Validation of the Jamaican Maternal Sexual Role Modelling Questionnaire

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ABSTRACT

Objective: Urban Jamaican adolescent girls face significant risk for sexually transmitted infections including HIV. Studies from the United States of America have found that parents influence adolescents' sexual risk attitudes and behaviours through parent-child sexual communication and monitoring/supervision. Data from an ongoing mother-daughter HIV risk reduction intervention study in Kingston, Jamaica identified an additional influence of adolescent girls' sexual risk – maternal sexual role modelling (MSRM). As no reliable and valid questionnaires existed to measure MSRM, one was developed. The objective of the current study was to evaluate the psychometric properties of the Jamaican Maternal Sexual Role Modelling questionnaire.

Method: Data were collected from 209 Jamaican female adolescents recruited from Kingston, St Andrew and St Catherine parishes.

Results: The final 19-item Jamaican MSRM questionnaire was found to have excellent internal reliability (Cronbach's alpha = 0.89). Content validity expert ratings and modified kappa statistics were all 1.0.

Keywords: Adolescent sexual risk, Jamaica, instrument development, sexual role modelling

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Principal component analysis identified a three-factor structure that accounted for 53.7% of the variance. Greater MSRM scale scores, indicating more positive and protective maternal sexual role modelling, were associated with less sexual experience, lower intentions to have sex, greater intentions to use condoms if having sex and greater condom use self-efficacy among adolescent girls.

Conclusion: The MSRM scale was found to be a reliable and valid measure of Jamaican adolescent females' perceptions of their mothers' sexual role modelling. Further research is needed to assess the reliability and validity of the instrument with other populations.

INTRODUCTION

The Caribbean is one of the areas that have been severely impacted by the HIV pandemic; HIV/AIDS rates in the region are second only to sub-Saharan Africa (1). Within Jamaica, HIV/AIDS rates vary and are highest in the most urbanized parishes [1–1.8%] (2).

Jamaican adolescents and young adults face significant risk for HIV; factors that contribute to their risk include poverty, unprotected sexual activities, multiple sexual partners, sexually transmitted infections, and cocaine use (2–4). Jamaican adolescent females, particularly those living in impoverished urban communities, are disproportionately affected by HIV (3, 5). Among those under age 30 years, the number of AIDS cases in women exceeds that for men (5). Young women's elevated risk for HIV/AIDS has been attributed to early sexual debut, unprotected sexual intercourse, transactional sex with older men, and multiple sexual partnerships (2–4, 6–8). Gender roles and male-dominated relationship dynamics have also been identified as potential contributors to sexual risk among Jamaican adolescent girls (9).

Numerous studies from the United States of America (USA) have found that parents exert significant influence on adolescents' sexual beliefs, values and behaviours, although studies outside of the USA have been very limited (10, 11). Parenting behaviours that have been identified as influential include parent-child sexual communication (12–16) and parental supervision (17–21). In contrast, few studies have examined the potential influence of parental sexual role modelling.

Parental role modelling is a form of influence whereby children and/or adolescents replicate the behaviours of their parents through observational and social learning processes over time (22, 23). Parental role models may be positive or negative influences depending on the appropriateness of their behaviours (24). For example, children with parents who smoke cigarettes are at an increased risk for smoking, compared to the children of non-smokers (25, 26). Similarly, research has consistently found associations between drug and alcohol use in parents and their children (27, 28). Despite evidence of the importance of parental role modelling for other health behaviours (*eg* tobacco and alcohol use) there is a dearth of research that examines the influence of parental sexual role modelling on adolescents' sexual risk beliefs and behaviours.

Maternal sexual role modelling (MSRM) was found to be an important influence of adolescent girls' sexual risk beliefs and behaviours in earlier qualitative research studies with Jamaican adolescents, guidance counsellors and parents (10, 11). Participants repeatedly described how Jamaican mothers influenced their daughters by their own actions. Examples of maternal sexual role modelling behaviours ran the gamut, from demonstrations of self-respect, self-protection and self-control in relations with men to presentations of overtly sexual dress, exchanging sex for money, encouraging daughters to develop relationships with older men who have money and offering daughters to men in exchange for money (11). Culture-specific, reliable and valid instruments were needed to measure MSRM. One such measure was developed specifically for use with urban Jamaican families. The purpose of this study was to evaluate the psychometric properties of the Jamaican MSRM scale.

SUBJECTS AND METHODS

The development of the Jamaican MSRM scale and evaluation of its psychometric properties were undertaken as part of a larger, international collaborative research project by investigators from the University of the West Indies, Mona, in Jamaica, New York University and the University of Pennsylvania in the USA. This five-year mother-daughter HIV risk-reduction project, "*The Jamaican Mothers and Daughters Standing Strong Together*" (MDSST) programme, was funded by the US National Institutes of Health (R01 NR010478). The MDSST programme was a randomized control trial in which 330 adolescent girls, ages 13–17 years, and their mothers or female guardians were randomly assigned to receive either a two-day HIV risk-reduction intervention or a general health intervention (the control condition).

The MSRM scale was developed through a long and iterative process that occurred in three phases. Phase one focussed on generating potential items for inclusion in the MSRM scale, based upon the existing parental role modelling literature, qualitative focus group data from earlier work in Jamaica (10), and elicitation research conducted as part of the Jamaican MDSST project (11). Phase two included assessment, discussion, review and refinement of items. Phase three involved pilot testing. A fourth study phase focussed on evaluating and documenting the psychometric properties of the MSRM scale. Those results are presented here.

All procedures for the protection of human subjects were reviewed and approved by the Ethics Committee of the University Hospital of the West Indies/University of the West Indies/Faculty of Medical Sciences and the New York University (NYU) University Committee

on Activities Involving Human Subjects (UCAIHS) prior to participant recruitment or data collection. Signed written informed consent was obtained from mothers for their own participation and for their daughters' participation; adolescent girls provided signed written informed assent in a separate room. Data were collected via paper-and-pencil questionnaires. Because of literacy concerns, questionnaires were also projected in the front of the room and read aloud; one-on-one reading assistance was provided as needed.

Data were collected from three samples of Jamaican female adolescents who resided in one of the three parishes of Kingston, St Andrew and St Catherine. The first sample included 18 female students (mean age = 20.4 years) from the University of the West Indies who participated in an instrument pilot study. The second sample included 20 adolescent girls (mean age = 14.9 years) who were participating in the pilot study for the MDSST project. The third sample included 171 adolescent girls (mean age = 14.6 years) who were participating in the first seven cohorts of the main MDSST study. Sample characteristics for the three samples are displayed in Table 1. All analyses were performed using the Statistical Package for Social Sciences (SPSS) PASW v 18.

RESULTS

Possible scores on the 19-item MSRM scale ranged from 19–76, with higher scores indicating more positive or protective sexual role models. As is shown in Table 1, actual scores were fairly consistent across the three samples and ranged from 54–76, with a mean of 72.3 (SD = 5.36).

The clustering of scores within the upper quartile of the range indicated that reports of maternal sexual role modelling, overall, were quite positive.

Cronbach's alpha was computed to estimate the internal reliability of the 19-item MSRM scale. Cronbach's alpha coefficient was 0.89 overall and consistent across the three samples, despite small sample sizes. This alpha coefficient far exceeded the minimum acceptable level [$\alpha = 0.70$] (29), indicating excellent internal consistency of the MSRM scale.

Content validity concerns "the degree to which a sample of items, taken together, constitute an adequate operational definition of a construct" (30). Item-level content validity index (CVI), scale-level CVI and modified kappa statistic were calculated to assess the content validity of the Jamaican MSRM scale.

An expert panel was convened and four content experts were charged with assessing the relevance of the original 33 MSRM scale items to the construct of maternal sexual role modelling. The experts included: (a) a US PhD researcher and expert in adolescent sexual risk and HIV; (b) a Jamaican MPH-PhD researcher and expert in Jamaican adolescent HIV-related sexual risk behaviour; (c) a Jamaican physician with clinical and research expertise and (d) a Jamaican MPH expert in sexual risk behaviour and STIs. All of the experts were published researchers and several had clinical expertise (31). Three of the four panel members were Jamaican, in recognition that the construct of maternal sexual role modelling and its enactment would likely be culture-dependent (32). Following the recommendations in the literature (31), panel members were asked to rate the relevance of each item as: [1] "not relevant", [2]

"somewhat relevant", [3] "quite relevant", or [4] "highly relevant." Ratings of 3 or 4 were considered content valid and acceptable. As is shown in Table 2, all of the items were highly rated by the expert panel members; the I-CVI ratings were all 1.0. Consistent with current recommendations (32–34), a scale content validity index (S-CVI) was calculated using the averaging approach. The average S-CVI index for the 19-item MSRM scale was also 1.0. In summary, the I-CVI and S-CVI met the criteria for excellent content validity (30, 33, 34).

In addition, a multi-rater kappa statistic was calculated that would adjust for chance agreement between raters (30, 34, 35). The modified kappa statistic (k^*) was calculated using the formula $k^* = (\text{I-CVI} - \text{pc})/(1 - \text{pc})$. The probability of chance agreement (pc) with 4 raters and an I-CVI of 1.0 was $(0.5)^4 = 0.063$ (34). The calculated $k^* = 1.0$ indicated excellent inter-rater agreement. In summary, all results indicated excellent and consistent ratings of content validity.

Factor analysis was conducted using principal component analysis with oblique rotation (36). Eigenvalues were used to represent the best-fit for the model (37). The scree-plot was also used to determine the number of factors that were the best fit for the analysis (38). A three-factor solution achieved the most parsimonious and interpretable results. This solution accounted for 53.7% of the variance. Factor 1, "Direct Sexual Modelling," contributed 39.5% of the variance. Factor 2, "Indirect Sexual Modelling," and Factor 3, "Sexual Exposure of Daughter," accounted for 7.5% and 6.7% of the variance, respectively. As is shown in Table 3, twelve items loaded on the first factor, three items on the second factor, and four items on the third factor.

Additional indicators that were examined to establish the construct validity of the MSRM scale included daughters' reports of sexual experience (*ie* ever had sex) and mothers' reports of parenting beliefs or attitudes. Higher MSRM scores (indicating more positive and protective role models) were inversely associated with daughters' reports of ever having sex (r = -0.15, p < 0.05). More positive MSRM scores were also related to mothers' parenting beliefs. For example, higher MSRM scores were associated with mothers' reports that they knew how to tell daughters good ways to postpone sex (r = 0.18, p < 0.05); and inversely associated with reports that daughters ignored them when they talked about abstinence (r = -0.17, p < 0.05). Mothers who were rated as positive sexual role models were also less likely to report believing that daughters were too young to understand if they talked about sex (r = -0.16, p < 0.05).

Predictive validity was assessed by examining the associations between adolescents' baseline reports of MSRM and their sexual attitudes and beliefs reported at three-month follow-up. These analyses were limited to girls who were assigned to the control condition (n = 74) of the MDSST intervention, as intervention effects could have acted as potential confounds. Greater amounts of maternal sexual role modelling were associated with adolescents girls' reports of greater condom use self-efficacy (r = 0.23, p < 0.05) and greater intentions to use condoms (r = 0.36, p < 0.001), and inversely associated with their intentions to have sex (r = -0.26, p < 0.05).

DISCUSSION

The Jamaican MSRM scale was developed as a theory-based, culture-specific measure of Jamaican adolescent girls' perceptions of maternal sexual role modelling. Evidence of reliability and validity were found. A major strength of this scale was that the items of the MSRM were culturally relevant and easy for participants to understand and interpret. In addition, the brevity of the 19-item scale made it efficient to administer in group settings or individually.

It must be noted that, although the negative examples of maternal sexual role modelling were reported with some frequency in earlier qualitative studies (11), these types of parenting behaviours were by no means considered normative or usual. These family experiences were seen as the exception rather than the rule and scores on the MSRM scale supported that contention. Scores clustered around the upper end of the scale, reflecting positive maternal sexual role modelling. Adolescents, parents and community leaders who work with adolescents in and around Kingston, Jamaica, reported that, while the effects of positive maternal sexual role modelling were protective, negative maternal sexual role modelling contributed to girls' HIV- and STI-related risk. Thus, there was a need to address maternal role modelling in our HIV risk-reduction intervention and develop a reliable and valid instrument to measure the construct.

The Jamaica MSRM scale is culture-specific. While the instrument performed well with urban Jamaican adolescent females, it is not known how well it would perform with different population groups. Although parental sexual role modelling undoubtedly exists across cultures, it may be enacted or interpreted differently. This scale may not have cross-cultural validity for

use with other populations. However, the Jamaican MSRM scale and development process may serve as a template for the development of MSRM measures that are reliable and valid for other groups.

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Table 1: Characteristics of the samples

Characteristic	Sample 1	Sample 2[b]	Sample 3[b]	Total[c]
N	18	20	171	209
Age (years)	20.4 (1.4)	14.9 (1.4)	14.6 (1.3)	15.1 (2.1)
Currently in school (%)	a	90	91	91
Lives with mother all or most of time (%)	a	85	89	88
Mother's age (years)	a	38.8 (9.0)	39.3 (7.2)	39.2 (7.4)
Mother's education (%)				
≤ Primary	a	5	19	18
≥ Secondary	a	95	81	82
Mother employed (%)				
Full-time	a	10	31	29
Part-time	a	35	33	34
Parents currently married (%)	a	10	15	14
MSRM scale scores (mean[SD])	71.9 (5.10)	72.2 (4.92)	72.4 (5.46)	72.3 (5.36)

[a]Data not available for Sample 1; [b]Samples 2 and 3 were used for validity tests; [c]The total sample was used for factor analysis and internal reliability.

Table 2: Maternal sexual role modelling scale – content validity index ratings

Item	Rater 1	Rater 2	Rater 3	Rater 4	Agreement
1	4	3	4	4	100% (1.0)
2	4	3	4	4	100% (1.0)
3	4	4	4	4	100% (1.0)
4	4	4	4	4	100% (1.0)
5	4	4	4	4	100% (1.0)
6	4	4	4	4	100% (1.0)
7	4	3	4	4	100% (1.0)
8	4	3	4	3	100% (1.0)
9	4	4	4	3	100% (1.0)
10	4	4	4	4	100% (1.0)
11	4	4	4	4	100% (1.0)
12	4	3	4	3	100% (1.0)
13	4	4	4	4	100% (1.0)
14	4	3	4	4	100% (1.0)
15	3	4	4	4	100% (1.0)
16	4	3	4	3	100% (1.0)
17	4	3	4	4	100% (1.0)
18	4	4	4	4	100% (1.0)
19	4	4	3	3	100% (1.0)
Average	100% (1.0)	100% (1.0)	100% (1.0)	100% (1.0)	100% (1.0)

Table 3: Principal component analysis rotated factor matrix/factor loadings (n = 209*)*

Item	Direct Sexual Modelling	Indirect Sexual Modelling	Sexual Exposure
Mother dresses in clothes that are tight /skimpy.	0.03	**0.77**	-0.05
Mother behaves flirty around men.	-0.04	**0.81**	0.15
Mother often goes to nightclubs/dancehall to meet men.	0.11	**0.72**	0.14
Mother often brings men home to have sex.	**0.84**	-0.08	0.13
Mother often lets men stay overnight with her.	**0.69**	-0.13	0.01
Mother lets men touch me sexually.	**0.57**	0.16	0.13
Mother encourages me to date older men she knows.	**0.72**	-0.15	0.30
Mother takes me to meet men and pretends we are sisters or friends.	**0.62**	0.15	0.28
Mother encourages me to wear skimpy or tight clothes.	0.01	0.06	**0.78**
Mother taught me different ways to please a man.	**0.47**	0.12	-0.13
Mother encourages me to get a big man or older man who will give me money and things.	0.05	0.01	**0.80**
Mother allows me to have boys in my room with the door closed.	**0.69**	-0.06	0.12
Mother tells me I should use my body to get what I want in life.	**0.45**	0.09	0.10
Mother is having sex with more than one man.	**0.56**	0.17	-0.21
Mother lets men hit and push her around.	**0.65**	0.04	-0.05
Mother often stays out all night with male friends.	**0.78**	-0.06	-0.00
I have seen my mother having sex.	0.27	0.05	**0.37**
Mother has sex with men to get money and things.	**0.55**	0.25	0.06
Mother lets me look at sexual content in magazines, TV, movies and on the internet.	0.03	0.14	**0.68**
% of variance	39.5%	7.5%	6.7%

Note: Factor loadings > 0.40 appear in bold. Rotation: Oblimin with Kaiser Normalization.