Introduction

College students in Nigeria have a low awareness of the risk of human immunodeficiency virus (HIV). Lammers and van Wijnbergen[1] have noted the low risk perception of unprotected sex in Nigeria, which invariably leads to poor awareness of HIV risk. A 2009 study reported that 74.6% of adolescents in Nigeria were sexually active, 66.4% had multiple partners and only 38.1% always used condoms during sexual intercourse.[2] The low perception of HIV risk has increased the rate of HIV infection in adolescent college students. There is evidence that 77% of college students in Nigeria are at risk of HIV infection.[3] A recent study has confirmed that students (mostly adolescents) in Nigeria and other developing countries are exposed to HIV infection.[4] HIV infections affect adolescents' education, vocational education, and personal and social lives. Ezegbe et al.[4] have pointed out that HIV infection can prevent adolescents from achieving their needs in every area of life, as adolescents with HIV may experience poor health, malnutrition, low education, lack of affection, insecurity, lack of protection, rejection, depression, discrimination, fear, loneliness, school dropout and suicidal thoughts.

In addition, there are substantial misconceptions about HIV that lead to low HIV risk perception.[3,5–7] In Africa as a whole, the high level of misconceptions about HIV risk frequently undermines HIV prevention efforts.[7] For example, most adolescents obtain HIV information directly from mass media sources; such information is often superficial and does not dispel erroneous beliefs.[8] Thus, HIV information obtained from the mass media can generate irrational beliefs that perpetuate HIV risk in adolescents. Although peer education and social media messaging have been used as strategies to disseminate HIV knowledge,[9,10] an educational digital storytelling intervention (EDSI) could help adolescents to acquire a broad, realistic knowledge of HIV.

Generally, digital storytelling is considered an effective therapeutic technique for treating behavioural problems. For instance, there is evidence that digital storytelling (in oral, pictorial, written and film media forms) is an essential element in learning new behaviours.[11,12] Digital storytelling has also been used as a creative counselling tool.[13,14] A recent study revealed that rational emotive digital storytelling (REDStory) is effective in increasing HIV knowledge and risk perception among students.[4] Similar to REDStory, the EDSI acknowledges that the way people think, feel and behave can make them vulnerable to HIV infection. Hence, effective HIV

interventions should consider the cognitive patterns of individuals. There is also evidence that HIV prevention programs that incorporate cognitive and behavioural skills training are more effective.[4,15] Therefore, the EDSI incorporates cognitive restructuring, re-education and sexual communication to help people alter their erroneous thoughts, emotions and behaviours, and gain the skills to reduce risk behaviours. The EDSI is built on the assumption that Nigerian adolescents are vulnerable to HIV infection owing to their daily patterns of thinking, feeling and behaving. To this end, cognitive restructuring and re-education are required to help adolescents overcome HIV risks. Thus, the objective of this study was to investigate the impact of an EDSI on HIV risk perception and knowledge among Nigerian adolescent college students.

Method

Ethical standards

The study procedure complied with the ethical principles of the American Psychological Association, the Declaration of Helsinki and the Faculty of Education, University of Nigeria, Nsukka. The study protocol was approved by the ethics committee of the Department of Art Education, University of Nigeria. The participants provided written informed consent before the beginning of the program.

Participants

We recruited 98 adolescents who attended a federal science college in Akwa Ibom State, Nigeria. We used G*Power 3.1 software (Heinrich-Heine-Universität Düsseldorf, Germany)[16] to determine the appropriateness of the sample size. The G*Power analysis showed that 98 participants were needed for an effect size of 0.60, an alpha of 0.05 and 0.80 power. The inclusion criteria were having access to social media platforms, availability to attend all the study sessions, and willingness to sign the informed consent form.

Measures

We used the 8-item Perceived Risk of HIV Scale (PRHS) generated by Napper, Fisher and Reynolds.[17] The PRHS had a Cronbach's alpha of 0.77 in the present study, showing good internal reliability. We also used the HIV Knowledge Questionnaire (HIV-KQ-18) designed by Carey and Schroder[18] to measure HIV-related knowledge (Cronbach's alpha was 0.87 for this scale in the present study, indicating good internal reliability). Other details of this instrument have been described previously.[4]

Intervention

In line with a previous study,[4] the EDSI was structured to cover 16 sessions over 8 weeks and featured a rational emotive psychoeducational audio-visual intervention about HIV. The aim of the EDSI was to help adolescent college students learn from and about other people's HIV-related lived experiences to increase their HIV risk perception. Other details of the intervention (contents, techniques, principles, assignments, procedures, meetings and skills) have been described previously.[4] The EDSI was delivered by therapists who were experts in the use of digital storytelling and HIV interventions and who had qualifications in educational technology, psychology, social work and counselling.

Procedure

We used a group randomized controlled trial design procedure involving pre-test, post-test and follow-up. We randomly assigned participants into either a treatment group or a no-treatment control group using

computer-generated random numbers. The participants in the treatment group received the EDSI whereas the participants in the control group received no intervention. Pre-test, post-test and follow-up data for the two groups were collected and subjected to repeated measures analysis of variance by experts. There were 2 months between the pre-test and post-test. Follow-up occurred 2 months after the post-test day. We observed a dropout of 23 participants (15 from the treatment group and 8 from the no-treatment control group), whose data were excluded from the analysis. Both the participants and the data analysts were blinded, as in our previous study.[4,19]

Results

There were 49 participants in the treatment group (23 males, 26 females; mean age $\pm$ standard deviation $= 20.43 \pm 0.89$ years). There were 49 participants in the no-treatment control group (25 males, 24 females; mean age $\pm$ standard deviation $= 21.67 \pm 0.73$ years). The pre-test assessment showed no significant difference between the treatment and no-treatment control groups in perceived risk of HIV and HIV knowledge, $F(1,75) = .074$, $\eta_p^2 = .001$, $\Delta R^2 = .-013$; confidence interval (CI) for the treatment group $= 30.18$ to 32.87; CI for the no-treatment control group $= 30.13$ to 32.44; and $F(1,75) = .126$, $\eta_p^2 = .001$, $\Delta R^2 = .-013$; CI for the treatment group- $= 18.53$ to 19.40; CI for the control group- $= 18.67$ to 19.46. After the EDSI, we observed a significant increase in HIV risk perception and HIV knowledge among adolescents in the treatment group compared with those in the no-treatment control group, $F(1,75) = 717.92$, $P = .000$, $\eta_p^2 = .908$, $\Delta R^2 = .907$; CI for the treatment group $= 11.52$ to 12.82; CI for the control group $= 29.80$ to 32.14 and $F(1,75) = 2972.19$, $P = .000$, $\eta_p^2 = .976$, $\Delta R^2 = .976$; CI for the treatment group $= 48.44$ to 50.72; CI for the control group $= 18.69$ to 19.50. The follow-up assessment showed that adolescents who had participated in the EDSI retained an increased HIV risk perception and HIV knowledge compared with adolescents in the no-treatment control group, $F(1,75) = 809.32$, $P = .000$, $\eta_p^2 = .917$, $\Delta R^2 = .916$; CI for the treatment group $= 9.20$ to 10.79; CI for the control group $= 29.76$ to 32.13 and $F(1,75) = 3048.68$, $P = .000$, $\eta_p^2 = .977$, $\Delta R^2 = .977$; CI for the treatment group $=$ 48.79 to 51.08; CI for the control group $=$ 18.62 to 19.42.

Discussion

This study investigated the impact of an EDSI on HIV risk perception and knowledge among Nigerian adolescent college students. The pre-test measure showed that adolescents had low HIV risk perception and low HIV knowledge, a finding that supports previous study findings.[1–4] The post-test and follow-up measures indicated that the EDSI was effective in increasing HIV risk perception and knowledge among adolescents who received the intervention compared with those in the control group. The findings support previous evidence that HIV prevention programs that incorporate cognitive and behavioural skills training are more effective.[15] Moreover, the current results support recent findings that a REDStory intervention program was effective in increasing schoolchildren's perceived risk of HIV.[4] The findings also support previous evidence that digital storytelling is an essential element in learning new behaviours[11,12] and is a useful creative counselling tool.[13,14]

The study findings indicate that educational technologists, counsellors, psychologists and medical professionals should consider the development and implementation of educational digital storytelling to increase HIV risk perception and

knowledge in different sectors of society. However, it is important that future researchers address the present study limitations of the small sample size, the lack of qualitative data and the limited participant information collected.

Conclusion

The study objective, which was to investigate the impact of an EDSI on HIV risk perception and knowledge among Nigerian adolescent college students, was achieved. We conclude that the EDSI should be used to help increase adolescents' HIV risk perception and knowledge and that further research and policy changes are needed to support the full implementation of the EDSI in different sectors of Nigerian society and in other parts of the world. We therefore call for more studies on the use of the EDSI to increase HIV risk perception and knowledge.

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ORCID iD

Mkpoikanke Sunday Otu https://orcid.org/0000-0002-7251-2561

References

1. Lammers J, van Wijnbergen SJ and Willebrands D. Condom use, risk perception, and HIV knowledge: a comparison across sexes in Nigeria. *HIV AIDS (Auckl)* 2013; 5: 283.
2. Abdulraheem I and Fawole O. Young people's sexual risk behaviors in Nigeria. *J Adolesc Res* 2009; 24: 505–527.
3. Ijadunola KT, Abiona TC, Odu OO, et al. College students in Nigeria underestimate their risk of contracting HIV/AIDS infection. *Eur J Contracept Reprod Health Care* 2007; 12: 131–137.
4. Ezegbe B, Eseadi C, Ede MO, et al. Efficacy of rational emotive digital storytelling intervention on knowledge and risk perception of HIV/AIDS among schoolchildren in Nigeria. *Medicine (Baltimore)* 2018; 97: e12910.
5. Adedimeji AA, Omololu FO and Odutolu O. HIV risk perception and constraints to protective behaviour among young slum dwellers in Ibadan, Nigeria. *J Health Popul Nutr* 2007; 25: 146.
6. Umeh CN, Essien EJ, Ezedinachi EN, et al. Knowledge, beliefs and attitudes about HIV/AIDS-related issues, and the sources of knowledge among health care professionals in southern Nigeria. *J R Soc Promot Health* 2008; 128: 233–239.
7. Tenkorang EY. Myths and misconceptions about HIV transmission in Ghana: what are the drivers? *Cult Health Sex* 2013; 15: 296–310.
8. Bamise O, Bamise C and Adedigba M. Knowledge of HIV/AIDS among secondary school adolescents in Osun state, Nigeria. *Niger J Clin Pract* 2011; 14: 338–344.
9. World Health Organization. *World health statistics 2015*. Geneva: World Health Organization, 2015. Available from: https://apps.who.int/iris/bitstream/handle/10665/170250/9789240694439_eng.pdf?sequence=1, pp.11–25.
10. Smith JA, Sharma M, Levin C, et al. Cost-effectiveness of community-based strategies to strengthen the continuum of HIV care in rural South Africa: a health economic modelling analysis. *Lancet HIV* 2015; 2: e159–e168.
11. Sawyer CB and Willis JM. Introducing digital storytelling to influence the behavior of children and adolescents. *J Creat Ment Health* 2011; 6: 274–283.
12. McClean ST. *Digital storytelling: the narrative power of visual effects in film*. Chicago: MIT Press, 2007, pp.67–69.
13. Bradley LJ, Whiting P, Hendricks B, et al. The use of expressive techniques in counseling. *J Creat Ment Health* 2008; 3: 44–59.

14. Pehrsson DE. Fictive bibliotherapy and therapeutic storytelling with children who hurt. *J Creat Ment Health* 2005; 1: 273–286.
15. Boyer CB and Kegeles SM. AIDS risk and prevention among adolescents. *Soc Sci Med* 1991; 33: 11–23.
16. Faul F, Erdfelder E, Lang AG, et al. G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav Res Methods* 2007; 39: 175–191.
17. Napper LE, Fisher DG and Reynolds GL. Development of the perceived risk of HIV scale. *AIDS Behav* 2012; 16: 1075–1083.
18. Carey MP and Schroder KE. Development and psychometric evaluation of the brief HIV Knowledge Questionnaire. *AIDS Educ Prev* 2002; 14: 172–182.
19. Omeje JC, Otu MS, Aneke AO, et al. Effect of rational emotive health therapy on alcohol use among community-dwelling, HIV-positive patients. *Medicine (Baltimore)* 2018; 97: e11688.