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Adapting the Pregnancy Physical Activity Questionnaire for Japanese Pregnant Women

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ABSTRACT

Objective: To assess the psychometric properties of the Pregnancy Physical Activity Questionnaire (PPAQ) for women who read and speak Japanese.

Design: This longitudinal study used a self-report questionnaire and quantitative biometric and instrumental measurements (actigraph) to assess the reliability and criterion validity.

Setting: A university hospital in Tokyo, Japan.

Participants: Sixty-nine pregnant women living in Tokyo and its suburbs were recruited.

Methods: The test–retest reliability of the Japanese version of the Pregnancy Physical Activity Questionnaire (PPAQ-J) was evaluated through intraclass correlation coefficients (ICCs) between PPAQ-J results administered three times (at recruitment, 7 and 14 days later). Criterion validity was assessed by comparing results to actigraph measures using Spearman's correlation coefficients. Participants wore the actigraph over the 2-week research period. Data from 58 participants were analyzed for test–retest reliability. The data of 54 participants were used to analyze criterion validity.

Results: The ICCs for the first and second and for the first and third PPAQ-J questionnaires were $\geq$0.56 for total activity and activities broken down by intensity and type (in metabolic equivalents [METs] $\times$ hours/day). To evaluate criterion validity, Spearman's correlation coefficients were calculated between the first measurement of the PPAQ-J and three published cut-points used to classify actigraph data (minutes/day); correlations ranged from .02 to .35 for total activity, $-$.21 to $-$.25 for vigorous activity, $-$.09 to .38 for moderate activity, and .01 to .28 for light activity.

Conclusion: The PPAQ-J is a psychometrically sound and comprehensive measure of physical activity in pregnant Japanese women.

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Overall, approximately 259,575 Japanese women live in North America as either expatriates or permanent residents (Ministry of Foreign Affairs of Japan [MOFA], 2012). Furthermore, many of these Japanese women living in the United States are of childbearing age and receive prenatal care. It is necessary to provide sufficient guidance to these women so that they might live a healthful lifestyle similar to that of women living in Japan. Assessing physical activity (PA) is an important part of promoting health during pregnancy, given that PA is known to reduce the risk of depressive symptoms (Loprinzi, Fitzgerald, & Cardinal, 2012). Although most clinically applicable assessment tools for PA are self-administered questionnaires, few surveys exist that are specific to pregnant women. Furthermore, no available questionnaire has been adjusted for women who speak little English and who maintain a lifestyle that is more similar to that of their native country than to that of the United States. Thus, a need for a reliable, linguistically and culturally appropriate tool has been identified for assessing PA in Japanese expatriates receiving prenatal care in the United States.

Two questionnaires are typically used to assess PA in pregnant women: the Kaiser Physical Activity Survey (KPAS) (Ainsworth, Sternfeld, Richardson, & Jackson, 2000) and the Pregnancy Physical Activity Questionnaire (PPAQ) (Chasan-Taber et al., 2004). Of the two measures, the PPAQ is more widely used in the United States, Vietnam, and France (Chandonnet, Saey, Almeras, & Marc,

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No reliable and valid tools are available in a questionnaire format for assessing the physical activity of pregnant Japanese women.

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2012; Chasan-Taber et al., 2004; Ota et al., 2008) than is the KPAS. We intended to develop a questionnaire for Japanese expatriate women whose first language is Japanese and who live in the United States, because a significant number of Japanese women who give birth in the United States are expatriates. The PPAQ is based on Ainsworth, Haskell, et al.'s (2000) compendium of physical activities that measures the average daily energy expenditure (metabolic equivalents [METs] $\times$ hours/day) by the calculation of the duration of time spent in each activity multiplied by its intensity. Ainsworth, Bassett et al. (2000) and Ainsworth, Haskell et al. (2000) defined the intensity of each activity as $<$1.5 METs for sedentary activity, 1.5 to $<$3.0 for light activity, 3.0 to $<$6.0 for moderate activity, and $\geq$6.0 for vigorous activity. The duration of time spent on each activity was defined according to participants' responses.

In a previous study, we reported the English to Japanese translated version of the PPAQ (PPAQ-J) had cross-cultural equivalency with the original English version (Matsuzaki et al., 2010). However, the reliability and criterion validity of the PPAQ-J had not yet been demonstrated.

Thus, the initial study had two aims: (1) translation of the existing questionnaire into Japanese and (2) assessment of the validity of this questionnaire in terms of its ability to estimate energy expenditure and the reliability in terms of its variability among women in Japan. The results of the first aim were published elsewhere (Matsuzaki et al., 2010); in this article we present the results for second aim. We decided to test the validity and reliability of the tool with women living in Japan instead of expatriates living in the United States for practical reasons because the investigators who translated it currently reside in Japan.

Methods

Setting and Participants

This longitudinal study testing the reliability and criterion validity of the PPAQ-J was conducted at a university hospital in Tokyo from June 2007 to July 2008. This university-affiliated hospital is a tertiary center, has about 900 births per year, and serves pregnant women from Tokyo and its suburbs. We chose this hospital as the research setting because of its convenience for field research and because the reliability and validity could be assured by recruiting a wide range of participants of varying ages, working status, pregnancy trimester, education, and living area (Portney & Watkins, 1993).

A total of 69 eligible pregnant women were recruited using convenience sampling over 9 days from June 2007 to July 2008. The participants were recruited while they were waiting for a pregnancy check-up in the hospital. We recruited each participant by giving her a description of the research, after which we obtained her informed consent; of the 69 recruited women, 60 consented to participate. The incentive for participation was a picture book for the child or a shopping coupon worth \$5.00 (\$1 = \100 in 2008), as well as an individual report of the actigraph results. The research protocol was approved by the research ethics committee of the Graduate School of Medicine, The University of Tokyo.

A sample of 55 pregnant women was necessary to ensure sufficient reliability and validity according to the developmental method of the original PPAQ (Chasan-Taber et al., 2004). The eligibility criteria included women with (a) a singleton pregnancy without complications and (b) the ability to read and speak Japanese.

Procedures

Recruitment occurred within the outpatient department. After written informed consent, participants completed the PPAQ-J and a questionnaire about their demographic characteristics, and their weights were measured. For the subsequent sessions that took place 7 and 14 days after recruitment, the PPAQ-J and weight measurements were conducted in the participants' homes. During that same period, the participants wore an actigraph (Manufacturing Technology, Inc., Fort Walton Beach, FL, USA, formerly known as the Computer Science Application [CSA] accelerometer) so that we could determine criterion validity. For 14 days after recruitment, the actigraph was placed on an adjustable belt on the right hip under participants' clothing during active hours, except during bathing, showering, swimming, and sleeping (Melanson & Freedson, 1995). Throughout the research period, the participants recorded their activities as well as when and for how long they removed the actigraph in a diary. After 2 weeks, participants removed the actigraphs by themselves and returned them to us by mail. We then downloaded the data from the actigraph onto a personal computer, using the reader interface unit.

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