

Testing the Simple Lifestyle Indicator Questionnaire

Initial psychometric study

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ABSTRACT

OBJECTIVE To carry out initial psychometric testing on the Simple Lifestyle Indicator Questionnaire (SLIQ).

DESIGN Self-administered questionnaire to obtain data for test-retest reliability, for Cronbach α testing on completed questionnaires, and for blinded external validity testing.

SETTING Kingston, Ont, and surrounding area.

PARTICIPANTS One hundred thirty-six family practice patients with an mean age of 68 years; 58% were women. Subjects were primarily white and living in a small city and its rural surroundings.

MAIN OUTCOME MEASURES Test-retest coefficients, Cronbach α values, and correlation coefficients.

RESULTS Test-retest reliability on the 12 questions ranged from 0.63 to 0.97. The Cronbach α was 0.58 for questions on diet and 0.6 for questions on physical activity. We found a correlation coefficient of 0.77 between participants' and blinded raters' scores on the SLIQ.

CONCLUSION The SLIQ, as currently tested, is likely suitable for use in research on people who are at least similar to those in our study population. It probably should not be used in clinical settings until further testing has been carried out.

EDITOR'S KEY POINTS

- While there are various scales for measuring the individual components of lifestyle that affect cardiovascular disease, the authors were unable to find a scale for measuring several components at once.
- This paper reports on initial psychometric testing of such a scale, the Simple Lifestyle Indicator Questionnaire.
- The Simple Lifestyle Indicator Questionnaire, as currently tested, is probably suitable for use in research on people who are at least similar to the population in this study. It likely should not be used in clinical settings until further testing has been carried out.

*Full text is available in English at www.cfp.ca.

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Validation du questionnaire abrégé indicateur du mode de vie

Étude psychométrique initiale

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RÉSUMÉ

OBJECTIF Faire une première évaluation psychométrique du Questionnaire abrégé indicateur du mode de vie (QAIM).

TYPE D'ÉTUDE Questionnaire auto-administré afin d'obtenir des données pour la fiabilité test-retest, pour l'évaluation du questionnaire par le Cronbach α et pour le test à l'aveugle de la validité externe.

CONTEXTE Kingston, Ont, et environs.

PARTICIPANTS Cent trente-six patients d'une clinique de médecine familiale âgés en moyenne de 68 ans, dont 58% de femmes. Les sujets étaient principalement de race blanche et habitaient une petite ville ou la campagne environnante.

PRINCIPAUX PARAMÈTRES À L'ÉTUDE Coefficients test-retest, valeurs du Cronbach α et coefficients de corrélation.

RÉSULTATS La fiabilité test-retest pour les 12 questions variait entre 0,63 et 0,97. Le Cronbach α était de 0,58 pour les questions sur l'alimentation et de 0,6 pour celles sur l'activité physique. On a trouvé un coefficient de corrélation de 0,77 entre les scores des participants et ceux des évaluateurs à l'aveugle pour le QAIM.

CONCLUSION D'après cette évaluation, le QAIM semble adéquat pour une recherche sur une population semblable à celle de notre étude. Il ne devrait probablement pas être utilisé dans des contextes cliniques avant d'avoir été davantage testé.

POINTS DE REPÈRE DU RÉDACTEUR

- Même s'il existe plusieurs échelles pour mesurer les diverses composantes du mode de vie qui influencent les maladies cardiovasculaires, les auteurs n'en ont trouvé aucune capable de mesurer plusieurs composantes à la fois.
- Cet article décrit l'évaluation psychométrique initiale d'une de ces échelles, le Questionnaire abrégé indicateur du mode de vie.
- Dans son état actuel, le Questionnaire abrégé indicateur du mode de vie convient probablement pour une recherche sur une population semblable à celle de l'étude présente. Il ne devrait vraisemblablement pas être utilisé dans un contexte clinique avant d'avoir été davantage testé.

*Le texte intégral est accessible en anglais à www.cfp.ca.
Cet article a fait l'objet d'une révision par des pairs.
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Those investigating cardiovascular disease often require assessment of the lifestyles of the participants in their research projects. While we found various scales that measured the individual components of lifestyle¹⁻⁴ that affect cardiovascular disease (diet, activity, stress, smoking, alcohol consumption), we were unable to find a health-measurement scale that measured all these components at once.

Our research into hypertension⁵⁻⁷ required such a scale. It needed to be short, reliable, valid, and useful in both research and clinical settings. This paper reports on our initial psychometric testing of such a scale, the Simple Lifestyle Indicator Questionnaire (SLIQ).

METHODS

Figure 1 lists the 12 questions on the SLIQ and indicates the scoring procedure. The SLIQ has 5 components: diet (3 questions), activity (3 questions), alcohol consumption (3 questions), smoking (2 questions), and stress (1 question). For each component, a raw score and a category score can be calculated. To provide equal weighting for each component, the overall SLIQ score is based on the 5 category scores. Each component has a category score of 0, 1, or 2, so overall SLIQ scores can range from 0 to 10. The higher the score, the more healthy the lifestyle.

Initial development and face and content validity

Originally, the SLIQ had 25 questions that had been drafted by 2 family physicians and a nutritionist. These were reviewed by a group, consisting of 3 family physicians, a nutritionist, and a nurse practitioner, which was asked to assess and comment on the content areas, the content of each item, and the structure of the questionnaire. Based on comments from this group and a factor analysis of the 9 original questions on diet, the final questions for the SLIQ were chosen. The factor analysis was done on 30 questionnaires completed by patients selected opportunistically in a family practice clinic.

Dr Godwin was a Professor and Director of the Centre for Studies in Primary Care at Queen's University in Kingston, Ont, at the time of this study and is now a Professor and Director of the Primary Healthcare Research Unit at Memorial University of Newfoundland in St John's.

Ms Streight and Dr Dyachuk are Research Assistants at the Centre for Studies in Primary Care. Ms van den Hooven and Ms Ploemacher are Research Interns at the Centre for Studies in Primary Care and are on an international elective from Wageningen University in the Netherlands. Ms Seguin is a Research Manager at the Centre for Studies in Primary Care. Ms Cuthbertson is a Nutritionist in the Department of Family Medicine at Queen's University.

Testing population

Once the content of the questions was final, and face and content validity had been assessed, formal evaluation of test-retest reliability, internal consistency, and external validity was undertaken. This testing was done on the first 136 people to be enrolled in a randomized study of home blood pressure monitoring. The eligibility criteria for that study included being 18 years old or older, having a diagnosis of hypertension, and not having achieved target blood pressure levels. People with diabetes, heart disease, or other comorbidity were not excluded.

Test-retest reliability

The 136 people were asked to complete the SLIQ and to complete it again 1 month later. Test-retest reliability coefficients were calculated for each question.

Internal consistency (Cronbach α)

Cronbach α indicates the degree to which the various questions are measuring the same construct. Only the questions on diet and activity were amenable to assessment by Cronbach α . These 2 components have 3 questions each. The component on stress has only 1 question and so cannot be assessed for Cronbach α . The questions on smoking and alcohol consumption are structured such that they are mutually exclusive and would not be expected to be scored in the same direction.

External validity

External validity was measured on a subsample of 60 questionnaires chosen randomly and assessed by 3 practitioners: a family doctor, a nurse practitioner, and a nutritionist. Without knowing how the questionnaires would have been scored on the SLIQ scoring template, these 3 health professionals were asked to review the responses and rank respondents' lifestyles on a scale of 0 to 10, then to rank them categorically as unhealthy, intermediate, or healthy. These scores were then correlated with the SLIQ scores using the Pearson correlation coefficient as a measure of validity.

RESULTS

Mean age of the 136 respondents was 68 years (standard deviation ± 12 years), and 58% of them were women. They were primarily white and lived in a small city and its rural surroundings in southeastern Ontario. **Table 1** shows the characteristics of the study population.

Face and content validity

The family physicians, nutritionist, and nurse practitioner who reviewed the final 12 questions thought that the content areas, content of items, and questionnaire structure covered the areas of lifestyle

important in cardiovascular disease (content validity). They also thought that “on the face of it” the questions were reasonable and unambiguous (face validity).

Test-retest reliability

Table 2 shows test-retest reliability coefficients of each of the 12 questions on the SLIQ. The reliability

Figure 1. The Simple Lifestyle Indicator Questionnaire and its scoring scheme

DIET: To answer these questions, think about your eating habits during the past year. Indicate how often you eat the following foods. Please include all meals, snacks, and food eaten out.					
Lettuce or green leafy salad, with or without other vegetables					
<input type="checkbox"/> Less than 1/week	<input type="checkbox"/> 1/week	<input type="checkbox"/> 2-3 times/week	<input type="checkbox"/> 4-6 times/week	<input type="checkbox"/> 1/day	<input type="checkbox"/> 2 or more times/day
0	1	2	3	4	5
Fruit, including fresh, canned, or frozen, but not including juices					
<input type="checkbox"/> Less than 1/week	<input type="checkbox"/> 1/week	<input type="checkbox"/> 2-3 times/week	<input type="checkbox"/> 4-6 times/week	<input type="checkbox"/> 1/day	<input type="checkbox"/> 2 or more times/day
0	1	2	3	4	5
High-fibre cereals, such as Raisin Bran or Fruit and Fibre, cooked oatmeal, or whole-grain breads, such as whole wheat, rye, or pumpernickel					
<input type="checkbox"/> Less than 1/week	<input type="checkbox"/> 1/week	<input type="checkbox"/> 2-3 times/week	<input type="checkbox"/> 4-6 times/week	<input type="checkbox"/> 1/day	<input type="checkbox"/> 2 or more times/day
0	1	2	3	4	5
Diet raw score (Q1 + Q2 + Q3) _____			Diet category score _____		
			0 if diet score 0-5		
			1 if diet score 6-10		
			2 if diet score 11-15		
EXERCISE: To answer the following questions, please indicate how many times per week you take part in the following activities for at least 30 minutes or more at a time.					
Light exercise, such as the following:					
<ul style="list-style-type: none"> • light gardening and light housework (eg, dusting, sweeping, vacuuming) • leisurely walking (eg, walking your dog) • bowling, fishing, carpentry, playing a musical instrument • volunteer work 					
<input type="checkbox"/> 0/week	<input type="checkbox"/> 1-3 times/week	<input type="checkbox"/> 4-7 times/week	<input type="checkbox"/> 8 or more times/week		
0	2	3	4		
Moderate exercise, such as the following:					
<ul style="list-style-type: none"> • brisk walking • bicycling, skating, swimming, curling • gardening (eg, raking, weeding, digging) • dancing, Tai Chi, or moderate exercise classes 					
<input type="checkbox"/> 0/week	<input type="checkbox"/> 1-3 times/week	<input type="checkbox"/> 4-7 times/week	<input type="checkbox"/> 8 or more times/week		
0	4	6	8		
Vigorous exercise, such as the following:					
<ul style="list-style-type: none"> • running, bicycling, cross-country skiing, lap swimming, aerobics • heavy yard work • weight training • soccer, basketball, or other league sports 					
<input type="checkbox"/> 0/week	<input type="checkbox"/> 1-3 times/week	<input type="checkbox"/> 4-7 times/week	<input type="checkbox"/> 8 or more times/week		
0	6	9	12		
Activity raw score (Q1 + Q2 + Q3) _____			Activity category score _____		
			0 if light exercise only		
			1 if any moderate activity		
			2 if any vigorous activity		

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DISCUSSION

The SLIQ has very good test-retest reliability, good internal consistency, and, to the degree that we have tested it to date, good external validity. It requires further testing to delineate more clearly how well it correlates with a full clinical assessment (concurrent validity). The research question would be "How well does this 5-minute questionnaire correlate with a 30-minute clinical assessment aimed at rating a patient's lifestyle?" There is also a need to compare each component's score with a fully validated scale known to measure that component reliably. In essence, each component needs to be compared with the criterion standard measurement for that component (convergent validity). The SLIQ also needs to be tested on a range of populations. Our study population was primarily white, culturally Canadian, and living in and around a small Ontario city.

The most common question asked by people reviewing the SLIQ is how the 3 questions on diet, which ask about only salads, fruit, and fibre, can be used to assess a spectrum of dietary components. The factor analysis we did before this study strongly suggested that people who have good dietary practices related to salads, fruit, and fibre also have good dietary practices around eating fish, not eating junk food, and choosing food low in saturated fat. We do not need to ask questions about this other food because of the high correlation between dietary practices.

Conclusion

The SLIQ, as currently tested, is probably suitable for use in research on people who are at least similar to our study population. It probably should not be used in clinical settings until further testing has proved that it is

a reliable instrument for measuring a range of lifestyle components. 

Contributors

Dr Godwin, Ms Streight, Dr Dyachuk, Ms van den Hooven, Ms Ploemacher, Ms Seguin, and Ms Cuthbertson contributed to concept and design of the study, analysis and interpretation of data, and preparing the manuscript for publication.

Competing interests

None declared

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