Preliminary investigation of the STBBI Stigma Scale: Description and pilot results

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ABSTRACT

OBJECTIVES: Sexually transmitted and blood-borne infections (STBBIs) are associated with stigmatizing attitudes and beliefs, which can affect the quality of and access to health care, as well as mental health and quality of life. The current study describes the adaptation from an HIV-related stigma scale and pilot testing of a new STBBI Stigma Scale, assessing the stigmatizing attitudes and beliefs of health and social service providers in Canada.

METHODS: 144 health and social service providers from across Canada completed the newly adapted scale assessing stigma associated with HIV, hepatitis C, other viral STBBIs and bacterial STBBIs, as well as demographic information, a scale of social desirability and measures of convergent and divergent validity. Participants were recruited through listservs and completed the scale online.

RESULTS: The new scale, consisting of 21 items for each category, demonstrated excellent internal consistency, reliability, and convergent and divergent validity. The factor structure of the scale supports a tripartite model of stigma consisting of stereotyping, prejudice and discrimination. Stereotyping had the highest relative scores on the subscales, and attitudes regarding other viral STBBIs differed significantly from the other STBBI categories.

CONCLUSION: The new scale provides a contextually relevant and applicable psychometrically valid tool to assess STBBI-related stigma among health and social service providers in Canada. The tool can be used to assess attitudes and beliefs, as well as guide self-assessment and possible trainings for providers.

KEY WORDS: Social stigma; social discrimination; reproductive health; self-assessment; surveys and questionnaires

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The Joint United Nations Program on HIV/AIDS defines stigma as “a dynamic process of devaluation that significantly discredits an individual in the eyes of others”.¹ It is well documented that HIV stigma can lead to detrimental outcomes for individuals living with or affected by HIV, including psychological stress, fear of disclosure, and avoidance of prevention, testing and treatment services.^{2–6} Stigma within health service settings is particularly disconcerting as it can affect the quality of care as well as a client's well-being and engagement in the health care process.⁷

Numerous assessment tools have been developed to measure HIV stigma, the large majority of which explore the perspectives of HIV-negative individuals and the remainder of which focus on the perspectives of people living with HIV.⁸ Many of these assessment tools are limited in their generalizability to other contexts because of their focus on specific population groups and/or settings. Further, many such tools were not generated on the basis of theory and, as a result, do not account for the complexity of HIV stigma.⁹ This preliminary study focuses on the development and validation of the STBBI (sexually transmitted and blood-borne infections) Stigma Scale, which was adapted from the previously validated Health Care Provider HIV/AIDS Stigma Scale (HPASS).⁹ The original HPASS was developed in response to the paucity of assessment tools measuring the perspectives of health care providers in a North American context, as well as the lack of assessment tools with specific reference to HIV stigma theories. The HPASS was developed using a critical framework, and the items

were generated using focus groups of people living with HIV, health care providers and health care trainees.

The original HPASS tool was designed to assess Earnshaw and Chaudoir's tripartite model, which identifies the individual-level processes of HIV stigma, namely the ways in which stigma is perpetuated as opposed to experienced. Within their model of HIV stigma, Earnshaw and Chaudoir identify prejudice, stereotyping and discrimination as the three individual-level processes manifested by HIV-negative individuals in order to distance themselves from people living with HIV. The authors suggest that each of these three stigma processes will differentially predict various psychological, physical and behavioural outcomes and, further, that outcomes will vary depending on infection status.⁸ Earnshaw and Chaudoir therefore argue that it is important to distinguish between stigma processes so that interventions can be developed and implemented accordingly.

The adaptation of the HPASS tool into the STBBI Stigma Scale was commissioned by the Canadian Public Health Association as part of its project *Engaging health professionals to decrease stigma and discrimination and improve sexually transmitted and blood-borne infections (STBBIs) prevention*. Through the development of

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capacity-building resources for health and social service providers, this project aims to enhance the prevention of STBBIs and reduce associated stigma. It was further decided that the newly adapted tool should be wider in scope than its predecessor and therefore applicable to the broad range of health and social service providers who support individuals living with or at risk of STBBIs. As much of the research in the field has focused on measuring HIV stigma, it was further decided that the HPASS tool should be adapted to incorporate a broader range of STBBIs, including HIV, hepatitis C, other viral STIs and bacterial STIs.^{9–13} These four distinct categories of STBBI were selected on the basis of route of transmission and treatment regimen, and were used to explore whether societal attitudes and beliefs differed for the various STBBIs, as has been suggested by other studies.¹⁴ Further, by incorporating a broader range of STBBIs, the STBBI Stigma Scale better reflects the continual shift towards a more integrated approach to STBBIs in Canada and internationally. An integrated approach recognizes the common modes of transmission; the potential role of STBBIs in the progression and transmissibility of HIV and hepatitis C; and the need to acknowledge and address the historical, structural and economic factors that may affect decision-making related to sexuality and substance use.¹⁵ By reducing fragmentation of services, an integrated approach can more effectively meet the needs of those living with or at risk of STBBIs.¹⁵

As with the HPASS, it was hypothesized that each category of the STBBI Stigma Scale, namely HIV, hepatitis C, bacterial STIs and other viral STIs, would support Earnshaw and Chaudoir's tripartite framework of stigma. It was further hypothesized that the newly adapted tool would demonstrate convergent as well as divergent validity with other measures of HIV stigma and social desirability. A convergent validity check ensures that the measure converges with a measure assessing theoretically the same or a similar construct, whereas a divergent validity check ensures that the measure varies from a measure theoretically assessing a different construct.¹⁶ Ultimately, the goal was to create a psychometrically valid tool inclusive of the broad range of STBBIs and applicable to a diversity of health and social service providers that could 1) facilitate self-reflection and exploration of individual attitudes and beliefs among health and social service providers and 2) be used to evaluate whether a change in attitudes and beliefs occurred as a result of participation in training offered across the country as part of the Canadian Public Health Association's project. The objectives of this paper are thus to present the preliminary findings from the development and validation of the STBBI Stigma Scale, and to discuss its limitations and potential application to the reduction of STBBI-related stigma within health and social service settings in Canada.

METHODS

Scale development

Conceptualization

The STBBI Stigma Scale was developed as an adaptation of the HPASS.⁹ The original HPASS measure was approved by both a reference group and through member checking with the focus group participants. The STBBI Stigma Scale was developed in order to pose these same questions regarding other STBBIs and to adapt it

for use with both health care and social service providers. It was hypothesized that questions related to HIV could be translated into similar experiences with other STBBIs. Items referencing specific medical or health care techniques and actions were removed from the scale, condensing the measure from 30 to 24 items. Each item was posed on a six-point Likert-type scale ranging from 1 = strongly disagree to 6 = strongly agree. Additionally, the measure was translated into French and backtranslated to achieve item accuracy. Each item was posed for four STBBI groups: HIV, hepatitis C, other viral STBBIs (e.g., genital herpes, human papillomavirus) and bacterial STBBIs (e.g., chlamydia, gonorrhea, syphilis). Therefore each of the 24 items was posed four times – once for each of the STBBI groups. A reference group was developed composed of approximately 10 advisors to the Canadian Public Health Association; they consulted on the project, shared information with their networks for feedback, and approved the items tested. Ethics approval was obtained from Ryerson University's Research Ethics Board.

Scale psychometric assessment

Participants

Health care and social service providers from across Canada were recruited to participate in an online questionnaire in order to assess the psychometric properties of the scale. Participants were recruited by email through the Canadian Public Health Association weekly news brief and through targeted recruitment to AIDS service organizations, sexual health centres and community health centres. Participants had to indicate that they were over 18 years of age to participate. The response rate could not be established as recruitment was through mass email distribution.

Procedure

Participants followed a link in the recruitment email to participate online. They provided informed consent and were given a debriefing form upon completion. Participants were not compensated for their involvement.

Measures

Along with the STBBI Stigma Scale, participants also completed the following questionnaires:

Demographics

Demographic information collected included age, gender, ethnicity, profession and sexual orientation (see Table 1 for more detail).

Convergent and divergent validity

The AIDS Attitude Scale (AAS)¹⁷ is a 21-item, six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree) with two subscales, Avoidance and Empathy. AAS-Avoidance is considered a measure of convergent validity as it also measures stigma, while AAS-Empathy is considered a measure of divergent validity as it measures empathic reactions, as opposed to stigmatizing ones. In the current sample, AAS-Avoidance and AAS-Empathy both had acceptable internal consistency (Cronbach's $\alpha = 0.71$ and Cronbach's $\alpha = 0.72$ respectively).

Table 1. Demographic characteristics of pilot test participants

Variable	N (yes)	%
Gender		
Female	112	78.3
Male	29	20.3
Other identity (trans, gender fluid)	2	1.4
Ethnicity*		
African	3	2.1
African-Caribbean or other Caribbean	3	2.1
East or South Asian	6	4.2
Middle Eastern/North African	2	1.4
White-European or other	122	84.8
Aboriginal	4	2.8
Other ethnicity/prefer not to say	7	4.9
Born in Canada	127	88.2
Sexual orientation		
Heterosexual	117	81.8
LGBQ	26	18.2
Professional role		
Nurse	71	49.7
Physician	16	11.2
Health educator or promoter	16	11.2
Other (including social worker, pharmacist, client engagement)	29	28
Direct engagement with service users	121	84.6
Taken a course or workshop about STBBIs	128	88.9
Worked with individuals with STBBIs	136	94.4
Worked with individuals with STBBIs more than 25% of caseload	81	59.6

* Participants were allowed to identify more than one ethnicity, therefore totals exceed 100%.

Note: LGBQ = lesbian, gay, bisexual and queer; STBBIs = sexually transmitted and blood-borne infections.

Social desirability

The Marlowe–Crowne Social Desirability Scale Short Form (MC-SF)¹⁸ consists of 10 true/false questions and is useful to assess desire for positive impression management. The scale had low internal consistency in the current sample (Cronbach's $\alpha = 0.35$) and therefore should be interpreted with caution. It was hypothesized that there would be no correlation between the MC-SF and the STBBI categories.

Data Analyses

All analyses were conducted using IBM SPSS Statistics 22.0.¹⁹ Analyses for the measure were run separately for each of the STBBI categories (because they are theoretically separate but also to mitigate multicollinearity). Exploratory factor analyses (EFA) were run to test the factor structure of each STBBI category. Initially, an EFA with three specified factors was run, because the factors underlying the STBBI Stigma Scale were theoretically driven, as they had been in the HPASS, and it was likely that three factors would best describe the data. Subsequently, an unrestricted model was run to ensure that the theorized three-factor model was indeed the best fit for the data; subsequent analyses used the three-factor model. Maximum likelihood estimation was used for factor extraction to allow for missing data, and direct oblimin rotation was used, as factor correlation was assumed. Cronbach's alphas for scale internal consistency reliability were determined for both total scale score and the subscales of discrimination, stereotyping and prejudice for each STBBI category. Upon examination of factor loadings, three items (one from each subscale) did not load consistently across categories or had very low factor loadings and

were therefore removed from the analyses. One item consistently demonstrated an alternative factor loading to the HPASS measure and was therefore included in calculations for the prejudice subscale as opposed to the discrimination subscale. Cronbach's alphas were re-run with the trimmed scale and improved from the 24-item version. Therefore all subsequent analyses were conducted on the 21-item scale. Convergent and divergent validity were examined through correlations of the STBBI Stigma Scale categories, other HIV stigma scales and a measure of social desirability. Additionally, a repeated-measures general linear model was run to determine differences between scores on the four types of STBBI.

RESULTS

A total of 144 health care and social service providers participated in the study.

Participants were between 23 and 75 years of age ($M = 42.67$, $SD = 12.23$), and over three quarters of the sample were female ($N = 112$, 77.8%). Approximately two thirds were health care providers (physicians, nurses and nurse practitioners, $N = 91$, 63.2%) and on average had been practising their profession for four and a half years ($M = 4.56$, $SD = 1.38$). Age, gender and professional role were not significantly associated with any of the STBBI category totals in bivariate associations, and therefore further subanalyses were not conducted with these variables.

Factor structure

EFA

Each STBBI category was examined for suitability for factor analysis. All items for each category correlated at least 0.30 with another item; Bartlett's test of sphericity was significant for each category; and Kaiser-Meyer-Olkin's measure of sampling adequacy was above the cut-off of 0.60 for each category. Communalities of the items indicated that the items did share some variance (all above 0.03). Considering each of these factors, EFA was deemed appropriate.

The three-factor EFAs explained over 51% of the variance for each category (hepatitis C [$M = 39.97$, $SD = 12.19$], HIV [$M = 40.98$, $SD = 13.02$], other viral STBBIs [$M = 38.75$, $SD = 12.56$] and bacterial STBBIs [$M = 40.15$, $SD = 12.67$]). The analysis corroborated the three-factor model of prejudice, stereotyping and discrimination for each form of STBBI stigma. The total score of each of the scale items was not normally distributed according to Kolmogorov–Smirnov's test of normality. The subscales were summed to determine their total scores (prejudice $n = 9$ items, stereotyping $n = 8$ items and discrimination $n = 4$ items). All subscales except for one (HIV stereotypes) were not normally distributed. Transformations were run for all individual items. Factor structure and inter-factor correlations were not significantly affected using transformed variables, and we therefore elected to report raw scores in order to mitigate any interpretive difficulties. See Table 2 for a full summary of scale normality and internal consistency.

Inter-factor correlations support the structure of the scale and also the uniqueness of the subscales. A full correlation table for all categories and subscales is found in Table 3.

Cronbach's alphas and EFA results for each STBBI category total and subscales

Hepatitis C				HIV				Other viral				Bacterial		
EFA % var = 51.18%				EFA % var = 51.19%				EFA % var = 56.89%				EFA % var = 55.54%		
α	K-S (p)	Skew (SE)	Kur (SE)	α	K-S (p)	Skew (SE)	Kur (SE)	α	K-S (p)	Skew (SE)	Kur (SE)	α	K-S (p)	Skew (SE)
0.883	0.129	1.24 (0.20)	2.19 (0.40)	0.900	0.131	1.26 (0.20)	2.09 (0.40)	0.903	0.141	1.44 (0.20)	2.66 (0.40)	0.905	0.130	1.41 (0.20)
0.767	$p < 0.001$	0.085	0.18 (0.20)	0.809	$p < 0.001$	0.071	0.14 (0.20)	0.853	$p < 0.001$	0.085	0.45 (0.20)	0.852	$p < 0.001$	0.075
	$p = 0.013$		−0.61 (0.40)		$p = 0.076$		−0.59 (0.40)		$p = 0.013$		−0.22 (0.40)		$p = 0.045$	0.28 (0.20)
0.902	0.277	2.70 (0.20)	8.57 (0.20)	0.906	0.269	2.52 (0.20)	7.14 (0.40)	0.923	0.301	2.97 (0.20)	9.98 (0.40)	0.915	0.299	2.87 (0.20)
	$p < 0.001$				$p < 0.001$				$p < 0.001$				$p < 0.001$	
0.852	0.263	1.64 (0.20)	2.16 (0.40)	0.848	0.259	1.64 (0.20)	2.17 (0.40)	0.884	0.305	1.78 (0.20)	2.49 (0.40)	0.868	0.286	1.83 (0.20)
	$p < 0.001$				$p < 0.001$				$p < 0.001$				$p < 0.001$	

variance = percentage of the variance accounted for in the Exploratory Factor Analysis; K-S = Kolmogorov–Smirnov's test of normality.

Category and subscale correlations

[illegible]

$p < 0.001$.
= stereotypes; Prej = prejudice; Discrim = discrimination.

Table 4. Correlations between STBBI Stigma Scale category total scores and convergent and divergent validity measures

	Hepatitis C	HIV	Other viral	Bacterial
AAS-Avoidance	0.60*	0.71*	0.63*	0.68*
AAS-Empathy	-0.44*	-0.51*	-0.53*	-0.55*
MC-SF	0.09	0.14	0.10	0.11

* $p < 0.01$.

Note: AAS = AIDS Attitude Scale; MC-SF = Marlowe-Crowne Social Desirability Scale Short Form.

Internal consistency

Internal consistency reliability for each total score and all subscales for each STBBI category were all acceptable to excellent (hepatitis C ranging from Cronbach's $\alpha = 0.767$ to 0.902 ; HIV from Cronbach's $\alpha = 0.809$ to 0.906 ; other viral from Cronbach's $\alpha = 0.853$ to 0.923 ; and bacterial from Cronbach's $\alpha = 0.852$ to 0.915). See Table 2 for full results.

Convergent and divergent validity

Convergent validity was assessed using the AAS Avoidance subscale as a comparison. Scores on the AAS-Avoidance were correlated with total scale scores for the STBBI Stigma categories, indicating convergent validity (see Table 4). AAS-Empathy had negative correlations with the STBBI Stigma Scale total scores, and the MC-SF had no correlation with the STBBI Stigma Scale total scores, demonstrating divergent validity.

Comparison between STBBIs

A repeated-measures general linear model was run to compare scores across the STBBIs. Mauchly's test was significant, indicating that sphericity could not be assumed ($\chi^2(5) = 145.83$, $p < 0.001$), and therefore Greenhouse-Geisser corrected tests are reported ($\epsilon = 0.61$). The results demonstrate that answers differed by type of STBBI, $F(1.82, 260.43) = 6.99$, $p = 0.002$. Comparatively, using contrasts with a Bonferroni correction, there were significant differences in scores between hepatitis C and other viral STBBIs ($F(1, 143) = 4.30$, $p = 0.040$, $r = 0.17$), with small differences observed between other viral and bacterial STBBIs ($F(1, 143) = 25.71$, $p < 0.001$, $r = 0.39$) and other viral STBBIs and HIV ($F(1, 143) = 15.51$, $p < 0.001$, $r = 0.31$).

DISCUSSION

This study demonstrates the preliminary factor structure, reliability and validity of the STBBI Stigma Scale across four STBBI groups – hepatitis C, HIV, other viral STBBIs and other bacterial STBBIs. The measure is an adapted version of the HPASS,⁹ which has been edited for STBBIs and for use with both health care and social service providers. The STBBI Stigma Scale continues to support Earnshaw and Chaudoir's⁸ HIV Stigma Framework, consisting of prejudice, stereotyping and discrimination, demonstrating that this framework is not solely relevant for HIV. Each STBBI scale has 21 items, pared down both conceptually and statistically from the original 30-item structure of the HPASS. Each of the four STBBI groups demonstrated good to excellent total score and subscale score internal consistency. Convergent validity was ascertained using the AAS Avoidance subscale and divergent validity using the

AAS Empathy subscale and MC-SF measure. To our knowledge, this is the first measure of its kind to assess STBBI stigma in health care and social service providers. It was assessed using active service providers, providing a current, relevant and practical assessment of attitudes and beliefs.

It is widely acknowledged that stigma is a considerable barrier to STBBI prevention, testing and treatment efforts in Canada. As a first step towards addressing stigma within service settings, health and social service providers must reflect on their own, often implicit, attitudes and values towards those living with or affected by STBBIs and, in turn, ensure that implicit attitudes and values do not affect the quality of care provided. For example, particularly with “curable” STBBIs like gonorrhea or chlamydia, there may be less perception of the stigmatizing nature of reactions and responses. The STBBI Stigma Scale presents a validated tool that can be used by health and social service providers to facilitate self-reflection of the prejudice, stereotyping and discrimination associated with STBBIs. In addition, the measure may be used as an evaluation tool to assess changes in attitudes and beliefs related to STBBIs following participation in professional development.

Analyses of the pilot test results demonstrate areas for further inquiry. The highest mean scores among pilot test participants were observed for stereotyping (average mean standardized item response of 2.40 across STBBI category, versus 1.50 for prejudice and 1.59 for discrimination), thus suggesting that there may be value in unpacking common stereotypes as part of professional development efforts with health and social service providers. In addition, significant differences in terms of mean scores were noted between viral STBBIs excluding HIV and hepatitis C (e.g., genital herpes, human papillomavirus) and all other STBBI categories, but not between any of the other categories. Further work should examine why these viral STBBIs were associated with less stigmatizing attitudes and beliefs.

While the application of the STBBI Stigma Scale is certainly promising, there are notable limitations to its initial development and pilot testing. Given the preliminary nature of this study, test-retest reliability was not assessed. Additionally, the sample was not large enough to conduct a confirmatory factor analysis. Both test-retest reliability and confirmatory factor analysis will be necessary to validate the scale's factor structure, given that factor structures with small samples can be unstable and need to be further confirmed. Further, it is possible that pilot test participants were not representative of the broader community of health and social service providers in Canada, given the small sample ($n = 144$) and the voluntary nature of the study. Participants who self-selected to participate may be more knowledgeable of STBBIs and in turn less likely to harbour stigmatizing attitudes and beliefs. This may explain the relatively low mean scores observed across all STBBI categories.

Limitations notwithstanding, the findings presented in this paper offer a preliminary view of the potential application of the STBBI Stigma Scale. The Scale was pilot tested among active service providers in Canada and thus represents a current and contextually relevant tool for health and social service professionals across the country. Furthermore, pilot test findings demonstrate very strong psychometric properties, particularly for a pilot adaptation. In order to further advance the preliminary findings from this pilot test, it is recommended that the STBBI Stigma Scale be used in

conjunction with observed behaviour and used over time to assess changes in attitudes and beliefs following participation in professional development.

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RÉSUMÉ

OBJECTIFS : Les infections transmissibles sexuellement et par le sang (ITSS) sont associées à des attitudes et des croyances stigmatisantes qui peuvent avoir un impact sur la qualité des soins de santé, l'accès aux soins, la santé mentale et la qualité de vie. L'étude en cours décrit l'adaptation d'une échelle de stigmatisation liée au VIH et l'essai pilote d'une nouvelle Échelle de stigmatisation des ITSS qui évalue les attitudes et les croyances stigmatisantes des dispensateurs de services sociaux et de santé au Canada.

MÉTHODE : 144 dispensateurs de services sociaux et de santé du Canada ont rempli l'échelle nouvellement adaptée évaluant la stigmatisation associée au VIH, à l'hépatite C, aux autres ITSS virales, aux ITSS bactériennes; les données démographiques, une échelle de désirabilité sociale et des indicateurs de validité convergente et divergente ont aussi été testés. Les participants ont été recrutés à l'aide de questionnaires de listes de diffusion et ont rempli l'échelle en ligne.

RÉSULTATS : La nouvelle échelle, qui comprend 21 éléments dans chaque catégorie, a affiché d'excellents résultats sur les plans de la cohérence interne, de la fiabilité, ainsi que de la validité convergente et divergente. La structure factorielle de l'échelle appuie un modèle de stigmatisation en trois parties : stéréotypes, préjugés et discrimination. Les stéréotypes ont eu les résultats relatifs les plus élevés des trois sous-échelles, et les attitudes à l'égard des autres ITSS virales ont présenté des écarts significatifs par rapport aux autres catégories d'ITSS.

CONCLUSION : La nouvelle échelle offre un outil psychométriquement valide à la fois contextuellement approprié et applicable pour évaluer la stigmatisation liée aux ITSS chez les dispensateurs de services sociaux et de santé du Canada. Cet outil peut servir à évaluer les attitudes et les croyances, ainsi qu'à guider une auto-évaluation et d'éventuelles formations pour les dispensateurs.

MOTS CLÉS : stigmatisme social; discrimination sociale; santé reproductive; auto-évaluation; enquêtes et questionnaires