

French Stigma Scale: French translation and validation of a stigma scale to measure diabetes-related stigma

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Research

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Abstract

Context: In recent years internalized stigma, or self-stigma, has been the focus of a number of studies in people living with chronic diseases and mental illness, as it can negatively impact access to care and quality of life. However, few studies have looked at self-stigma experienced by people living with diabetes, specifically among immigrants, a population with a higher risk of stigmatization. Furthermore, the majority of the tools used to measure this type of stigma are only available in English. In order to assess the level of self-stigma among francophone populations living with diabetes, it is imperative to possess a specific French-language tool allowing the measurement of self-stigma in this population.

Objective: The aim of this study was to translate and validate a French version of the Self-Stigma Scale-Short (SSS-S), a tool for assessing internalized stigma, in the Canadian immigrant population living with diabetes.

Methods: The reliability and validity of the French stigma scale were tested in a sample of 30 immigrant patients living with type 2 diabetes recruited using the volunteer method. Exploratory and confirmatory factor analyses were performed to assess the factors formulated in the original scale, the SSS-S. To evaluate the psychometric properties of the scale, Cronbach's alpha was used to estimate internal consistency and intraclass correlation coefficients were used to assess reliability.

Results: The total mean score of the scale obtained for the study sample was 16.57 (\pm 5.10), showing a low level of stigma. Analysis of the scores indicated good internal consistency (Cronbach's alpha = 0.86) and excellent reliability (ICC = 0.94) for the full scale. The results of the exploratory factor analysis confirmed the original three-dimensional structure of the SSS-S, despite an unsatisfactory confirmatory factor analysis. ($P > \chi^2$ of the base model < 0.05 , RMSEA > 0.06 , for both models).

Conclusion: The French stigma scale is a valid and reliable tool that can be used to assess internalized stigma in patients living with diabetes.

Introduction

The number of people living with diabetes was estimated at 382 million in 2013, and is expected to climb to 592 million by 2035 (1). In Canada in 2017, 7.3% of Canadians age 12 or older—about 2.3 million people—reported having been diagnosed with diabetes (2). Given that ethnicity and immigration are risk factors for the occurrence of diabetes and its complications (1, 3) immigrants to Canada, the majority of whom are from Asia and Africa (4), show a higher prevalence of diabetes (5).

People living with diabetes may experience internalized stigma, or self-stigma, where they accept and internalize the societal stereotypes and preconceptions associated with their health status (6, 7). They may also experience social stigma in everyday interactions, including stereotypes, prejudice, and discrimination (6). Social stigma can occur in any setting, particularly in healthcare environments, where it reduces access to health care, diminishes quality of life, and fosters internalization of stereotypes that

lead to self-stigma (6). Finally, anticipated stigma is when a person expects to be the victim of discriminatory behaviour or prejudice (6). The many consequences of diabetes-related stigma include refusal to talk about one's condition; psychological distress; decreased self-esteem, social adaptability, and overall well-being; shame; loss of hope; identity issues; and problems with social relations (7, 8). As for access to health care and quality of life, the literature shows that diabetes-related stigma is associated with more-frequent hospitalizations, low patient compliance, and reduced adherence to treatments among patients living with chronic diseases such as diabetes (6–14). Stigma has also been cited as justification for not participating in patient education about the disease (15).

As a result, at a time when the prevalence of diabetes in Canada is increasing (2), especially within the growing immigrant population (16), which faces multiple barriers to accessing health care (1, 17–20), it is extremely important to assess the extent to which immigrants living with diabetes experience self-stigma so that early interventions can be implemented to strengthen their self-esteem and their adherence to treatment. This type of assessment is crucial, all the more so because immigrants may face a double stigma (9, 21, 22) due to their immigrant status (23) and the fact that they are living with diabetes (9).

While a certain number of tools have been developed and validated for internalized stigma, most are focussed on mental disorders and are in English (24–27). The standardized tool typically used to measure stigma is the Stigma Scale developed by King in 2007 (26, 28–31). Taking King's Stigma Scale as their starting point, Mak and Cheung created the Self-Stigma Scale, a tool for quantifying and assessing internalized stigma in a variety of groups of concealable (non-visible) minorities, for example certain mental illnesses, certain immigrant groups, non-heterosexual groups, etc. (29). Since diabetes is a concealable disease that can lead to self-stigma in those living with it (32), the tool developed by Mak and Cheung seemed ideal for measuring diabetes-related stigma. Kato et al. used and validated the instrument for type 2 diabetes (28) in both its long form (the Self-Stigma Scale) and its short form (the Self-Stigma Scale-Short or SSS-S), in Japanese (SSS-J) and in English.

However, to our knowledge there is no French-language tool for measuring diabetes-related self-stigma that is culturally adapted to the ethnocultural minorities in Canada's immigrant population (the group most affected by diabetes). To fill this gap, we translated the Self-Stigma Scale-Short (SSS-S) from English to French in order to test its reliability and validity among immigrants with type 2 diabetes. The tool was renamed "Échelle de stigmatisation" in French, French Stigma Scale (FSS) in English. The authors of the original version of the SSS-S agreed to its translation.

Methods

Translation of the French Stigma Scale (FSS)

We translated the SSS-S from English into French according to a simple translation protocol, following the standard recommendations for translating questionnaires (33). The five-step translation process is illustrated in Fig. 1. Four bilingual translators translated and back-translated the questionnaire. Two were

native French speakers, including the lead author of this study, and the other two were native English speakers. All four translators were knowledgeable about the study topic and were familiar with the research (two research assistants and two research professionals). Three had prior experience working in diabetes research. The objectives of the translation process had been communicated to them to ensure they focused on the meaning of each item.

In Step 1, the original SSS-S was translated from English to French separately by two native French-speaking translators.

The goal of Step 2 was to obtain a consensual French version based on the two French versions produced in Step 1. Together the two translators considered the content, semantics, conceptualization, and technical equivalence with the initial scale, and any necessary cultural adaptations (28).

In Step 3, the consensual French version from Step 2 was back-translated into English separately by two native English-speaking translators, then combined into a single version based on a consensus between the translators, as in Step 2.

In Step 4, the final English version from Step 3 was compared with the original English version of the SSS-S by all four translators to ensure the consensual French version from Step 2 matched the original SSS-S.

Finally, in Step 5 the suggestions made in Step 4 were incorporated in order to validate a suitable final French-language version of the FSS.

Validation of the FSS with persons living with diabetes

Data collection

Data was collected using the FSS, which was self-administered two times by 30 participants between August 2017 and November 2017, a period of four months. The first time, the questionnaire was given to participants after a one-hour semi-structured qualitative interview on the connection between diabetes-related stigma and engagement in research (the research topic of another study our team is conducting). The second time, participants completed the survey online or by phone, according to their preference. The average time between the first and second administration of the questionnaire was one to four weeks. The average completion time was about one minute.

Participants

The study population consisted of immigrants from ethnocultural minorities who are living with diabetes. The population included Arab people as well as people from Asia, the Middle East, Africa and the Caribbean (34)).

To be included, participants had to be 1) age 18 or older; 2) be an immigrant belonging to an ethnocultural minority in Canada ("immigrant" designates a person residing in Canada who was born

outside of Canada, excluding temporary foreign workers, Canadian citizens born outside Canada, and student or work visa holders (35)); 3) have been diagnosed with chronic diabetes (except gestational diabetes); 4) speak French or English; 5) read French; and 6) agree to participate in the study.

Sampling

We used the volunteer sampling method. This is a form of intentional recruitment made up of individuals who agree to participate in research (36). Participants were recruited with a message sent to the Francophone and Immigrant Patient Circle at Diabetes Action Canada, and posted on-site at ACCÉSSS (Alliance des communautés culturelles pour l'égalité dans la santé et les services sociaux) in Montréal and Québec City. We then used the snowball method to recruit the other participants (37).

Measurements

The nine-item FSS uses a four-point Likert scale of agreement for each item, with the following answer choices: 1) strongly disagree, 2) disagree, 3) agree, 4) strongly agree, corresponding to a score of 1, 2, 3, and 4 respectively. The total score can range from 9 to 36. A higher score represents a higher level of internalized stigma. The scale also has three subscales: 1) cognitive (stigmatized individuals perceive themselves as less competent than the majority and undeserving of better living conditions), 2) affective (feelings of shame, discouragement, embarrassment, or anger), and 3) behavioural (self-denigration and reduced social interaction). Each subscale includes three items and its score can range from 3 to 12.

Participants' sociodemographic characteristics, including sex, current age, age at time of diabetes diagnosis, length of time living in Canada, education level, and marital status, were collected at the beginning of the interview. For data analysis purposes, certain variables were categorized: sex (male, female); education level (secondary school, college, bachelor's, master's, PhD); and marital status (single, divorced, married, widowed). Age and lifetime in Canada were treated as continuous variables.

To validate the FSS, we estimated the internal consistency, internal validity, and test-retest reliability of the full scale and each subscale.

The data gathered was entered and compiled using Microsoft Excel 16.12, then transferred to SAS 9.4 for analysis.

Analyses

The distribution of sociodemographic characteristics within the population was analyzed by sex. Age, the only continuous variable on the questionnaire, was presented as the arithmetic mean \pm standard deviation; the categorical variables were presented as proportions (%).

As for the scale statistics, the proportion (prevalence) of each answer choice was calculated for each item on the questionnaire using the PROC FREQ frequency analysis procedure in SAS. The mean scores were obtained for each subscale and for the full scale using the PROC MEANS procedure. An analysis of

variance (ANOVA) for continuous variables was conducted to compare the mean scores according to number of years since diagnosis.

Finally, the internal consistency of the stigma scale was evaluated using Cronbach's alpha with a threshold of 0.70 (38, 39) and a reliability indicator, intraclass correlation coefficients (ICC). We calculated the ICCs of each subscale to gauge the test-retest reliability of the answers to the questionnaire. The structure and stability of the relationship between items in the stigma scale were determined using Mak and Cheung's exploratory factor analysis (EFA) and a confirmatory factor analysis (CFA) (29). These analyses were completed in SAS (PROC CALIS for the CFA and PROC FACTOR for the EFA).

Results

Respondents' sociodemographic characteristics

Table 1 shows the sociodemographic data for the study population. Just over half the respondents, 53.33% (16 out of 30), were female. The mean age of participants was 55.63 (95% CI, 22 to 73) with no significant difference between the sexes. The lifetime in Canada ranged from less than 1 year to 62 years ($= 28.31 \pm 14.82$ years) and the number of years with Type 2 diabetes ranged from 1 to 35 years.

Table 1
Participants' sociodemographic characteristics

Sociodemographic characteristics	Study population N = 30
Age, μ (\pm SD)	55.63 (13.59)
Female	56.56 (9.35)
Male	54.57 (17.46)
Number of years in Canada, μ (\pm SD)	28.31 (14.82)
Sex, N (%)	
Female	16 (53.33)
Male	14 (46.67)
Age of diagnosis, μ (\pm SD)	11.89 (8.97)
Education level, N (%)	
Secondary	3 (10.00)
College	6 (20.00)
Bachelor's	10 (33.33)
Master's	6 (20.00)
PhD	4 (13.33)
Marital status, N (%)	
Female	
Single	0 (0.00)
Married	8 (50.00)
Divorced	7 (43.75)
Widowed	1 (6.25)
Male	
Single	4 (28.57)
Married	1 (7.14)
Divorced	9 (64.29)
Widowed	0 (0.00)

Respondents were from a number of different countries (Table 2) and 70% had a university degree. One third of respondents were married at the time of the study (50% of the women versus 7.14% of the men). Only 13.33% of respondents were single; all self-identified as men.

Table 2
Participants' country of origin (N = 30)

Country of origin	N	Frequency, %
Chile	6	20.00
Pakistan	5	16.67
Haiti	4	13.33
Togo	3	10.00
China	3	10.00
Morocco	2	6.67
DRC	2	6.67
Cuba	1	3.33
Guadeloupe	1	3.33
Guinea-Conakry	1	3.33
Italy	1	3.33
Tunisia	1	3.33
Uruguay	1	3.33

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Scale statistics

The total mean score for the FSS was 16.57 (± 5.10) (Table 3). When we look at the subscales, the mean scores are 7.27 (± 2.60) for the cognitive subscale, 5.26 (± 2.05) for the affective subscale, and 4.03 (± 2.04) for the behavioural subscale.

Table 3
Respondents' mean score by subscale (N = 30)

	Mean	SD	Minimum	Maximum
Full scale	16.57	5.09	9	27
Cognitive	7.27	2.60	3	12
Affective	5.26	2.05	3	10
Behavioural	4.03	2.04	3	12

Internal validity

Internal consistency

The internal consistency of the FSS was evaluated using Cronbach's alpha, with a lowest acceptable threshold of 0.70. The internal consistency of the full scale is considered acceptable with $\alpha = 0.82$. Similar results were obtained for the subscales, with the affective subscale the only outlier ($\alpha = 0.84$ for the cognitive subscale, $\alpha = 0.67$ for the affective subscale, and $\alpha = 0.90$ for the behavioural subscale).

Test-retest reliability

The FSS's test-retest reliability, expressed in intraclass correlation coefficients (ICCs), was studied for the entire population of 30 participants. The average time between the first and second administration of the questionnaire was one to four weeks. For the full scale, we found excellent reliability with an ICC of 0.94. The cognitive subscale showed the greatest reliability with an ICC of 0.96. The affective and behavioural subscales yielded ICCs of 0.86 and 0.83 respectively. These values suggest good test-retest reliability for our French version of Mak and Cheung's stigma scale (29).

Construct validity

Since our instrument is a translation of Mak and Cheung's scale (29), we conducted an exploratory factor analysis (EFA) followed by a confirmatory factor analysis (CFA), based on the two models described by these authors. The EFA identified the same three subdimensions as in Mak and Cheung (29), with the exception of Item 4, which scored moderately high in both factors 2 and 3 (Table 4).

Table 4
Factor loading based on exploratory factor analysis

	Mean (SD)	Rotation factor values ^a			
		Factor 1	Factor 2	Factor 3	
Q1: My identity as a _____ is a burden to me.	2.33 (0.96)	14	76	*	19
Q2: My identity as a _____ incurs inconvenience in my daily life.	2.47 (0.97)	20	70	*	11
Q3: The identity of being a _____ taints my life.	2.47 (1.04)	7	84	*	12
Q4: I feel uncomfortable because I am a _____.	2.10 (0.96)	5	57	*	62
Q5: I fear that others would know that I am a _____.	1.53 (0.77)	38	3		53
Q6: I feel like I cannot do anything about my _____ status.	1.63 (0.89)	-1	18		64
Q7: I estrange myself from others because I am a _____.	1.37 (0.76)	81	*	7	32
Q8: I avoid interacting with people because I am a _____.	1.30 (0.70)	96	*	10	5
Q9: I dare not to make new friends lest they find out that I am a _____.	1.37 (0.76)	80	*	32	-6

^a Values below are multiplied by 100 and rounded to the nearest whole number. Values higher than 0.468968 are marked with an *.

On the other hand, the results of the CFAs were unsatisfactory (Pr > chi-squared of the base model < 0.05, RMSEA > 0.06, for both models, although Bentler's CFI was around 0.9 in both cases). Indeed, while the small sample size of 30 was enough to perform that analysis, it was well below the recommended sample size of 100 for such analyses. Our data also did not meet the condition of normality required for such analyses. In practice, these statistical models are fairly resilient to non-normality. Therefore, the non-normality of our observations does not prevent us from using this analysis, but instead represents a potential explanation for our unsatisfactory suitability results.

Discussion

The purpose of this study was to translate the Self-Stigma Scale-Short from English into French and to test its reliability and validity for immigrants with type 2 diabetes. The consequences of diabetes-related

stigma on access to care and quality of life combined with the many barriers immigrants face to accessing care prompted us to examine the extent to which immigrants living with diabetes experience self-stigma. Having access to this information would make it possible to implement early interventions to strengthen self-esteem and adherence to treatment among immigrants living with a diabetes diagnosis. It would also provide a valid tool for subsequent research on diabetes in immigrant populations in Canada and other culturally similar regions.

The FSS was translated using a rigorous process that resulted in a questionnaire that includes the three subscales from the original SSS-S. The scores obtained in our population were higher than those obtained by Kato et al. (28) but lower than those of Mak and Cheung (29). This can be explained by the difference in the study population, for studies show that immigrants are at greater risk of stigma (9, 21–23). Mak and Cheung (29) administered their scale to immigrants suffering from mental illness, while Kato et al. did not target the immigrant population (28). Further studies focusing on immigrant populations living with diabetes are needed to determine their actual level of self-stigma.

The primary goal of this study was to validate the French Stigma Scale. The results show that our French version of the SSS-S has satisfactory psychometric properties. Its internal consistency is good (Cronbach's coefficient $\alpha = 0.82$), though slightly lower than that found in Kato et al. (2014) (28). The internal consistency of each conceptual dimension of the scale ranged from good to excellent, with the exception of the affective subscale ($\alpha = 0.84$ for the cognitive subscale, $\alpha = 0.67$ for the affective subscale, and $\alpha = 0.90$ for the behavioural subscale). This indicates satisfactory interaction between the items in the scale and each subscale. Furthermore, the reproducibility of the FSS upon readministration was excellent for the main scale (ICC = 0.94) as well as for the subscales (ICC = 0.96 for cognitive, 0.86 for affective, and 0.83 for behavioural).

The result obtained for the factor structure matched that found in the original version (29) (30) and in the SSS-J (28). The three-dimensional nature of the FSS highlighted in the previous studies (28, 29) was revealed by the EFA, although one of the items (Q4) scored in two different subscales. Which subscale this item belongs to is only ambiguous if we look solely at our own data.

That said, these results can be explained by one of the limits of our study, the sample size. Factor analysis requires not only normality of observations but also a sample size greater than 30. A larger sample would also have allowed us to measure stigma according to sociodemographic characteristics such as education level and socioeconomic status, which were associated with a higher stigma score (29). The other limit of our sample was its representativeness. While our sample was heterogeneous, it was not representative of the Canadian immigrant population because our sampling method led to selection bias. Volunteer participants may have different perceptions than non-participants. In health research, non-probability sampling tends to attract people who have stronger feelings about the matter being studied. But the volunteer method was the most suitable to our study, given the difficulty we had recruiting respondents from minority ethnic groups. Another limitation of this study was the lack of validated French-language tools available at the time of the study for use in confirming the external

validity of our work. This study is the first to propose a scale in French to measure self-stigma related to diabetes. While there are other scales for diabetes-related stigma, they do not use the same constructs as the SSS-S, which makes comparison difficult. In addition, the average time between the two administrations of the questionnaire may have influenced the test-retest reliability' results of the FSS. In this case, the average time between the first and the second administration of the questionnaire was from one to four weeks. The lack of uniformity could have had an effect on the results. For the sake of consistency, when the two administrations are close in time, the respondent can decide to give the same answer during the second administration (40). In contrast, when the two administrations are widely spaced, the line measured may have really changed between the two tests (40). This seems unlikely in this case since internalized stigma refers to long-term appropriation and internalization of stereotypes and prejudices associated with the disease(9). In other words, it is unlikely to feel the stigma of a participant change within a month's time. Finally, one of the limits of the FSS is that it specifically measures internalized stigma. A broader tool measuring other constructs would provide a better evaluation of stigma.

Conclusion

In conclusion, this study led to the production of a French-language version of the SSS-S scale that has satisfactory psychometric properties and that may be used to good effect in medical practice, the field of preventive health interventions, and research studies on diabetes-related stigma. Furthermore, because it is a short 9-item scale, the stigma scale can be used in situations less amenable to long administration times, such as telephone and online surveys, to measure the level of internalized stigma in francophone immigrant populations in Canada.

Declarations

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

This research project was submitted to Université Laval's human research ethics committee, CERUL, which verified project compliance with best practices in research and authorized it to go ahead (approval number 2017-019/18-04-2017).

CONSENT TO PUBLISH

Not applicable

DATA AVAILABILITY

The data generated and/or analyzed in the course of this study is not publicly available due to an ethics committee restriction authorizing data collection for this study only. However, it is available from the corresponding author upon reasonable request.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHOR CONTRIBUTIONS

JO, MJD, and MTD conceptualized and designed the study. JO was part of the team that translated the scale; she combined all the intermediary versions into a single version in collaboration with the other translators. MP conducted the analysis. JO interpreted the data and wrote the article. MP helped interpret the data and assisted with writing the article. MJD helped interpret the results and revised the final document. All authors read and approved the final manuscript.

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References

1.
Ballotari P, Caroli S, Ferrari F, Romani G, Marina G, Chiarenza A, et al. Differences in diabetes prevalence and inequalities in disease management and glycaemic control by immigrant status: a population-based study (Italy). *BMC Public Health*. 2015;15(1):1.
2.
Statistics Canada. Diabète. 2017. Les feuillets d'information sur la santé. 2018;N°82-625-X.
3.
Agence de la santé publique du Canada. Le diabète au Canada: Perspective de santé publique sur les faits et chiffres. 2011 [Available from: <https://www.canada.ca/fr/sante-publique/services/maladies-chroniques/rapports-publications/diabete/diabete-canada-perspective-sante-publique-faits-chiffres.html>].
4.
Chui T, Tran K, Maheux H. Immigration au Canada: un portrait de la population née à l'étranger, Recensement de 2006, année de recensement 2006: Statistique Canada; 2007.
5.
Pelletier C, Dai S, Roberts K, Bienek A, Onysko J, Pelletier L. Le diabète au Canada: perspective de santé publique sur les faits et chiffres. *Maladies chroniques et blessures au Canada*. 2012;33(1):53–4.
6.
Earnshaw VA, Quinn DM. The impact of stigma in healthcare on people living with chronic illnesses. *J Health Psychol*. 2012;17(2):157–68.
7.
Browne JL, Ventura A, Mosely K, Speight J. 'I call it the blame and shame disease': a qualitative study about perceptions of social stigma surrounding type 2 diabetes. *BMJ open*. 2013;3(11):e003384.
8.
Browne JL, Ventura A, Mosely K, Speight J. 'I'm not a druggie, I'm just a diabetic': a qualitative study of stigma from the perspective of adults with type 1 diabetes. *BMJ open*. 2014;4(7):e005625.
9.
Schabert J, Browne JL, Mosely K, Speight J. Social stigma in diabetes. *Patient*. 2013;6(1):1–10.
- 10.

- Lee S-M, Lim L, Koh D. Stigma among workers attending a hospital specialist diabetes clinic. *Occup Med (Lond)*. 2015;65(1):67–71.
- 11.
- Jaacks LM, Liu W, Ji L, Mayer-Davis EJ. Type 1 diabetes stigma in China: A call to end the devaluation of individuals living with a manageable chronic disease. *Diabetes Res Clin Pract*. 2015;107(2):306–7.
- 12.
- Teixeira ME, Budd GM. Obesity stigma: A newly recognized barrier to comprehensive and effective type 2 diabetes management. *J Am Acad Nurse Pract*. 2010;22(10):527–33.
- 13.
- Potter L, Wallston K, Trief P, Ulbrecht J, Juth V, Smyth J. Attributing discrimination to weight: associations with well-being, self-care, and disease status in patients with type 2 diabetes mellitus. *J Behav Med*. 2015;38(6):863–75.
- 14.
- Robinson DJ, Luthra M, Vallis M. Diabetes and mental health. *Can J Diabetes*. 2013;37:87–92.
- 15.
- Winkley K, Ewrierhoma C, Amiel S, Lempp H, Ismail K, Forbes A. Patient explanations for non-attendance at structured diabetes education sessions for newly diagnosed Type 2 diabetes: a qualitative study. *Diabet Med*. 2015;32(1):120–8.
- 16.
- Dion P, Caron-Malenfant É, Grondin C, Grenier D. Long-Term Contribution of Immigration to Population Renewal in Canada: A Simulation. *Popul Dev Rev*. 2015;41(1):109–26.
- 17.
- Okraine K, Booth GL, Hollands S, Bell CM. Language Barriers Among the Foreign-Born in Canada: Agreement of Self-Reported Measures and Persistence Over Time. *J Immigr Minor Health*. 2015:1–7.
- 18.
- Okraine K, Bell CM, Hollands S, Booth GL. Risk of cardiovascular events and mortality among a population-based cohort of immigrants and long-term residents with diabetes: Are all immigrants healthier and if so, for how long? *Am Heart J*. 2015;170(1):123–32.
- 19.
- Newbold KB. Self-rated health within the Canadian immigrant population: risk and the healthy immigrant effect. *Soc Sci Med*. 2005;60(6):1359–70.
- 20.
- Ahmed S, Shommu NS, Rumana N, Barron GR, Wicklum S, Turin TC. Barriers to access of primary healthcare by immigrant populations in Canada: a literature review. *J Immigr Minor Health*. 2015:1–19.
- 21.
- Link BG, Phelan JC. Conceptualizing stigma. *Annu Rev Sociol*. 2001:363–85.
- 22.
- Weiss MG, Ramakrishna J, Somma D. Health-related stigma: Rethinking concepts and interventions 1. *Psychol Health Med*. 2006;11(3):277–87.
- 23.

- Lalonde RN, Cameron JE. An intergroup perspective on immigrant acculturation with a focus on collective strategies. *Int J Psychol.* 1993;28(1):57–74.
- 24.
- Link BG. Understanding labeling effects in the area of mental disorders: An assessment of the effects of expectations of rejection. *Am Sociol Rev.* 1987:96–112.
- 25.
- Corrigan P. A toolkit for evaluating programs meant to erase the stigma of mental illness. *Chic Kent Law Rev.* 2008.
- 26.
- Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale. *Res Nurs Health.* 2001;24(6):518–29.
- 27.
- Rao D, Choi SW, Victorson D, Bode R, Peterman A, Heinemann A, et al. Measuring stigma across neurological conditions: the development of the stigma scale for chronic illness (SSCI). *Qual Life Res.* 2009;18(5):585–95.
- 28.
- Kato A, Takada M, Hashimoto H. Reliability and validity of the Japanese version of the Self-Stigma Scale in patients with type 2 diabetes. *Health Qual Life Outcomes.* 2014;12(1):1.
- 29.
- Mak WW, Cheung RY. Self-Stigma among Concealable Minorities in Hong Kong: Conceptualization and Unified Measurement. *Am J Orthopsychiatry.* 2010;80(2):267–81.
- 30.
- King M, Dinos S, Shaw J, Watson R, Stevens S, Passeti F, et al. The Stigma Scale: development of a standardised measure of the stigma of mental illness. *Br J Psychiatry.* 2007;190(3):248–54.
- 31.
- Morandi S, Manetti SG, Zimmermann G, Favrod J, Chanachev A, Monnat M, et al. Mesurer la stigmatisation perçue chez les personnes souffrant de troubles psychiques: traduction française, validation et adaptation de la Stigma Scale. *L'Encéphale.* 2013;39(6):408–15.
- 32.
- INVOLVE. Briefing notes for researchers: public involvement in NHS, public health and social care research. [Available from: <http://www.invo.org.uk/resource-centre/resource-for-researchers/>].
- 33.
- Cha ES, Kim KH, Erlen JAJJoan. Translation of scales in cross-cultural research. issues techniques. 2007;58(4):386–95.
- 34.
- Statistiques Canada. Immigration et diversité ethnoculturelle au Canada Statistiques Canada. 2013 [Available from: <https://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/99-010-x2011001-fra.cfm>].
- 35.
- Statistics Canada. Definition of "Immigrant" 2010 [Available from: <http://www.statcan.gc.ca/pub/81-004-x/2010004/def/immigrant-eng.htm>].

36.

Jupp V. The Sage dictionary of social research methods: Sage; 2006.

37.

Johnston LG, Sabin K. Échantillonnage déterminé selon les répondants pour les populations difficiles à joindre. Method Innov. 2010;5(2):38–48.

38.

Kamunge E, Cahill T, Zipp G, Parasher R. Knowledge, attitudes and practices of registered nurses regarding the spread of nosocomial infections and the impact of organizational support. Antimicrob Resist Infect Control. 2015;4(S1):P60.

39.

Remler DK, Van Ryzin GG. Research methods in practice: Strategies for description and causation: Sage Publications; 2014.

40.

Tsang S, Royse CF, Terkawi AS. Guidelines for developing, translating, and validating a questionnaire in perioperative and pain medicine. Saudi J Anaesth. 2017;11(Suppl 1):80-s9.

Figures

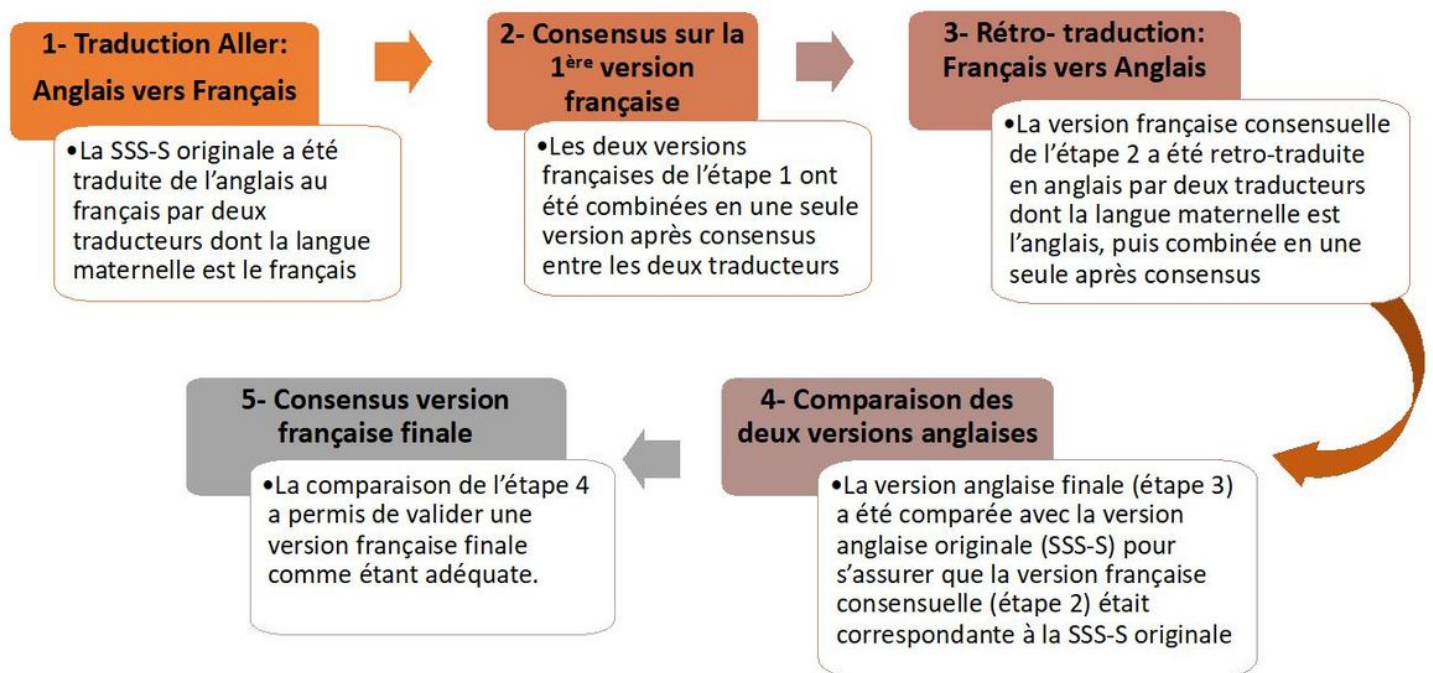


Figure 1

Process for translating the SSS-S from English into French