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Chinese version of the Healthy Lifestyle Beliefs Scale for Taiwanese adolescents: A psychometric study[1]

Shu-Min Chan [a,*], Bernadette Mazurek Melnyk [b], Angela Chia-Chen Chen [c]

[a] Department of Nursing, Shu Zen College of Medicine and Management, No.452, Huanqiu Rd. Luzhu Dist, Kaohsiung City 82144, Taiwan, ROC
[b] Ohio State University, Associate Vice President for Health Promotion, University Chief Wellness Officer, Dean, College of Nursing, 120 Newton Hall 1585 Neil Avenue Columbus, OH 43210, United States
[c] College of Nursing and Health Innovation, Department of Nursing, Arizona State University, 500 N. 3rd Street Phoenix, AZ 85004, United States

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ABSTRACT

Background: Taiwanese adolescents' unhealthy lifestyles (e.g., unhealthy eating and sedentary behavior) are associated with excess weight and obesity, which affect their physical and mental health (e.g., depression). Because adolescents' beliefs about healthy lifestyles predict their actual lifestyles, a valid and reliable tool to measure their beliefs about healthy lifestyles is needed.
Methods: The Healthy Lifestyle Behavior Scale (HLBS) was translated into Chinese based on recommended guidelines. A convenience sample of 186 Taiwanese adolescents completed the Chinese version Healthy Lifestyle Behavior Scale (CHLBS) anonymously. We used Cronbach's α to determine the internal consistency of the CHLBS and exploratory and confirmatory factor analyses to examine the factor structure.
Results: The Cronbach's α for the CHLBS was .94. Exploratory analysis suggested that there were two factors and explained 57% of the total variance. The confirmatory factor analysis indicated an acceptable fit.
Conclusion: The CHLBS is a reliable and valid scale. It can be used to gather information about Taiwanese adolescents' beliefs about healthy lifestyles, which will assist in developing culturally and developmentally relevant interventions.

Introduction

The prevalence of overweight and/or obese adolescents is rising significantly worldwide (Lobstein et al., 2015; Ogden et al., 2012). In Taiwan, 26.4% of boys and 18.0% of girls aged 15 to 18 were overweight and obese (Ministry of Health and Welfare, MHW, 2013). The prevalence of obesity in Taiwanese adolescents was between 11.2% and 12.2%, and the obesity epidemic in both boys and girls has increased significantly from 2007 to 2011 (MHW, 2015).

Mounting evidence indicates that adolescents who are overweight and/or obese have a higher risk of physical and emotional disturbances, including impaired fasting glucose (IFG), anxiety, depression (Chen et al., 2014; Chiang et al., 2013; Ting et al., 2012), and poor sleep quality (Chen et al., 2013a, 2013b).

Healthy behaviors established during adolescence have long—term affects into adulthood (Lee et al., 2010). Unhealthy lifestyles, such as sedentary behavior (e.g., TV watching, internet use), skipping breakfast, and excessive consumption of sugar—sweetened drinks, are key factors that contribute to obesity in Taiwanese adolescents (Chen et al., 2013a, 2013b). High academic pressure (Chen et al., 2014), increased sedentary activities and lack of exercise facilities (Wang et al., 2009) have been found to be associated with decreased physical activity and increased prevalence of obesity in Taiwanese adolescents. Beck et al. (1979) suggested that feelings and behaviors influence each other, which means that how people think affects how they behave. Thus, adolescents who believe that they can live a healthy lifestyle are more likely to engage in healthy lifestyle behaviors (O'Haver et al., 2014).

The Healthy Lifestyle Beliefs Scale (HLBS), developed by Melnyk and Small, has been tested in the United States (Jacobson & Melnyk, 2011; Jacobson & Melnyk, 2012; Melnyk & Small, 2003b; Melnyk et al., 2006; O'Haver et al., 2014). There is no existing Chinese scale developed to examine Taiwanese adolescents' beliefs about healthy lifestyles. Therefore, we adapted HLBS and made necessary changes to make it culturally and developmentally relevant to Taiwanese adolescents. A culturally and developmentally relevant, valid and reliable tool would allow healthcare providers, researchers, educators and policy makers to measure Taiwanese adolescents' beliefs about healthy lifestyles and consequently, to develop appropriate interventions and policies to address this important public health issue.

The HLBS has been used to determine the relationships between BMI and cognitive and psychological measures (e.g., healthy lifestyle choices and depression) in American adolescents (Jacobson & Melnyk, 2011; Jacobson & Melnyk, 2012; Melnyk & Small, 2003b; Melnyk et al., 2006; Melnyk et al., 2009; O'Haver et al., 2014), parents, and university

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* Corresponding author.
E-mail address: pamiechan2014@gmail.com (S.-M. Chan).

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faculty and staff (Melnyk et al., 2016; Militello et al., 2015). The Cronbach's α for the HLBS in American adolescents was between .76 and .94 (Jacobson & Melnyk, 2011; Kelly et al., 2011; Melnyk et al., 2006; O'Haver et al., 2014). Face and content validities were established in 10 youths and eight adolescents (Melnyk et al., 2006).

In these studies, researchers have found that adolescents who hold beliefs in healthy lifestyle are more likely to make healthy lifestyle choices and consequently decreases their body mass index (BMI) (Jacobson & Melnyk, 2011; Melnyk et al., 2006). On the other hand, adolescents who perceive difficulty in engaging in healthy lifestyles are less likely to choose healthy lifestyle behaviors and choices and have higher BMIs (Melnyk et al., 2006; O'Haver et al., 2014). Furthermore, adolescents' stronger beliefs about healthy lifestyles are found to be associated with better knowledge about healthy activities, better attitudes toward living in healthy lifestyle, greater intentions to have healthy lifestyles, and were more physically active (Jacobson & Melnyk, 2011; Kelly et al., 2011; Melnyk et al., 2006). Adolescents who hold stronger beliefs about healthy lifestyles also reported lower levels of anxiety and depression (Melnyk et al., 2006; O'Haver et al., 2014). Finally, adolescents with support from their family and friends reported having stronger beliefs about their ability to live healthy lives (Kelly et al., 2011).

In sum, these findings suggest a close relationship between adolescents' beliefs about healthy lifestyles, and their actual behaviors and BMIs. Thus, assessing adolescents' beliefs about healthy lifestyles is a critical first step toward promoting healthy lifestyle behaviors (O'Haver et al., 2014).

Given the alarming statistics about excess weight and obesity in Taiwanese adolescents, a culturally, linguistically and developmentally appropriate scale that measures adolescents' beliefs about healthy lifestyles is needed. This study aimed to examine the psychometric properties of the CHLBS in Taiwanese adolescents.

Methods

Design

We have conducted a cross−sectional survey in a convenience sample of 186 Taiwanese adolescents.

The Healthy Lifestyle Beliefs Scale

The items in the HLBS were developed based on cognitive behavioral theory (CBT). The fundamental premise of CBT is that the way in which one cognitively structures the world affects one's behaviors (Beck et al., 1979). Therefore, a person who has negative thoughts or beliefs tends to think and act in a negative way (e.g., engage in unhealthy lifestyle behaviors), and this leads to negative emotions (e.g., depression symptoms) and to unhealthy lifestyle behaviors and choices (Melnyk et al., 2006; O'Haver et al., 2014).

The 16−item HLBS measures beliefs about different facets of maintaining a healthy lifestyle. Participants answer each of the 16 items using a five−point Likert scale that ranges from 1 (*strongly disagree*) to 5 (*strongly agree*). The total score ranges from 16 to 80, with higher scores indicating stronger beliefs about the ability to engage in health lifestyle behaviors.

Translation

We conducted forward and backward translations of the HLBS based on the cross−cultural translation guidelines (Beaton et al., 2000), with the goal of achieving linguistic equivalence and maintaining the conceptual meaning of the original items.

In stage I, three bilingual (English/Chinese) professionals with extensive experience in research and psychometric tool translation translated the HLBS from English to Chinese; the other three bilingual professionals performed the back translation. We found a couple of minor discrepancies between the translations and back translations due to differences in word choice, but not definition differences.

In stage II, two bilingual nurse researchers who had experience working with Taiwanese and American adolescents discussed these minor discrepancies until a consensus regarding word choice was achieved. In stage III, we recruited 10 Taiwanese adolescents aged 13−15 years from a middle school in southern Taiwan to pilot test the final CHLBS for clarity, acceptability, and relevance. They had no difficulty understanding the wording and meaning of the questions in the CHLBS, so no further modifications were made.

Sample Population and Sampling

A student was recruited if s/he (a) was between 13 to 15 years of age, (b) read and wrote Chinese, and (c) returned both the adolescent assent and the parental consent forms. Students who did not meet all of the inclusion criteria were excluded.

Prior to data collection, we contacted school principals of middle schools in suburban area in Taiwan to explain the study purpose and procedures. Three classes, each included approximately 30–35 students, from each of the two schools participated in the study. A convenience sample of 186 students (109 females and 75 males) answered the anonymous survey in their own classrooms. The mean age of the sample was 14.15 years of age (SD = 0.89).

Power Calculation

Based on the suggestions by Gorsuch (1983) and Bentler (1989) of a 5−to−1 ratio (five individuals per scale item) for conducting exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), a minimum of 80 participants would be needed to conduct EFA and CFA of the 16−item CHLBS. Therefore, our sample size (n = 186) provided sufficient power to conduct psychometric testing of the CHLBS.

Procedure

This study was approved by the research ethics committees of Arizona State University (ASU) and by the two middle schools in Taiwan. Parental consents and adolescent assents were obtained prior to conducting the study.

Before conducting the study, we held an information session to explain the study purpose, procedures and confidentiality issues to the students. A study information sheet was provided to the students so that they could discuss the study with their parents and decide whether to participate. Once we received the parental consents and adolescent assents, eligible students were placed in quiet classrooms to answer the questionnaire anonymously. Participating students were told that they could skip any questions that they did not wish to answer and could withdraw from the study at any time without any negative consequences. One researcher was available in the classrooms for questions. It took 15 min. for students to complete the survey that included the 16−item CHLBS and two questions regarding age and biological sex. After completing the surveys, the participants placed the surveys into sealed envelopes and received culturally appropriate incentives (pencils and notebooks) for their participation.

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