DEVELOPMENT AND VALIDATION OF A SEXUAL RISK BEHAVIOUR SCALE (SRBS) IN NIGERIA

Abiodun Musbau Lawal PhD

Department of Psychology, Federal University, Oye-Ekiti, Ekiti State, Nigeria

ABSTRACT

It remains a challenge till today that no standardized uniform sexual risk behaviour scale is available for use in Nigeria. This research developed, validated and established the psychometric properties of a self-report sexual risk behaviour scale (SRBS). The SRBS was derived from several sources and it consists of 6 items. Adult population of men and women (N=450) responded to the initial 19-item scale that was statistically reduced to 6-item scale. Factor analysis using principal component analysis was done for the 6-item sexual risk behaviour scale and revealed three components named casual sex, unprotected sex and alcohol-induced sex. For reliability, the 6-item SRBS demonstrated an internal consistency of alpha=.85 and for validity, the scale demonstrated strong associations with much longer previously validated scales of sexual compulsivity scale (r =.18, p<.01), condom use barriers (r =.19, p<.01), condom use negotiation (r =-.17, p<.01), depression (r =.23, p<.01), anxiety (r =.18, p<.01) and stress (r =.17, p<.01) respectively. We conclude that the sexual risk behaviour scale (SRBS) is internally consistent, stable, sensitive to change resulting from intervention and suitable for use or can be administered to low literacy populations.

Key Words:
Sexual Risk Behaviour, scale, development, psychometric evaluation.
BACKGROUND

Most studies about sexually transmitted diseases (STDs) including HIV and AIDS have emphasized sexual risk behaviour of individuals as a major route through which STIs, HIV and AIDS are transmitted or are spread worldwide (e.g. Seth, Christi and Kellie, 2006; Malow, Rosenberg, Donenberg & Devieux, 2006). These sexual risk behaviours may include multiple sexual partners, sexual activity with commercial sex workers, irregular or lack of condom use among others. Because sexual risk behaviour is a key factor facilitating the spread of sexually transmitted diseases, interventionists often use sexual risk behaviour assessment to guide risk reduction or prevention programmes and provide feedback whether individuals are at the risk of infection of STIs/HIV or not. This is also considered to ascertain the effectiveness of any intervention programmes adopted to change sexual risk behaviour among individuals.

Many researchers are faced with the challenges of assessing sexual behaviour among individuals. For instance, Catania, Gibson, Chitwood and Coates (1990) reviewed some of the methodological challenges faced by many researchers attempting to assess sexual risk behaviour. Some of these researchers have faced with the problems of methodologies and error of measuring sexual behaviour. Thus, it remains a challenge till today that no standardized uniform sexual risk behaviour scale is available for use in Nigeria. It is no doubt that practitioners, scientists and researchers within and outside Nigeria need a reliable, valid and feasible scale to assess sexual risk behaviour of individuals of high and low literate populations. Against this backdrop, the researchers developed, validated and established
psychometric properties of a self-report sexual risk behaviour scale (SRBS) that will be appropriate in assessing sexual risk behaviour in adult population; that can be easily translated into any language and adaptable for any culture.

The regard that an individual gives to himself or herself may go a long way with the level of risk he/she gets involved with. In this respect, the researchers correlated individual’s self esteem with sexual risk behaviours. Self esteem has been explained to refer to one’s attitude towards oneself or evaluation of oneself which may be positive or negative. Self esteem is basically a person’s overall assessment of his or her personal adequacy or worth or regard. Individual’s self esteem has been identified as one of the person characteristics that contribute to one’s sexual risk behaviour. For example, Sterk, Klein and Elifson (2004) describe the relationship between self-esteem and HIV-related risk behaviours. In their study they found that self-esteem was related to the number of times of having oral sex, the number of times having sex with paying partners, the frequency of sexual risk-taking, the number of different HIV risk behaviours practiced during the previous year, and condom use attitudes and self-efficacy. In other words, greater involvement in HIV risk behaviours was associated with lower self-esteem. The findings indicate that self-esteem is highly relevant to HIV risk behaviour and sexual practices, and this has important implications for HIV intervention programs.

Sexual expression is a natural part of a well-rounded life. However, if sex need is overwhelming in a person; whereby he or she is so intensely preoccupied with this need that
is beginning to interfere with the job and relationships; such may be said to have sexual compulsivity. Sexual compulsivity has been identified to be a significant contributing factor to high sexual risk behaviour. In other words, sexual compulsivity may be associated with high rates of sexual behaviour and may increase risks for sexually transmitted infections (STIs), including HIV infection. For instance, Benotsch, Kalichman and Kelley (1999) investigated the role of sexual compulsivity as a contributing factor to high-risk sexual behaviour in HIV sero-positive men who have sex with men. They found that men scoring high on sexual compulsivity reported engaging in more frequent unprotected sexual acts with more partners, reported greater use of cocaine in conjunction with sexual activity, rated high-risk sexual acts as more pleasurable, and reported lower self-esteem. This of course indicates the relationship between sexual compulsivity and sexual risk behaviour among individuals.

What remains as the best method to reduce HIV and other STI risk among sexually active persons is the correct and consistent use of condom. However, some individuals have reported dissatisfaction as barriers in the use of condom. For instance, Sunmola (2005) reported that both men and women indicated that condoms hindered their sexual satisfaction, caused health problems for them and reduced their sexual interest. The findings indicate condom use barriers among some individuals, which can relatively put them at high sexual risk behaviour. Following this trend, the researchers correlate condom use barriers with sexual risk behaviour in the report; proposing that individuals who perceive more barriers to the use of condom may engage more in sexual risk behaviours.

Evidence has supported link between mental health and sexual risk behaviour. For instance,
Olley, Soraya and Stein (2006) reported rate of psychiatric disorders such as depression and post traumatic stress disorder (PTSD) in HIV/AIDS patients, especially with their persistence of risky sexual behaviour. In another study, Brown, Danoysky, Lourie, DiClemente and Ponton (1997) reported high STD prevalence among adolescents suffering from mental illness considering their sexual risk behaviour. In this report however, the researchers used the Depression, Anxiety and Stress Scale 42 (DASS-42) consisting of three self report scales to measure negative emotional states of depression, anxiety and stress in relation with sexual risk behaviour. DiClemente, Wingood, Crosby, Sionean, Brown, Rothbaum, Zimand, Cobb, Harrington and Davies (2001) found that individuals exhibiting significant distress like depression were more likely to be pregnant, have had unprotected sex, have non-exclusive sex partners and not use any form of contraception than non-distressed people. Similarly, Ramrakha, Caspi, Dickson, Moffitt and Pail (2000) reported that participants with depressive disorders were more likely to report three or more sex partners in the past year and never or only sometimes using condom.

Anxiety is another psychological disturbance that is likely to have a relationship with the level of sexual risk behaviour of an individual. For instance, Reisner, Mimiaga, Tetu, Cranston, Novak and Mayer (2008) found that individuals with high levels of psychological distress such as anxiety are likely to engage in behaviours that would place them at increased risk for STDs and HIV. This suggests that an individual that is greatly anxious may engage in casual sex or unprotected sex perceiving these as acts that could alleviate his psychological condition.
Regarding stress and sexual risk behaviour, the degree at which an individual experience stress may make him to engage in casual or unprotected sex; perhaps to cope with the stress. Lots of studies have established the relationship between stress and sexual risk behaviour among different categories of people. For instance, Olley, Seedat, Gxamza, Reuter and Stein (2005) reported a significant influence of negative life events on condom use among HIV- patients in South Africa. Also, in order to determine whether stress raises the risk of HIV infection through an intermediate effect on sexual risk behaviour, Calzavara, et al (2006) found that stress was related to sexual risk behaviour; they agued that the remaining effect of stress may be due to other pathways (e. g. increased likelihood of encountering an HIV+ partner). Alternatively, they reported that stress may act as a biological cofactor through increased susceptibility upon exposure. Their results suggest that individuals may use sexual behaviour as a coping strategy when faced with stressful situation.

Finally, individuals may benefit a lot from condom use negotiation strategies for reducing sexual risk behaviour; suggesting that condom use negotiation can affect level at which one gets engage in sexual risk behaviour. There researchers therefore correlate condom use negotiation with sexual risk behaviour in this report. To confirm this relationship, Carballo- Dieguez, Miner, Dolezal, Rosser, Jacoby (2006) reported that individuals who engage in sexual negotiations were more likely to use condoms during sexual intercourse compared to those who did not.
Purpose of Study

The purpose of this paper was to develop, validate and establish the reliabilities as psychometric properties of a self-report sexual risk behaviour scale (SRBS) for use in adult population in Nigeria. Two evaluation criteria guided this study. First, the researchers expected the sexual risk behaviour scale to yield reliability indices (i.e. internal consistency) that are acceptable for use in most culture. Second, that the sexual risk behaviour scale is expected to have logical discriminant and convergent validity with some established scales such as self esteem, sexual compulsivity, condom use barriers, condom use negotiation, depression, anxiety and stress scales.

METHODS

Description of Sexual Risk Behaviour Scale (SRBS)

The sexual risk behaviour scale (SRBS) is an 6-item self report instrument (Table 1) that was developed using formative work, experts” judgment, item and factor analyses to assess sexual risk behaviour for STDs, HIV and AIDS prevention. The SRBS taps items falling into sexual risk assessment and event that allow description of the level of risk and those that allow event-level examination of the co-occurrence of potential risk factors with risk behaviour. Respondents were administered with a scale initially consisted of 19 statements to indicate “Always”, “Sometimes”, “Occasionally or “Never”. The way each of the statement was stated indicates that they are likely to be widely understood even by low literacy readers. “Always” responses were scored 4, “Sometimes” responses were scored 3, “Occasionally” were scored 2 and “Never” responses were scored 1. The total score is the sum of the points
for all the items in the scale. Higher score indicates greater reported sexual risk behaviours. Respondents are required to place a mark on any response option that best describes their sexual experience during the past three months. The three-month timeframe was chosen because it has been well-evidenced in the literature as appropriate to evaluate risk behaviour in sexually active individuals.

**Respondents**

Four hundred and fifty (Male=258, Female=192) participants were sampled in the study. The ages ranged from 18 to 71 with mean age of 26.62 years (SD=6.18). The choice of adult population is appropriate in view of their relatively high level of sexual activity. Three hundred and forty seven (77.1%) of the participants were singles, 100 (22.2%) were married, 2 (.4%) were divorced and only 1 (.2%) was a widow. In terms of educational qualifications, 154(34.2%) had ordinary level certificate, 169 (37.6%), 51(11.3%) had higher national diploma, 51 (11.3%) had first degree, 18 (4.0%) had post graduate/professional qualification. Most of the participants 374(34.2%) were Christians, 75(16.7%) were Muslims and only one 1(.2%) indicated belonging to other religion. The family structure of the participants showed that 340(75.6%) came from monogamous background and 107(23.8%) came from polygamous background. In terms of ethnicity, majority of the participants 334(74.2%) were Yoruba, 55(12.2%) were Igbo, 8(1.8%) were Hausa and 51 (11.3%) indicated other ethnic.

**Table 1**

*Instruction:* Please answer the following questions by ticking on any of the following responses: Always (AL), Sometimes (SM), Occasionally (OC), or Never (NV) beside each of the question. Please answer as honestly as you can and be sure to answer all the questions.
<table>
<thead>
<tr>
<th></th>
<th>I have taken alcohol heavily before having sex in the last 3 months.</th>
<th>AL</th>
<th>SM</th>
<th>OC</th>
<th>NV</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>I have engaged in sexual activity with commercial sex worker in the last 3 months.</td>
<td>AL</td>
<td>SM</td>
<td>OC</td>
<td>NV</td>
</tr>
<tr>
<td>3.</td>
<td>I have had sex with a casual friend I met for the first time in the last 3 months.</td>
<td>AL</td>
<td>SM</td>
<td>OC</td>
<td>NV</td>
</tr>
<tr>
<td>4.</td>
<td>I have had sex with someone more than one time apart from my primary partner without condoms in the last 3 months.</td>
<td>AL</td>
<td>SM</td>
<td>OC</td>
<td>NV</td>
</tr>
<tr>
<td>5.</td>
<td>I did not use condom at my last sex in the last 3 months.</td>
<td>AL</td>
<td>SM</td>
<td>OC</td>
<td>NV</td>
</tr>
<tr>
<td>6.</td>
<td>I have had sex with a partner with intravenous drug use (i.e. syringe) or on heavy alcohol use in the last 3 months.</td>
<td>AL</td>
<td>SM</td>
<td>OC</td>
<td>NV</td>
</tr>
</tbody>
</table>

**Design of the Measurement of the Sexual Risk Behaviour (SRBS)**

**Selection of Items:** The goal of the researchers was to develop a scale to measure sexual risk behaviour. The researchers employed the following steps. First, the researchers defined sexual risk behaviours as sexual activities that could readily put an individual at risk of dangers in sex within the last three months. Second, a group of 100 male and female students from faculty of the social sciences in university of Ibadan, Ibadan Nigeria were accidentally selected and were asked an open question each; to state what they think are risky sexual behaviours. Their responses yielded 47 descriptions of sexual risk behaviours and those ambiguous were clarified from the respondents through in-depth interviews with them. The pool of items generated at this stage was supplemented with information from a literature review and was prepared for the next stage. Third, these generated items were taken to five lecturers in psychological tests construction and experienced in reproductive behaviour for content validity. These experts reduced the items into 19 items; having disregarded some.
items perceived not measuring sexual risk behaviours. The 19 items were modified to make them simpler, clearer and comprehensive for even low literacy respondents. This modification of the items was necessary in order to reduce measurement error in each item and the entire scale. The 19-item SRBS was designed to form a questionnaire that was eventually administered to the adult population.

**Item Analysis:** After the collection of administered questionnaires, the questionnaires were taken to the analyst for item analysis. Internal consistency analyses were performed and yielded robust alpha coefficient for use in Nigeria. At this stage, the researchers tested the SRBS for its psychometric properties.

**Statistical Procedures:** The researchers used Pearson’s product-moment correlation coefficient and Cronbach’s alpha using Statistical Packages for the Social Sciences (15.0 version). Similarly, factor analysis was performed using principal component analysis for extraction method and Varimax with Kaiser Normalization for rotation method.

**RESULTS**

**Reliability:**

Assessing the validity of a scale, it needs to be first reliable. A method adopted for establishing reliability of the sexual risk behaviour scale is the evaluation of internal consistency. This was found necessary as the researchers included some same questions more than one time in order to ascertain the concordance of responses of the respondents. The

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researchers arrived at the final alpha coefficient for the retained 6-item SRBS through the initial 19-item SRBS as follows: alpha coefficients of (alpha=.65) for the initial 19-item scale, (alpha=.76) for 11-item scale, (alpha=.80) for 10-item scale, (alpha=.83) for 9-item scale, (alpha=.84) for 6-item and (alpha=.85) for the retained Sexual Risk Behaviour Scale. Items discarded were due to the fact that they were not up to .30 in corrected item total correlation. The initial factor analysis for the 8-item SRBS showed three (3) factors. Factor analysis for the retained 6-item SRBS extracted ranging from .52 to .85 showed three (3) factors, where items 1 and 6 are categorized in factor one; named alcohol-induced sex, items 2 and 3 were categorized in factor two; named casual sex and items 4 and 5 were categorized as factor three; named unprotected sex respectively (Lawal, 2012). An alpha reliability coefficient of .85 was obtained for the 6-item sexual risk behaviour scale.

**Validity:**

Lack of physiological or psycho-physiological data that correspond directly to frequency of sexual activity among individuals could make validity of individual’s accurate report of his or her sexual risk behaviour difficult; hence needs to be self-reported. Of course, this would have been used as normative data for validating a self report sexual risk behaviour scale. However, in this study, the researchers obtained evidence for the validity of the sexual risk behaviour scale developed using the (N=450) adult population that revealed associations between score on the newly developed sexual risk behaviour scale and some established measures.
**Discriminant Validity:** Discriminant validity was obtained through the associations of the developed sexual risk behaviour scale with some established measures of related variables.

**Self-esteem scale:** This is a 10-item self esteem scale developed by Rosenberg (1965). The self esteem scale measures global self esteem and remains the most – widely used of all self – esteem measures. Global Self esteem is defined as the individual’s positive or negative attitude toward the self as a totality (Rosenberg, 1965). Therefore, self esteem is individual’s evaluation of worth. It is basically the regard given to oneself which may be high or low. Evidence has shown that levels of regard given to oneself may likely affect individual’s sexual risk behaviour. In this report, a discriminant validity obtained indicated a non-significant relationship between sexual risk behaviour and self esteem ($r=-.01; P>.05$). This suggests that the self esteem scale was not found to have a significant relationship with the developed sexual risk behaviour scale.

**Condom Use Negotiation Scale:** This is a 4-item condom use negotiation scale developed by Crosby, Sanders, Yarber and Graham (2003). In this report, a significant negative relationship was obtained between sexual risk behaviour and condom use negotiation ($r=-.17; P<.01$). This suggests that individuals who are high in condom use negotiation are more likely to exhibit less sexual risk behaviour.

**Convergent Validity:** Convergent validity was obtained through the associations of the developed sexual risk behaviour scale with some established measures of related variables.
Sexual Compulsivity Scale (SCS): This is a 10-item Sexual Compulsivity Scale developed by Kalichman, Adair, Rompa, Multhauf, Johnson and Kelly (1994) to assess tendencies toward sexual preoccupation and hyper-sexuality. Items were initially derived from self-descriptions of persons who self-identify as having a „sexual addiction“. The self-descriptors were taken from a brochure for a sexual addictions self-help group. The scale has been used to predict rates of sexual behaviours, numbers of sexual partners, practice of a variety of sexual behaviours, and histories of sexually transmitted diseases. Respondents were asked to endorse the extent to which they agree with a series of statements related to sexually compulsive behaviours and thoughts. The items were anchored on 5-point scales from 1 = not at all like me, to 5 = very much like me. The scale is internally consistent with alpha coefficients that range between .85 and .91. Sexual compulsivity scale has previously shown good reliability and has demonstrated criterion-related validity (Kalichman & Rompa, 1995). Responses from the present sample were internally consistent, [alpha] = .90. In this report, a convergent validity was obtained where the result showed that the sexual compulsivity scale is positively related to the developed sexual risk behaviour scale ($r=.18; P<.01$). This suggests that an individual who exhibit sexual compulsive behaviour is more likely to engage in sexual risk behaviour.

Condom Barriers Scale (CBS): This is 27-item Condom Barriers Scale (CBS) developed by St. Lawrence, Devieux, O”Bannon, Brasfield and Eldridge (1999). It is an instrument originally developed to measure women's perceived barriers to condom use for prevention of HIV and other sexually transmitted diseases. For convergent validity, the condom barriers scale was found to have positive relationship with the sexual risk behaviour scale ($r=.19; P<.01$).
This indicates that individuals who perceive condom use barriers to be high are more likely to engage in sexual risk behaviour.

**Depression, Anxiety, Stress Scale 42 (DASS-42):** The DASS is a 42 item self report inventory that yields 3 factors: Depression, Anxiety and Stress developed by Lovibond and Lovibond (1995). Gamma coefficients that represent the loading of each scale on the overall factor (total score) are .71 for depression, .86 for anxiety and .88 for stress subscale. Reliability coefficients as reported by the authors are considered adequate with .71 for depression, .79 for anxiety and .81 for stress (Brown, Chaorpita Korotitsch and Barlow, 1997). For convergent validity in this report, all the sub-scales were found to be positively related with the sexual risk behaviour scale ($r=.23; P<.01; r=.18; P<.01; r=.17; P<.01$) respectively. This suggests that individuals who are depressed, anxious or stressed are more likely to engage in sexual risk behaviour.

**DISCUSSION**

The purpose of this research was to develop and validate a sexual risk behaviour scale that would be suitable for use in a variety of clinical, educational, counselling and public health setting. As there was no uniform standardized sexual risk behaviour scale for Nigeria population, this study attempted to construct a short sexual risk behaviour scale for use among adults in Nigeria. The items included in the SRBS covered various sexual acts that can readily put an individual into risk of sexual relationships. Data were gathered from adult
population in Nigeria to obtain the psychometric properties of the scale. To determine the
number of principal components, the researchers used the Kaiser-Guttmann rule to select and
arrive at the three components of the 6-item SRBS. This criterion is best used when principal
component analysis is used as a technique to extract components (Pett, Lackey & Sullivan, 2003). Factorial analysis provided us a three factors solution for the 6-item SRBS.

Based on the above findings with the SRBS having .85 alpha coefficients, this scale satisfies
the criteria - high internal consistency and high item-item correlations as found with other convergent and divergent established measures. In other words, the reliability assessment for each item and overall scale were acceptable. Construct validity for the SRBS also appears to be satisfactory. There is strong support for the validity of the sexual risk behaviours scale based on its correlation coefficients obtained in comparisons with other related standardized scales. The SRBS is found supporting some features of sexual risk behaviours such as self esteem, sexual compulsivity condom use barriers, condom use negotiation, depression, anxiety and stress. Possible explanation of the strong relationships of the sexual risk behaviour scale with other established measures is that individuals who are low in self esteem, high in sexual compulsivity, high in condom use barriers, low in condom use negotiation, depressed, anxious or stressed are more likely to engage in sexual risk behaviours.

**Limitations**

The study procedures might have some limitations. For instance, the issue of self reported sexual risk behaviour of an individual can bring about measurement error in assessing the
person”s actual sexual risk behaviour. To avoid this, though could be difficult but possible; monitoring and measuring the actual sexual risk behaviours of respondents would have been more reliable as against what the respondent report them to be. Also, our participants were adult population that may limit the viability of generalization of our results to other populations; meaning other categories of population should be included for this purpose. With respect to the theoretical frame that risk assessment is important for behavioural change, this study mainly addressed sexual risk behaviours. In spite of these limitations, the scale is a unique short, reliable and valid instrument to assess sexual risk behaviours.

Conclusion

In conclusion, this 6-item self reported sexual risk behaviour scale would be valuable not only for assessing sexual risk behaviours but also for evaluating efficacy of behavioural-change techniques directed toward reducing sexual risk behaviours. In other word, the SRBS is internally consistent, stable, sensitive to change resulting from intervention and suitable for use or can be administered to low literacy populations. However, further evaluation of the scale need to be conducted on other population groups in the country with the aim of improving on the methods used in the study.
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