Sexual behavioral abstine HIV/AIDS questionnaire:
Validation study of an Iranian questionnaire

Fatemeh Rahmati Najarkolaei, Shamsaddin Niknami1, Farkhondeh Amin Shokravi1, Sedigheh Sadat Tavafian1, Mohammad Gholami Fesharaki2, Mohammad Reza Jafari3

Health Research Center, Baqiyatallah University of Medical Sciences, 1Department of Health Education, 2Department of Biostatistics, School of Medical Sciences, Tarbiat Modares University, Tehran, 3Department of Psychology, Science and Research Branch, Azad University, Saveh, Iran

ABSTRACT

Background: This study was designed to assess the validity and reliability of the designed sexual, behavioral abstinence, and avoidance of high-risk situation questionnaire (SBAHAQ), with an aim to construct an appropriate development tool in the Iranian population. Materials and Methods: A descriptive–analytic study was conducted among female undergraduate students of Tehran University, who were selected through cluster random sampling. After reviewing the questionnaires and investigating face and content validity, internal consistency of the questionnaire was assessed by Cronbach’s alpha. Explanatory and confirmatory factor analysis was conducted using SPSS and AMOS 16 Software, respectively. Results: The sample consisted of 348 female university students with a mean age of 20.69 ± 1.63 years. The content validity ratio (CVR) coefficient was 0.85 and the reliability of each section of the questionnaire was as follows: Perceived benefit (PB; 0.87), behavioral intention (BI; 0.77), and self-efficacy (SE; 0.85) (Cronbach’s alpha totally was 0.83). Explanatory factor analysis showed three factors, including SE, PB, and BI, with the total variance of 61% and Kaiser–Meyer–Olkin (KMO) index of 88%. These factors were also confirmed by confirmatory factor analysis [adjusted goodness of fitness index (AGFI) = 0.939, root mean square error of approximation (RMSEA) = 0.039]. Conclusion: This study showed the designed questionnaire provided adequate construct validity and reliability, and could be adequately used to measure sexual abstinence and avoidance of high-risk situations among female students.

Key words: HIV, questionnaires, sexual abstinence, sexual behavior

INTRODUCTION

HIV/AIDS has been recognized as one of the most important public health problems in the recent past, especially in Asian countries such as Malaysia, China, Thailand, and Iran. According to the World Health Organization’s (WHO’s) report of HIV, Iran is categorized as one among the countries with gradually accumulating levels of infection.

Preventing HIV infection is one of the top priorities in 2010 to lead a healthy life. Three transmission ways have been identified for the disease: Sexual activity with an infected person, contact with infected blood through sharing injection needles, and mother-to-infant infection. In order to prevent HIV transmission through sexual activities, which accounts for 85% of the disease, the three following options have been recommended: Abstinence, faithfulness, and condom use, among which the first one is the safest.

Due to the lack of global access to AIDS treatment and also based on the fact that HIV/AIDS transmission requires a
behavioral process, behavioral change interventions are the
best approach to prevent the spread of the disease.\cite{9,12}

Since most health problems are closely related to human behavior,
behavioral theories and models can provide insights into finding
ways to prevent health problems such as HIV/AIDS.\cite{11} Most of
the studies conducted have been based on cognitive-behavioral,
health belief models, and theories such as social cognitive
theory (SCT) and theory of reasoned action (TRA).\cite{12}
Considering the results, and in order to increase the efficiency of
the models, a selective mixture of aforementioned theories has
been employed in the present study.

In his survey of AIDS-behavior change theories, Noar (2007)
mentioned 13 theories used in the studies, including belief- and
intervention-based, message-driven, and AIDS-related
theories, and other common hygienic behavior changes.\cite{11}
Some researchers used a questionnaire based on behavior
change theories or models such as motivation-behavioral
skills model (IMB),\cite{14} social cognitive theory (SCT),\cite{15} and
the theory of reasoned action (TRA).\cite{16} Furthermore, the
constructs such as knowledge,\cite{17} attitude,\cite{18} self-efficacy
(SE),\cite{19} behavioral intention (BI),\cite{20} and high-risk sexual
behavior\cite{21} were used in some studies.

Like most Islamic countries, sexual affairs are considered as taboo
in Iran.\cite{22} Therefore, given the cultural differences between
the Western countries and Iran and the sensitive nature of the
disease, the HIV/AIDS behavior change questionnaires derived
from the previous studies conducted in non-Islamic countries
cannot be applied here. Although the validity and reliability of
the questionnaire has been confirmed in a previous study,\cite{23}
this study was conducted only with male students. However,
to our knowledge, no study has been carried out with female
students so far. As females, in comparison with males, are
physiologically more vulnerable to HIV/AIDS, female students
were selected as the target group.\cite{24} Considering the lack of
appropriate tools and questionnaires, the study focused on
designing and validating a culturally suitable sexual abstinence
questionnaire among unmarried Iranian female students.

**MATERIALS AND METHODS**

**Participants and study design**
The study was cross-sectional in design and was conducted
from February to June 2010. The study subjects were
undergraduate female students studying at Tehran University.
The criteria based on which the participants were selected
were as follows: Age range of 15-25 years, single status, living
alone, and residing in Tehran for at least 1 year at the time of
the study. Those with physical disability and those reluctant
to participate in the study were excluded.

For achieving an appropriate score maximum fitness and
predicting the number of students, the participants were
randomly selected from the three areas of humanities,
engineering, and science at the University of Tehran. Then,
the participants were selected through cluster systematic
sampling (with each class as one cluster). For each question,
a minimum of 10 samples were used according to Munro’s
method, and 348 female students were randomly selected
to reach construct validity. Descriptive (mean, standard
deviation, and Cronbach’s alpha) and inductive statistics
(exploratory and confirmatory factor analysis) functions of
SPSS and AMOS ver. 16 were used to analyze the data.\cite{25}

**Instruments**
A self-administered questionnaire was used which comprised
the following four parts: Socio-demographic characteristics,
SE regarding sexual abstinence, perceived benefits (PB)
toward sexual abstinence, and Behavioral intention (BI).
The demographic information included age, residency
region, family income, parents’ education, and previous
knowledge about HIV. There were four SE questions about
individual restraint, avoidance of risky situations, and the
behavioral skills of saying no. These questions were also
designed according to the Iranian standardized general SE
questionnaire.\cite{26} For unifying the results and facilitating
analysis, the questions were designed with five options ranging
from strongly agree to strongly disagree. For each item, a
typical 5-point Likert scale ranging from strongly disagree (1)
to strongly agree (5) was used. The scale of PB consisted of six
items measuring individual and social benefits of abstinance,
risky behavior avoidance, negative answer to risky offers, and
high-risk situation avoidance. Most questions were derived
from the studies of Ghafari\cite{27} and Miller et al.\cite{28} Furthermore,
one question with regard to the features of female students in
the studied society was added to the aforementioned questions.

BI questions consisted of four items based on the dual behavior
theory of Gibbons and Gerrard\cite{29} and a domestic questionnaire
designed by Ghaffari et al. These questions were about the BI of
abstinence, a negative answer to risky advances, and avoidance
of highly risky situations. Also, given the fact that the
participants were young and prone to highly risky situations,
one of the questions required them to give their own opinions
about their willingness to avoid high-risk situations.

**Statistical analysis**
Descriptive statistics, Cronbach’s alpha, and exploratory and
confirmatory factor analysis functions of SPSS and AMOS
ver. 16 were used to analyze the data.

**Ethical issues**
The study was approved by the Ethics Committee of Tehran
University and ethical principles were adhered to throughout
the study. After the researchers explained the purpose and
procedures of the study to the participants, they consented to
participate in the study.

**RESULTS**
In order to determine the face validity, the questionnaire was
distributed to 30 students with similar characteristics. They
were asked to pinpoint the weaknesses and ambiguities of
the questionnaire, comment on its clarity, rationality, brevity,
and appropriateness, and finally, improve it. Content validity ratio (CVR) was applied to assess the extent of experts' comment upon the clarity, rationality, brevity and appropriateness of it. Then, the questionnaire was given to 20 specialists in the fields of health education, nursing, medicine, and psychology to take the experts' ideas into account. Content validity was assessed by each panel member with a 3-item Likert scale (the items were "necessary," "useful but not necessary," and "unnecessary"). In case an item was marked as "unnecessary," the experts' suggestions for modification or elimination were sought.

The CVR equal to 0.80 or above was considered satisfactory. The original questionnaire included 122 items in 11 separate parts. The number of questions was reduced to 50 after measuring the CVR.

**Reliability**

In order to verify the reliability of the questionnaire, Cronbach's alpha score was calculated. Cronbach's alpha or the internal consistency for PB, BI, and SE variables was found to be 0.87, 0.77, and 0.85, respectively. All these values indicate the desirable level of the scales.

In order to determine the construct validity of the questionnaire, exploratory and confirmatory factor analysis was used. One way of investigating construct validity is by running a factor analysis for identifying clusters of questions related to the instruments. This method helps the researcher to determine whether the available tool measures one construct or several ones.\[^1\]

The exploratory factor analysis using principal components analysis with varimax rotation was used to determine compliance and naming of the extracted factors. Using all observations (N = 348), the factor analysis helped in identifying three decisive factors with a variance greater than 61% and 88% of Kaiser–Meyer–Olkin (KMO), both of which are appropriate indicators of factor analysis. After inserting three retention factors in the orthogonal varimax rotation, each of the factors was given a name and estimated using the probability method. Based on the loadings, and also the content of questions, the three factors were identified as SE, BI, and PB, respectively. Table 1 summarizes the data and loading factors. As presented in the chart, only the first three values have Eigen values more than one.\[^2]\] Six PB questions were omitted, and four SE and four BI questions were used in the model; at the final stage and after determining factor analysis, one SE question was deleted.

After running exploratory factor analysis, in order to confirm the supposed factor structure of the measure as well as the contribution of each question in measuring the components of self-efficacy, BI and PB were analyzed using Amos Software. Table 1 shows the most important parameters of the measuring components of the questionnaire. The most important fitness statistics is the Chi-square statistic. This shows the disparity between the observed and predicted measures (matrices). The insignificance of the statistics indicated the model's fitness with the data, but the pitfall of the statistics is that it is sensitive to the sample size, which means that with larger sample sizes, the possibility of the statistics being insignificant t decreases. Values less than 0.05 for the index root mean square error of approximation (RMSEA), values above 0.9 for goodness of fitness index (GFI), and adjusted goodness of fitness index (AGFI) were used as the criteria for model compliance with the observed data [Table 3].\[^30\]

As it was stated, the model's of the goodness of fitness indexes are all acceptable. Therefore, the confirmatory factor analysis also approved the construct validity of the questionnaire [Figure 1].

**Demographic information**

On the whole, 348 female students participated in the study. The mean age of the participants was 20.69 ± 1.63 years. Relevant demographic information is presented in Table 2.

The average of CVR for the entire questionnaire was 0.85. The CVR for the subscales of PB, BI, and SE was calculated to be 0.83, 0.84, and 0.89, respectively. The time needed for completing the questionnaire was about 6 min.

**DISCUSSION**

Considering that there is lack of valid and reliable questionnaire on the behavioral changes of HIV/AIDS among Iranian females, we aimed to design an appropriate abstinence questionnaire and determine its validity and reliability.

Islamic religious beliefs play an important role in people's attitude to the disease.\[^31\] This point has been taken into account to a lesser extent in the questionnaires developed in the Western countries. For example, some Iranians believe that avoiding unsafe sexual encounters would give them better chances of getting married in the future.

Other studies on the validity and reliability of domestic questionnaires have mainly investigated the knowledge of...
people and their behaviors and attitudes toward HIV, and reported the reliability of the scales.\textsuperscript{32,34} For instance, in a study by Khatoon et al., face-to-face web-based training was employed to verify the content validity of nurses’ knowledge questionnaire by the experts, and also, the reliability of the questionnaire was confirmed through test–retest (0.9).\textsuperscript{135} Furthermore, the Cronbach’s alpha for the HIV/AIDS knowledge and attitude questionnaire developed by DiClemente et al. was reported to be 0.72.\textsuperscript{136} In the study conducted by Nije-Carr on HIV/AIDS Knowledge, Attitudes, and Beliefs Patient Questionnaire (HAKABPQ), the internal consistency of the questions was shown to be higher than 0.7.\textsuperscript{137} Also, the internal consistency of HIV-related knowledge, attitudes, and sexual risk-taking behaviors was reported to be 0.073 in the study by Ugarte et al.\textsuperscript{138} In the study of Koopman et al. (1990), both the knowledge and belief instruments were indicated to have a high internal consistency, test–retest reliability, and successfully avoided ceiling effects.\textsuperscript{139}

The highest reported figure was 0.96 for the validity of St Andrews Sexual Knowledge and Attitudes Instrument (SASKAI), which was conducted among female employees by Khatoni et al.\textsuperscript{132} Of course, the high internal consistency is a result of high level of similarity among the questions. In the study of Hughes and Admiraal entitled “Systematic review of HIV/AIDS knowledge measures,” the results showed low reliability and a validity rate of HIV knowledge questionnaire. In general, the measuring instruments of knowledge, attitudes, and beliefs about HIV do not have a high level of internal consistency and have rarely been tested by factor analysis.\textsuperscript{141}

Lux and Petoza designed a questionnaire based on which the Cronbach's alpha was estimated to be 0.64 and 0.79 for healthy sexual BI and SE of sexual discussion, respectively.\textsuperscript{42} In another study conducted by Mahoney Thombs and Ford, the Cronbach’s alpha SE subscale for using condoms was reported to be 0.91. Thus, all these questionnaires show their eligibility for application in related studies.\textsuperscript{43} The scale of Mukoma et al.,\textsuperscript{44} which was applied to evaluate school-based HIV/AIDS intervention in South African courtiers and Tanzania, reported a Cronbach’s alpha of higher than 0.5. Regarding sexual behaviors, the Cronbach’s alpha was lower than 0.5, based on which the author verified the utility of the scales. In a similar study conducted by Ghafari et al.,\textsuperscript{133} the alpha values for a 10-scale instrument about HIV/AIDS prevention were 0.69, 0.78, and 0.74 for SE, PB, and BI, respectively, which were lower than those of the present instrument.\textsuperscript{45}

It is worth noting that the alpha values between 0.8 and 0.9 show a high internal consistency and the alpha values of 0.7 and higher present a good internal stability.\textsuperscript{166,47} In the present study, the Cronbach’s alpha was between 0.77 and 0.87, indicating a good internal correlation of the instrument. Also, the reliability coefficient of the scale was approximately 0.85, which is satisfactory when seen in the light of the studies listed. There were three main measures of sexual behaviors: Abstinence, number of sexual partners, and condom use, which

### Table 1: The results of the exploratory factor analysis with varimax rotation

| Extracted factors                                                                 | SE     | BI     | PB     |
|----------------------------------------------------------------------------------|--------|--------|--------|
| Q1SE=I can abstain before marriage                                                | 0.609  |        |        |
| Q2SE=I can avoid any risky behavior even if it is easily accessible               | 0.759  |        |        |
| Q3SE=I can easily avoid any situation which puts me in a high-risk behaviors      | 0.751  |        |        |
| Q4SE=I am able to say “no” to any dangerous suggestion offered by my friends or other people | -0.611 |        |        |
| Q1BI=I decide not to have any sexual behaviors before getting married             | 0.751  |        |        |
| Q2BI=I decide to say NO to any future suggestions which are probable to provide me with HIV/AIDS, whether offered by my friends or any other person | 0.662  |        |        |
| Q3BI=I decide to avoid being in a dangerous situation in the future              | 0.634  |        |        |
| Q4BI=Suppose the following case: You are in a party in which most of your friends are doing risky behaviors. A close friend offers you to do a risky thing, what would you do? 1. I’d agree 2. My approval depends on the situation 3. I’d say “no, thanks” 4. I’d leave the party | 0.728  |        |        |
| Q1PB=Sexual abstinence keeps me from being infected with HIV/AIDS and other venereal diseases | 0.589  |        |        |
| Q2PB=Sexual abstinence before marriage saves me from God’s punishment            | 0.688  |        |        |
| Q3PB=Sexual abstinence before marriage earns me a respectful reputation in the community known as virtuous and religious-conscious | 0.801  |        |        |
| Q4PB=Refusing dangerous suggestions increases my self-confidence                 | 0.816  |        |        |
| Q5PB=Refusing dangerous suggestions provides me with peace of mind and success in my education | 0.782  |        |        |
| QPB6=Standing far from dangerous situation brings me better chances of marriage in the future | 0.696  |        |        |

The values less than 0.3 are not shown, SE = Self-efficacy, PB = Perceived benefits, BI = Behavioral intention
This study have showed that the sexual behavioral abstinence, and avoidance of high-risk situation questionnaire (SBAHAQ) questionnaire can be used as a valid and reliable tool to measure abstinence and avoidance of high-risk situations regarding HIV/AIDS infection. However, it is recommended to test the validity of the tool in various communities such as students, scholars, etc.

ACKNOWLEDGMENT

We are grateful to Ms Marjan Sheikhi for translating and proofreading the article.

REFERENCES

1. Acaroglu R. Knowledge and attitudes of mariners about AIDS in Turkey. J Assoc Nurses AIDS Care 2007;18:48-55.
2. Umeh CN, Essien EJ, Ezedinachi EN, Ross MW. 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;128:233-9.
3. Wong LP, Chin CK, Low WY, Jaafar N. HIV/AIDS-Related Knowledge Among Malaysian Young Adults: Findings From a Nationwide Survey. J Int AIDS Soc 2008;10:148.
4. Jia Y, Lu F, Sun X, Vermund SH. Sources of data for improved surveillance of HIV/AIDS in China. Southeast Asian J Trop Med Public Health 2007;38:1041-52.
5. Youngkong S, Baltussen R, Tantives S, Koolman X, Teerawattananon Y. Criteria for priority setting of HIV/AIDS interventions in Thailand: A discrete choice experiment. BMC Health Serv Res 2010;10:197.
6. Cheemeh PE, Montoya ID, Essien EJ, Ogunbade GO. HIV/AIDS in the Middle East: A guide to a proactive response. J R Soc Promot Health 2006;126:165-71.
7. Archibald C. Knowledge and attitudes toward HIV/AIDS and risky sexual behaviors among Caribbean African American female adolescents. J Assoc Nurses AIDS Care 2007;18:64-72.
8. Zaitzow BH. Women prisoners and HIV/AIDS. J Assoc Nurses AIDS Care 1999;10:78-89.
9. Boyer CB, Barrett DC, Peterman TA, Bolan G. Sexually transmitted disease and HIV risk in heterosexual adults attending a public STD clinic: Evaluation of a randomized controlled behavioral risk-reduction intervention trial. AIDS 1997;11:359-67.
10. Lee TS, Fu LA, Fleming P. Using focus groups to investigate the educational needs of female injecting heroin users in Taiwan in relation to HIV/AIDS prevention. Health Educ Res 2006;21:55-65.
11. Sefa M, Marta M. Designing effective interventions: Using science and experience in HIV. Newton: Connecticut HIV Evaluation Bank, 2001.
12. Basen-Engquist K, Coyle KK, Parcel GS, Kirby D, Banspach SW, Carvajal SC, et al. Schoolwide effects of a multicomponent HIV, STD, and pregnancy prevention program for high school students. Health Educ Behav 2001;28:166-85.
13. Noar SM. An interventionist’s guide to AIDS behavioral theories. AIDS Care 2007;19:392-402.
14. Fisher JD, Fisher WA, Bryan AD, Misovich SJ. Information-motivation-behavioral skills model-based HIV risk behavior change intervention for inner-city high school youth. Health Psychol 2002;21:177-86.
15. Heeren GA, Jemmott JB, Ngwane Z, Mandeya A, Tyler JC. A Randomized controlled pilot study of an hiv risk-reduction intervention for Sub-Saharan African University Students. AIDS Behav 2013;17:1105-15.
16. Randolph ME, Pinkerton SD, Somlai AM, Kelly JA, McAuliffe TL,
Gibson RH, et al. Seriously mentally ill women’s safer sex behaviors and the theory of reasoned action. Health Educ Behav 2009;36:948-58.

17. Carey MP, Schroder KE. Development and psychometric evaluation of the brief HIV Knowledge Questionnaire. AIDS Educ Prev 2002;14:172-82.

18. Donenberg GR, Schwartz RM, Emerson E, Wilson HW, Bryant FB, Coleman G. Applying a cognitive-behavioral model of HIV risk to youths in psychiatric care. AIDS Educ Prev 2005;17:200-16.

19. Cecil H, Pinkerton SD. Reliability and validity of a self-efficacy instrument for protective sexual behaviors. J Am Coll Health 1998;47:113-21.

20. Carey MP, Maisto SA, Kalichman SC, Forsyth AD, Wright EM, Johnson BT. Enhancing motivation to reduce the risk of HIV infection for economically disadvantaged urban women. J Consult Clin Psychol 1997;65:531-41.

21. Robertson A, Levin ML. AIDS knowledge, condom attitudes, and risk-taking sexual behavior of substance-abusing Juvenile offenders on probation or parole. AIDS Educ Prev 1999;11:450-61.

22. Wong LP, Chin CK, Low WY, Jafar N. HIV/AIDS-related knowledge among Malaysian young adults: Findings from a nationwide survey. J Int AIDS Soc 2008;10:148.

23. Mohtasham G, Shamsaddin G, Bazargan M, Anosherravan K, Eshaghi M, Fazlollahi G. Correlates of the intention to remain sexually inactive among male adolescents in an Islamic country: Case of the Republic of Iran. J Sch Health 2009;79:123-9.

24. Sales JM, Spitaknich J, Milhausen RR, Wingood GM, DiClemente RJ, Salazar LF, et al. Validation of the worry about sexual outcomes scale for use in STI/HIV prevention interventions for adolescent females. Health Educ Res 2009;24:140-52.

25. Munro BH. Statistical methods for health care research 5th ed. Canada: Pearson Prentice Hall; 2008.

26. Nezami E, Schwartzer R, Jerusalem M. Persian Adoption (Farsi) of the prototype willingness model. Dev Rev 2008;28:29‑61.

27. Miller BC, Norton MC, Fan X, Christopherson CR, Prubert Development, Parental Communication, and Sexual Values in Relation to Adolescent Sexual Behaviors. J Early Adolesc 1998;18:27‑52.

28. Gerrard M, Gibbons FX, Houlihan AE, Stock ML, Pomery EA. A dual-process approach to health risk decision making: The effectiveness of web-based and face-to-face continuing education methods on nurses’ knowledge about AIDS: A comparative study. BMC Med Educ 2009;9:41.

29. DiClemente RJ, Zorn J, Temoshok L. Adolescents and AIDS: A survey of knowledge, attitudes and beliefs about AIDS in San Francisco. Am J Public Health 1986;76:1443-5.

30. Njie-Carr VP. Knowledge, attitudes, cultural, social and spiritual beliefs on healthseeking behaviors of Gambian adults with HIV/ AIDS. Int J Cult Ment Health 2009;2:118-28.

31. Ugarte WJ, Hogberg U, Valladares E, Essen B. Assessing knowledge, attitudes, and behaviors related to HIV and AIDS in Nicaragua: A community-level perspective. Sex Reprod Health 2013;4:37-44.

32. Koopman C, Rotherman-Borus MJ, Henderson R, Bradley JS, Hunter J. Assessment of knowledge of AIDS and beliefs about AIDS prevention among adolescents. AIDS Educ Prev 1990;2:58-69.

33. Long CG, Krawczyk KM, Kenworthy NE. Assessing the sexual knowledge of women in secure settings: The development of a new screening measure. Br J Learn Disabil 2013;41:51-65.

34. Hughes AK, Admiraal KR. A Systematic Review of HIV/AIDS Knowledge Measures. Res Soc Work Pract 2012;22:313-22.

35. Lux KM, Petosa R. Preventing HIV Infection Among Juvenile Delinquents: Educational Diagnosis Using the Health Belief Model. Int Q Community Health Educ 1994;15:145-64.

36. Mahoney CA, Thombs DL, Ford OJ. Health belief and self-efficacy models: Their utility in explaining college student condom use. AIDS Educ Prev 1996;7:32-49.

37. Mukoma W, Flisher AJ, Helleve A, Aaro LE, Mathews C, Kaaya S, et al. Development and test-retest reliability of a research instrument designed to evaluate school-based HIV/AIDS interventions in South Africa and Tanzania. Scand J Public Health 2009;37(Suppl 2):7-15.

38. Ghafari M, Niknami S, Kazemnejad A, Mirzai E, Ghofranipour F. Desining validity and reliability of 10 Conceptual scales to Prevent HIV among Adolescents. Behboud 2008;11:38-50.

39. Du Y, Kou J, Coghill D. The validity, reliability and normative scores of the parent, teacher and self report versions of the Strengths and Difficulties Questionnaire in China. Child Adolesc Psychiatry Ment Health 2008;2:8.

40. Rosen L, Zucker D, Brody D, Engelhard D, Manor O. The effect of a handwashing intervention on preschool educator beliefs, attitudes, knowledge and self-efficacy. Health Educ Res 2009;24:686-98.

41. Musimenta A. A Controlled Pre-Post Evaluation of a Computer-based HIV/AIDS Education on Students’ Sexual Behaviors, Knowledge and Attitudes. Online J Public Health Inform 2012;4(1):pii: ojphi.v4i1.4017. doi: 10.5210/ojphi.v4i1.4017. Epub 2012 May 17.

42. Esfahri B, Aal RT, Delli CA, Afsar P, Millson PM, Kamali M, et al. Preventing HIV transmission among Iranian prisoners: Initial support for providing education on the benefits of harm reduction practices. Harm Reduct J 2008;5:21.

43. Olijra L, Berhane Y, Worku A. Assessment of comprehensive HIV/AIDS knowledge level among in-school adolescents in eastern Ethiopia. J Int AIDS Soc 2013;16:17349.

44. Gelibo T, Belachew T, Tilahun T. Predictors of sexual abstinence among Wolaita Sodo University Students, South Ethiopia. Reprod Health 2013;10:18.