

Development and validation of psychometric properties of a questionnaire for sexual health literacy related to HIV/AIDS and sexually transmitted diseases among Iranian young men

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Abstract

Introduction: Worldwide, sexually transmitted diseases and acquired immunodeficiency syndrome (AIDS) are major health issues. Sexual health literacy refers to a range of sexual health literacy that encompasses a variety of areas, including gender and sexual development, puberty, pregnancy, contraceptive methods, unwanted pregnancy, and sexually transmitted diseases. The evaluation of sexual health literacy needs an appropriate tool. The aim of this study was to develop and evaluate psychometric properties of an instrument to measure sexual health literacy related to AIDS and sexually transmitted diseases among young Iranian men between the ages of 19 to 29 years old.

Material and methods: This study was carried in out two phases in Tehran during 2018-2019. In the first phase, a questionnaire was developed by item generation through an expert panel and literature review. In the second part, an assessment of psychometric properties of questionnaire, including face and content validity, was performed. Reliability of questionnaire was assessed using internal consistency (Cronbach's α) and interclass correlation coefficient (ICC).

Results: The content validity indices (CVI and CVR) for all items were 0.89 and 0.87, respectively. The designed tool showed a high internal consistency reliability, with Cronbach's α ranging from 0.79 to 0.87 and ICC ranging from 0.79 to 0.87.

Conclusions: The psychometric assessment of the 30-item questionnaire indicates desirable validity and reliability. This questionnaire is recommended for assessing the level of sexual health literacy of young men in future studies.

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Introduction

Sexual health literacy (SHL) has been defined as a set of knowledge, attitudes, behaviors, personal motivations, and abilities to access, understand, evaluate, and use sexual health information [1]. This concept also refers to areas, including gender, sexual development, puberty, pregnancy, contraception methods, unwanted pregnancy, sexually transmitted diseases (STDs), sex management skills, such as negotiating on quality of sexual relationships, sexual orientation, and performance, along with positive and romantic aspects of sex [2]. Sexual health status in young individuals (aged, 19-29) is currently a worldwide concern, especially in low-income countries [3]. This age group is at a greater risk for unsafe abortions, young maternal mortality, violence, and STDs, e.g., human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) as well as social consequences, such as school expulsion and poverty [4].

Among factors contributing to prevention of sexual health problems in adolescents and young people, is their capacity to make informed decisions based on correct knowledge with regard to their sexual health conditions [5]. It should be noted that sexual health is an essential component of physical and mental health, and even one of the main aspects of personal health affecting individuals of all ages [6]. Knowledge in this respect is not sufficient; however, social skills and competencies to promote and maintain healthy life are of utmost importance. These competencies together are defined as the “health literacy” [7], which has turned into a significant issue of public health in recent years [8]. The concept of health literacy also speaks about individuals’ knowledge and skills to deal with health problems and illnesses in a successful manner [8]. Recently, the European Health Literacy Project (HLS-EU) has further provided a more comprehensive definition of health literacy, suggesting four key factors, including ability to access, understand, appraise, and apply health information to make decisions in everyday life in three main areas of disease prevention, healthcare, and health promotion [9].

For example, the results of a previous study in this field revealed that most adolescents were suffering from inadequate sexual and reproductive health literacy [10]. Moreover, other investigations indicated a high prevalence rate of complications related to sexual health among Iranian youth population, including unwanted pregnancies (30.6%) [11] and high-risk sexual behaviors (34%), along with subsequent susceptibility to STDs [12] due to inadequate sexual and reproductive health literacy. The results of numerous surveys in the related literature correspondingly revealed that Iranian society often had poor and inaccurate information on sexual and reproductive health [13], and 85% of Iranian adolescents had limited sexual and reproductive health literacy [14]. A study also reflected on knowledge and attitudes related to sexual and reproductive health, in which both male and female subjects obtained low scores on sexual awareness of genital anatomy, STDs as well as contraception methods. Moreover, majority of participants demonstrated

their positive attitudes towards attending pre-marital sex education programs [15].

Further, another study reported that people with sufficient SHL could enhance their abilities to understand and evaluate sexual health risks, delay their first sex experiences, have a safe sex experience, decrease unwanted pregnancies and STDs, improve sexual and reproductive health, and ultimately, boost health conditions in their family and community [16, 17]. However, several studies established that low levels of SHL could be associated with less use of condoms, probability of experiencing an increase in unprotected sex, and high-risks of unwanted pregnancies, especially in young people [18, 19]. Little attention had been consistently given to gender, and very few surveys explored male SHL. Studies on men’s knowledge and awareness of health further proposed that health literacy in this gender group could be directly related to their help-seeking and adoption of protective behaviors [20]. Therefore, only little focus was laid on the relationship between men’s health literacy and health outcomes [21].

Accordingly, one of the main public health problems is men’s sexual and reproductive health in many countries [22, 23]. A study in this field suggested that despite the significance of conditions, such as HIV/AIDS, Iranian men could be the most important counterparts in prevention of HIV/AIDS and STDs [24]. A low level of men’s referrals to healthcare facilities and stigmatization of reporting STDs in a society due to sociocultural concerns could also call for designation of strategies for improving men’s healthcare conditions. In addition, men’s health knowledge could be assessed with consideration of cultural, contextual, and socioeconomic issues [25].

Most researchers agree that health literacy is context-specific, so different settings may need a variety of assessment tools. Despite many studies on development and evaluation of instruments used for measuring health literacy in different populations [26-28], a review of literature showed that the most developed tools were concentrated on sexual knowledge, high-risk sexual behaviors, health literacy in adults, and sexual attitudes [29, 30]. Therefore, development of specific tools targeting SHL in young men remain unfledged.

In other words, since SHL is context-based and it is influenced by socio-cultural factors, developing a specific instrument to assess the levels of SHL in young individuals is necessary. Therefore, the main purpose of this study was to develop and validate a questionnaire to measure the levels of SHL related to HIV/AIDS and STDs among Iranian young men.

Material and methods

The present study was conducted to develop a questionnaire for assessing the levels of SHL related to HIV/AIDS and STDs among young men in the city of Tehran, Iran, in 2018-2019. This study was performed in two phases: designing a questionnaire and evaluating its psychometric proper-

ties. In the first phase, the questionnaire items were generated, and the main draft was developed; in the second phase, the psychometric properties (i.e., validity and reliability) of the questionnaire for SHL related to HIV/AIDS and STDs in Iranian young men aged 19-29 years old were evaluated.

Methods

Phase 1: Item generation and questionnaire development

In order to design the questionnaire items, the literature and available tools in this field were reviewed. The reason for choosing the given approach at this stage of the study was that there had been considerable research studies in the field of sexual health in Iran, especially in recent years. Therefore, the research team explored Persian, namely, *IranDoc*, *Scientific Information Database: SID*, *Magiran*, and English, i.e., *Scopus*, *PubMed*, *MEDLINE*, and *Science Direct* databases, using the key terms, including 'Health Literacy', 'SHL', 'Sexual Health', 'Men's Health', 'STDs', and 'AIDS'.

All the relevant documents on the subject matter were accordingly investigated with no time constraints and if the full texts were available. After reviewing context-based manuscripts, the scientific documents related to SHL published between 2000 and 2018 across the world were reviewed.

In defining the domains of the given questionnaire, the Iranian health literacy questionnaire (IHLQ) developed by Montazeri was used [31], which was then changed after measuring its content validity. Finally, a 45-item pool was generated by a relatively comprehensive investigation. Each item was subsequently rated on a five-point Likert-type scale (from 'always' to 'not at all'), in which higher scores represented a higher health literacy about HIV/AIDS and STDs. Reverse scoring was further carried out for negative statements. Likewise, the 45-item version of the questionnaire developed for evaluating its psychometric properties was included in the second phase of the present study.

Phase 2: Psychometric evaluation – validity and reliability

Validity

Face Validity. Face validity was assessed through a qualitative method. Accordingly, 15 Iranian young men, aged between 19 and 29 years, were requested to complete the questionnaire and to express their opinions about its appearance, clarity, and simplicity. Consequently, the participants stated that they had no problems with its readability and understanding.

Content validity. Two approaches (viz., quantitative and qualitative) were utilized to assess the content validity of the given questionnaire. In the quantitative phase, two indicators of content validity assessment, i.e., content validity ratio (CVR) and content validity index (CVI) were measured.

First, a panel of experts including 10 investigators evaluated the content validity of the questionnaire to assess CVR. These experts specialized in reproductive and sexual health ($n = 4$), health education and promotion ($n = 2$), obstetrician and gynecology ($n = 2$), and psychiatry ($n = 2$).

The necessity of the items was further evaluated according to a three-point scale (i.e., 'not necessary', 'useful but not necessary', and 'necessary'). After being assessed by the experts, the CVR was calculated for each item. According to Lawshe's table, items with $CVR > 0.62$ (based on 10 experts' evaluation) were kept and considered as significant items [32].

A method developed by Waltz and Bausell was further employed to assess CVI [33] based on three criteria, including relevancy, simplicity, and clarity. Each item of the questionnaire was accordingly evaluated using a four-point Likert-type scale from 1 = irrelevant, not simple, and not clear to 4 = totally relevant, very simple, and very clear. Furthermore, the items were accepted only if their CVI score was greater than 0.79. The experts also evaluated grammar, wording, item allocation, scaling, and any needed modifications, eliminations, or additions to the questionnaire [37]. Every point was additionally reviewed and revised based on the experts' opinion.

Reliability

To measure internal consistency of the given questionnaire, Cronbach's α coefficients were calculated. Accordingly, test-retest reliability was used to assess the stability of the questionnaire by estimating and interpreting the intra-class correlation coefficient (ICC) [24]. For this purpose, a total number of 30 participants completed the questionnaire twice within two-week intervals. Then, the scores of both stages were compared and ICC values ≥ 0.8 were considered satisfactory [24].

Ethical considerations

This study was a part of research project approved by the Ethics Committee of Baqiyatallah University of Medical Sciences, Tehran, Iran (code No., IR.BMSU.REC.1398.202).

The participants also were informed that involvement in the study was voluntary and anonymous. Similarly, an informed written consent with general conditions of the study and its applications was obtained from every participant and all were assured about the privacy and confidentiality of their information and comments.

Statistical analysis

The IBM SPSS Statistics software (Statistical Package for the Social Sciences, version 16.0, SPSS Inc., Chicago, Illinois, USA) was used for calculating the correlation coefficient and frequencies of baseline characteristics of the study participants.

Table 1. Results of content validity (CVR and CVI) of the sexual health literacy related to AIDS and sexually transmitted infections questionnaire

No.	Items	CVI	CVR
Reading skills			
1	It is easy for me to read educational materials (books, booklets, brochures, educational and promotional booklets) about sexually transmitted diseases	1.00	0.87
2	It is easy for me to read educational materials (books, booklets, brochures, educational and promotional brochures) about HIV/AIDS	1.00	0.87
3	When I have a sexual problem and refer to the counselors, it is easy for me to read written worksheets entries (such as before performing lab tests, pelvic, urine-genitalia exams, or ultrasound)	0.80	0.87
4	I can easily read information about sexually transmitted diseases and AIDS from various sources	0.87	0.86
5	It is easy for me to read educational material related to healthy sexual relationship	0.80	1.00
6	If I have a sexual problem and refer to the counselors, it is easy for me to read the written instructions about my problem	0.87	0.73
Health information access			
7	I can access information about sexually transmitted diseases from different sources	1.00	0.87
8	I can access information about HIV/AIDS from different sources	1.00	1.00
9	I can obtain information about unhealthy sexual relationships from various sources	0.80	0.73
10	I can obtain information about safe sexual relationships in youth from various sources	0.87	0.87
11	I can obtain information about sexually transmitted diseases and AIDS protection and prevention methods	0.87	1.00
12	In case of getting a sexually transmitted disease, I can get information about my disease	1.00	0.86
Understanding/comprehension skills			
13	I understand the concept of the material on how to prevent and treat AIDS	0.93	1.00
14	I understand the concept of the material on how to prevent and treat sexually transmitted diseases	0.87	0.87
15	I understand the recommendations of specialists related to sexually transmitted diseases and HIV/AIDS	1.00	0.86
16	In case of getting a sexually transmitted disease, I can understand the drug usage amount prescribed on the package	1.00	1.00
17	I understand dangers and risks of unprotected sex	0.87	0.86
18	I can understand information and warnings in the media (radio, television, and Internet) about substance use or high-risk behaviors	0.93	1.00
Evaluation skills			
19	I can evaluate the accuracy of recommendations offered by friends and peers on AIDS and sexually transmitted diseases	1.00	0.87
20	I can evaluate the accuracy of information provided by television, radio, Internet, and satellite networks about sexual health	0.93	0.87
21	I can transfer learned information about sexual health to others accurately	1.00	1.00
Behavior/decision-making skills			
22	When I have a sexual problem or illness, I know how to refer to	1.00	1.00
23	If I have any questions about AIDS or sexually transmitted diseases, I will ask the experts at counseling centers	1.00	1.00
24	I avoid harming my body with unhealthy actions (like tattoos) or drug use (e.g., smoking, tobacco, alcohol, drug abuse, and stimulants)	0.80	0.87
25	In every situation, I take care my sexual health	0.80	0.87
26	I avoid having unsafe sex	0.87	0.87

Table 1. Cont.

No.	Items	CVI	CVR
27	If I have sexual problems, I will try to solve them	1.00	1.00
28	I use the information I get from various sources about sexual health	1.00	1.00
Sources of sexual health information and knowledge			
29	How important is it for you to find information about sexual health?	0.93	0.86
30	Which of the following sources is your preference for sexual health information?	0.80	0.87

Table 2. Reliability of the sexual health literacy related to AIDS and sexually transmitted infections questionnaire

Factors	Internal consistency	Test-retest
Reading skills	0.85	0.76
Health information access	0.87	0.74
Understanding/comprehension skills	0.79	0.75
Evaluation skills	0.79	0.84
Behavior/decision-making skills	0.85	0.73
Sources of sexual health information and knowledge	0.85	0.74
Total	0.84	0.74

Results

Validity

Regarding qualitative face validity, the length of the questionnaire and its tabulated form were reviewed by 15 participants.

Face validity

With respect to qualitative face validity, eight items were reworded, and nine cases were modified.

Content validity

Considering quantitative content validity, based on CVI and CVR less than 0.79 and 0.62, several items were omitted. The overall CVR score of the questionnaire was 0.87. A total number of seven items with CVR < 0.62 were accordingly removed, so the number of items decreased from 45 to 38 cases.

The total CVI of the questionnaire was 0.89. The CVIs obtained for all domains of the questionnaire were as follows: background variables = 0.79, reading skills = 0.82, understanding/ comprehension skills = 0.90, evaluation = 0.82, behavior/ decision-making skills = 1.00, health information access = 1, and sources of sexual health information and knowledge = 0.87. Nine items based on CVI < 0.79 were also excluded in this stage, and consequently, the number of items reduced to 30 items. The CVR and CVI of the re-

mained items were between 0.62-1 and 0.79-1, respectively (Table 1).

Reliability

In total, 30 men aged 19-29 years old participated in the test-retest phase. The mean age of the participants was 22.5 (standard deviation: SD = 5.8) years. Majority of the participants were students (76.3%) and the highest level of education in 38.4% of the cases was a university degree.

Table 2 shows ICCs for all domains separately as well as for the whole questionnaire. The overall ICC was equal to 0.74. All domains of the developed questionnaire correspondingly showed acceptable reliability (ICC > 0.70). The internal consistency was further evaluated, using Cronbach's α coefficient, which was 0.84. Cronbach's α values obtained for all the sub-scales ranged from 0.79-0.87 (Table 2).

Discussion

The results of this study demonstrated that the developed context-specific questionnaire to assess SHL related to HIV/AIDS and STDs in young men was a valid and reliable tool in Iranian socio-cultural context. Cronbach's α coefficient for all domains of the instrument was above 0.79, and the results indicated that face validity and content validity of the questionnaire were favorable.

A review of the literature on the subject-matter also indicated lack of tools for measuring SHL related to HIV/AIDS and STDs among young men (aged, 19-29 years), considering the socio-cultural context of Iran. In this respect, in a study by Mousavi *et al.* using behavioral change theories to design a domestic tool for evaluation of reproductive health in Iranian young men, the reliability of questionnaire was reported at a moderate level in some domains, such as HIV/AIDS and STDs [34].

In a Persian version of sexual and reproductive health needs assessment questionnaire for Iranian young men, low reliability coefficient in STDs was further shown [35], so there was a need to design a tool that would independently measure HIV/AIDS and STDs, showing high reliability in Iranian society.

The only tools available for sexual and reproductive health, appropriate for the cultural context in Iran, was the sexual health literacy for adults (SHELA) questionnaire, in which HIV/AIDS and STDs were ignored, and there were

even a limited number of items in this regard, referring briefly to this domain [29]. Therefore, the recently developed instrument in the present study was of particular importance since it focused on HIV/AIDS and STDs related to sexual health, while few tools available in the literature on SHL had merely reflected on high-risk behaviors, sexual knowledge, and sexual attitudes [30, 36]. Moreover, no tool measuring health literacy with regard to HIV/AIDS and STDs was found.

One of the advantages of this instrument was its design for men, as the most important counterparts in prevention of HIV/AIDS and STDs [24]. It is of note that about 90% of people infected with HIV/AIDS in Iran are men, and STDs are more likely to be transmitted from men to women under the same conditions. Therefore, the risk of women getting the virus through sexual intercourse is at least twice that of men [37]. Although men are a significant part of Iran's population and have a leading role in both society and family, they have been largely ignored, while their sexual and reproductive health has persisted as one of the most unexplored issues of health in this country. Studies conducted in this respect have confirmed that men have requirements regarding sexual and reproductive health, and its sub-categories, such as HIV/AIDS and STDs, which have been so far overlooked [38]. Moreover, promotion of men's sexual and reproductive health, which has been highly ignored, is a key stone to enhancing their health, thereby promoting healthier lifestyles, preventing HIV/AIDS and STDs as well as reducing unwanted pregnancies and unsafe abortions.

The literature regarding men's healthcare could further contribute to strategizing on how to reduce prevalence rates of HIV/AIDS and STDs. Also, it is important to note that these documents were collected considering socio-cultural aspects [24].

The recently developed instrument consisted of five domains, including reading, understanding, evaluation, decision-making, and access, covering four dimensions of access, understanding, evaluation, and use of sexual health information based on definitions of SHL [39].

Gilbert and the World Health Organization (WHO) had also identified a good level of SHL as an effective factor in enhancing one's ability to analyze, judge, discourse, make decisions, and change sexual behaviors contributing to empowerment, maintenance, and promotion of sexual health [39, 40]. These dimensions were in accordance with the ones developed in the present questionnaire.

In a questionnaire introduced by Maasoumi *et al.*, SHL aspects of access, reading, understanding, analysis, evaluation, and use of information were stated in a similar way to that in the present instrument, except that reading and understanding were considered as a factor [29]. In this developed instrument, reading was taken into account separately as one of the SHL dimensions, emphasized in other studies because of its importance in explaining this concept. Therefore, reading is the first step to the later ones, such as understanding, judging, and decision-making, and it is a separate item consisting of six parts developed in a way that they can increase the validity of the instrument.

The questionnaire on SHL developed by Maasoumi was also designed with a larger number of items, encompassing general aspects, such as prevention and treatment of STDs, and sex education. However, the dimensions related to HIV/AIDS and STDs related to SHL in the present study were specifically and exclusively addressed [29].

Previous findings had further demonstrated that HIV/AIDS knowledge was strongly associated with patients' health literacy in a population [41]. Regarding the high prevalence rates of HIV/AIDS and STDs, the increasing incidence of HIV/AIDS in young people, and given the low levels of knowledge in this population [38], it is of utmost importance to develop an instrument for assessing SHL in this field. It is concluded that adequate levels of health literacy can help this age group make better decisions about their own health based on the capacity to obtain, process, and understand basic health information and to act appropriately [42].

Limitations

In this study, the criterion validity of the questionnaire was not fulfilled, as there were not known standard tools in this field to make required comparisons [43]. Moreover, this instrument was designed for the Iranian society and its validity in other settings cannot be guaranteed. In addition, the convergent validity of the given questionnaire was not evaluated. Due to the concurrence of this study and the prevalence of coronavirus disease (COVID-19) in Iran, confirmatory factor analysis for the given questionnaire was eventually suggested.

Conclusions

The findings of the study showed that the new instrument has the appropriate validity, reliability, and is concurrent with the cultural and social values of Iran. Therefore, given the lack of SHL related to young people's sexual health literacy, it can be used in this context and makes it possible to compare data with other communities. This questionnaire is suggested for assessing the level of sexual health literacy of other groups of male population in future studies.

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Conflict of interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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