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RELIABILITY AND VALIDITY OF THE INDIAN VERSION OF THE PREGNANCY PHYSICAL ACTIVITY QUESTIONNAIRE (PPAQ)

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Abstract:

Purpose: The aim of this study was to translate the Pregnancy Physical Activity Questionnaire into regional languages of India i.e., Hindi and Marathi and test its reliability and validity among Indian pregnant women.

Subjects and Methods: The subjects were 60 healthy, single pregnant women of all three trimester between the age group of 18 and 40 who volunteered to participate in this study. The physical activity practices of all the consenting mothers from all the three trimesters were assessed using the Hindi and the Marathi version of PPAQ for three consecutive days. Reliability was evaluated by measuring the three day test-retest reliability with the intraclass correlation coefficient and Spearman's correlation analysis. Concurrent validity was examined by comparing the Pregnancy Physical Activity Questionnaire into Indian regional language i.e. Hindi and Marathi. Later Hindi and Marathi translated questionnaire were back translated into English. It was compared with the original PPAQ.

Results: The test-retest reliability, r values were respectively 0.987,0.956, 0.953 and 0.993 for self-reported sedentary, light, moderate, and vigorous activity, respectively. Intraclass correlation coefficient scores ranged from 0.965 to 0.999. For validity, the PPAQ were compared with the translated PPAQ.

Conclusion: The Indian version of the Pregnancy Physical Activity Questionnaire is a valid and reliable tool for measurement of the physical activity level of pregnant women.

Key Words: Pregnancy, Physical Activity Questionnaire & Reliability

Introduction:

Physical activity (PA) is an important component of a healthy pregnancy, for both the mother and her child.[1,2] The assessment of maternal physical activity (PA) during pregnancy is crucial due to the close relationship between the PA levels and the health status.[3] Unfortunately, research exploring the impacts of prenatal PA continues to rely heavily on indirect and self-reported measures of PA, such as questionnaires or PA recalls, despite mounting evidence of the poor reliability of self-reported PA.[4,5] Among pregnant women, physical activity tends to be of lower duration, frequency, and intensity compared to pre-pregnancy.[6,7]PA during pregnancy is very important as it reduces the risk of several medical factors during the course of pregnancy. Recent epidemiologic studies have shown that women who are more active during pregnancy may have reduced risks of gestational diabetes, hypertensive disorders, and pre-term birth in developed countries. However, the amount of activity required for favourable pregnancy outcomes, remains to be determined in Asian populations, especially those in developing countries.[8] The Physical activity during pregnancy varies with different periods of gestation. Therefore, the measurement of Physical activity during pregnancy is quite difficult to assess. Valid and reliable methods for measurement of PA are needed to be able to report the duration, frequency, and intensity of PA; to determine the proportion of individuals following health recommendations; to make cross-cultural comparisons; to measure the influence of different intensities of PA on health; and to examine the effects of specific interventions.[9] The easiest and most common way to measure PA is via self-report or interview based on questionnaires.[10] A questionnaire is a convenient tool for assessing physical activity. It provide a relatively inexpensive, quick, and efficient way of obtaining large amount of information from a large sample of people. It is easy to administer, relatively inexpensive, non-invasive, less time time-consuming and allows the estimation of activity intensity. Numerous PA questionnaires have been developed and validated in non-pregnant adults. However, most questionnaires fail to include household or childcare activity, which comprises a substantial portion of physical activity during pregnancy. Inaccurate determination of the PA level may lead to misunderstandings about the correlations between PA during pregnancy and both maternal and foetal health.[11-13]The Pregnancy Physical Activity Questionnaire (PPAQ is a widely used tool for the assessment and measurement of PA levels amongst pregnant women. The PPAQ is a quick and simple method to evaluate the duration, frequency, and intensity of activity patterns in pregnant women. It has been included in both epidemiological and clinical studies.[11]The PPAQ has already been translated into different languages, and it is available in Japanese, Vietnamese, Turkish and French.[14,15-17] To our knowledge, there are currently no Indian

PA questionnaires that specifically evaluate the PA of pregnant women or take into account the cultural differences of Indian women.

Methods:

All data collection described herein was approved by the central Ethics committee of D.Y.Patil University, Nerul, Navi Mumbai and each participant provided a written informed consent prior to participation in the study. The subject was explained about the methodology and the purpose of the study in the language best understood by them. We evaluated evidence for test-retest reliability and concurrent validity from two independent samples of pregnant women. Permission was received to adapt the questionnaire by contacting via mail with Lisa Chasan-Taber. The study was performed in two stages: The first stage was cultural and linguistic translation of the PPAQ from English to Hindi and Matrathi, including a pilot study. The second stage was analysis of the statistical reliability and validity of both Hindi and Marathi PPAQ. A Cross-sectional Observational Study comprising sixty primigravida pregnant women (20 each from the three trimesters) in the age group of 18 to 40 years, recruited from their pregnancy check-ups at the community health centres was conducted through D.Y. Patil University, School of Physiotherapy in Nerul, Navi Mumbai over a duration of 6 months. Participants were excluded if they presented with a history of any of the following medical conditions: cardio respiratory disease, diabetes mellitus, or hypertension requiring medications; chronic renal or inflammatory joint diseases or long-term and/or repetitive musculoskeletal problems that would limit daily PA, Multipara and Pregnant women lesser than 18 or above 40 years of age. Also non consenting mothers were excluded from the study.

Material Used:

PPAQ: The pregnancy physical activity questionnaire (PPAQ) developed by Lisa Chasan-Taber[11]was used to measure duration, frequency, and intensity of total activity (household/caregiving, occupational, and sports/exercise) during pregnancy. It is a semi-quantitative questionnaire that asks the respondents to report on the time spent participating in 32 activities, including household/caregiving (13 activities), occupational (5 activities), sports/ exercise (8 activities), transportation (3 activities), and inactivity (3 activities).[11]The respondents were asked to select a category for each activity to the nearest amount of time spent per day or week. The duration of the performed activity ranged from 0-to-3 or more hours per-day. At the end of PPAQ, an open-ended section allowed each respondent to add activities not already listed, sleeping activity was not included as an option.[11] Some of the questions in the original version of the PPAQ were not suitable for the Indian culture, as they were carried out rarely or never in India, so they were replaced. Two specific examples are items 18 and 19 in the original PPAQ, which refer to the use of a lawnmower; lawnmowers are not commonly used in India, so instead we added an item that addressed "kitchen activity". Minor changes involved conversion from English measurements (gallons, pounds) to the metric equivalents (litres, kg) for item 33.

Translation Process: The PPAQ was translated into Indian regional languages i.e., Hindi and Marathi. The English version of the PPAQ was translated into Marathi by Mrs. Vaishali Kakade Ghuge, who has a Masters of Arts degree in Marathi. Second, the PPAQ was translated into Hindi by Mrs Satyabhama Singh who has a Master degree in Hindi. Later, both the Hindi and Marathi translated PPAQ were retranslated into English to compare it with the Original PPAQ. The Hindi and Marathi translated PPAQ were back translated into English by Mrs Sushma Chirayan, who has a Master degree in English. Data collection was done from two maternity homes in Thane. Firstly, Dr Uma Bansal's Fertility Clinic and IVF centre and second, Medicare Hospital. To ascertain the type, duration, and frequency of physical activities performed by pregnant women, we conducted three 24-hphysical activity recalls among 60 ethnically diverse prenatal care patients.

Results:

The statistical analysis of the data was performed using the SPSS (Statistical Package for the Social Sciences) for Windows 7 software. With the sample size of 60, the study had an estimated 95% power to detect a correlation of 0.9 between the score from the questionnaire PPAQ. The mean age of the participants (N =60) was 25.4±3.74 years. An equal number of women were considered from each trimester. Reliability was evaluated by measuring the 3 days test-retest reliability. Test-retest reliability was determined by using the intra-class correlation coefficient (ICC) and Spearman's correlation analysis. The reliability between the administrations of the questionnaire was strong as can be verified from Table 1. The reliability was strong for total physical activity (ICC = 0.985). The ICC values for total activity, and subscales such as intensity and type scores, were all > 0.75, reaching a substantial level. The reliability between the administrations of the questionnaire was also strong (ICC = 0.994 for) for sedentary activity, for light intensity activity (ICC = 0.979), for moderate intensity activity (ICC = 0.977), for vigorous intensity activity (ICC = 0.998), for household/caregiving activity (ICC = 0.965), for occupational activity (ICC = 0.989) and for sports/exercise activity (ICC = 0.999). Figure 1 shows the graphical representation of the relationship between pre and post score of the PPAQ.

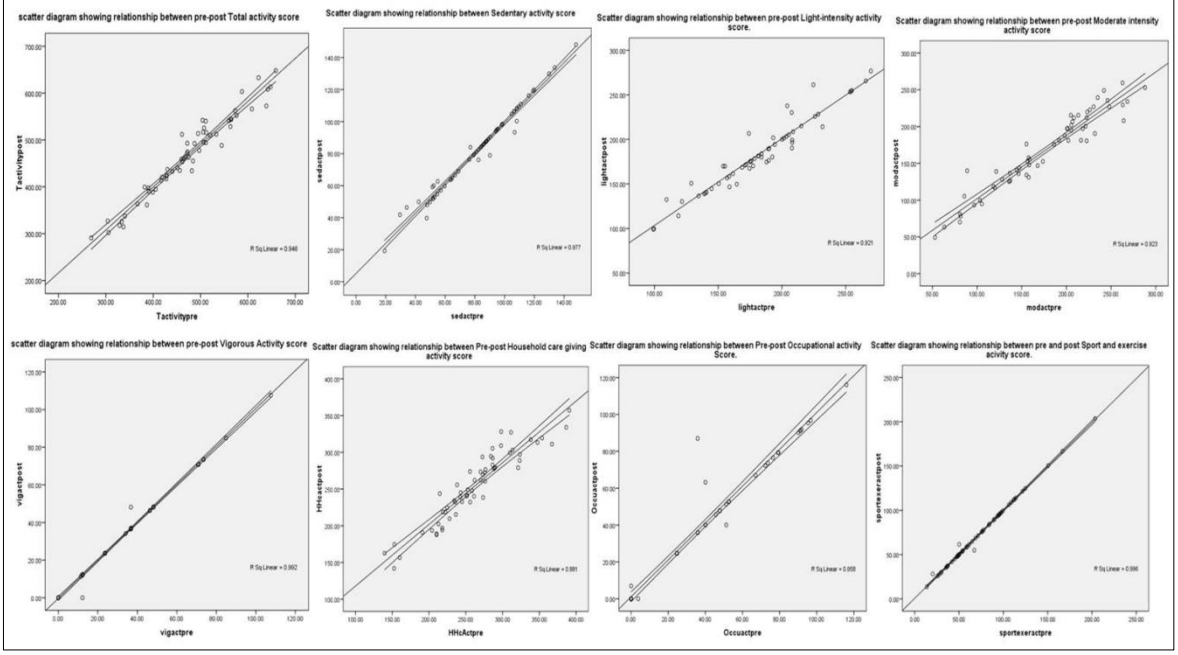
Table 1: Results for the test re-test reliability of the PPAQ.

	ICC (95% CI)	**r (95% ci)**
Total score of PPAQ	0.985	0.969

By intensity		
Sedentary (<1.5 METs)	0.994	0.987
Light activity (1.5 ≤ 3.0 METs)	0.979	0.956
Moderate activity (3.0-6.0 METs)	0.977	0.953
Vigorous activity (>6.0 METs)	0.998	0.993
By Type		
Household/caregiving	0.965	0.948
Occupational activity	0.989	0.973
Sports/exercise	0.999	0.995

PPAQ: Pregnancy Physical Activity Questionnaire;
r: Spearman's correlation coefficients; CI: confidence interval;
ICC: intra class correlation coefficient; MET: metabolic energy turnover.

Figure 1: Graphical illustration of the relationship between pre and post- total, sedentary, light intensity, moderate intensity, vigorous, Household/caregiving, Occupational and Sports/exercise activity score of the PPAQ



Discussion:

This study first described the translation process of the PPAQ from English to Hindi and Marathi. The translation process involved the methods of translation and back-translation. The PPAQ was successfully translated from English into Hindi and Marathi, with face validity achieved through a rigorous process of cross-cultural validation. This study also evaluated the reliability and validity of the physical activity questionnaire in Indian pregnant women. The PPAQ demonstrated an acceptable reliability and validity, and provided a useful tool for assessing physical activity in women during pregnancy. The results of our reliability and validity testing are in line with those of previous studies, which is evidence that our translation procedure was adequate. The reliability of the PPAQ has been addressed in a few studies. Chasan-Taber et al., who developed the questionnaire, administered the PPAQ to 54 pregnant women aged 16 to 40 to assess its one-week reliability and found ICCs of 0.78, 0.79, 0.78, 0.82, 0.81, 0.86, 0.93, and 0.83 for total, sedentary, light, moderate, vigorous, household/caregiving, occupational, and sports/exercise activity, respectively.[11] Similarly, in the Vietnamese version of the PPAQ, the ICC value was 0.88 for total activity, 0.94 for sedentary activity, 0.88 for light activity, 0.90 for moderate activity, and 0.87 for vigorous activity.[14]It was reported that the ICCs for the French version of the PPAQ were 0.90 for total activity, 0.86 for light and moderate-intensity activity, and 0.81 vigorous-intensity activity.[15] In the Japanese version, the ICCs were ≥0.56 for total activity and other activity categories[16]. In Turkish version, the ICC value was 0.95 for total activity, 0.96 for sedentary activity, 0.93 for light activity, 0.95 for moderate activity, and 0.97 for vigorous activity.[17]All the above results are similar to the results obtained in the present study thus indicating successful adaptation of the PPAQ to Indian version and reliability of the Indian PPAQ. In Indian version of PPAQ questionnaire, after 3 days of test- retest, ICC value was 0.98 for total activity, 0.994 for sedentary activity, 0.979 for light activity, 0.977 for moderate intensity activity, and 0.998 for vigorous activity and we found that the ICCs were 0.965, 0.989, and 0.99 for household/caregiving,

occupational, and sports/exercise activity, respectively. Correlation coefficients for test-retest reliability were also computed. Values ranged from 0.948 to 0.993. Significantly higher activity score was for sports/exercise activities were obtained amongst the Indian pregnant women. In the present study, the ICC values were above 0.80, indicating that the Indian PPAQ has excellent reliability. ICCs can range from 0.00 to 1.00, with values of 0.60 to 0.80 regarded as evidence of good reliability and those above 0.80 indicating excellent reliability.[18] When comparing our results for Physical activity levels with those of other countries around the world, it was found that the total activity scores of Indian pregnant women were higher than those in America, Canada, Turkey and Vietnam.

Conclusion:

The PPAQ in India has an excellent reliability and validity, suggesting that the Indian version reflects concepts similar to those of the original English version. We recommend the use of the Indian PPAQ for the measurement of physical activity in Indian pregnant women.

References:

1. Ferraro ZM, Gaudet L, Adamo KB. The potential impact of physical activity during pregnancy on maternal and neonatal outcomes. Obstet Gynecol Surv 2012; 67(2):99–110. PMID: 22325300. doi: 10.1097/OGX.0b013e318242030e.
2. Nascimento SL, Surita FG, Cecatti JG. Physical exercise during pregnancy: A systematic review. Curr Opin Obstet Gynecol 2012; 24(6):387–94. PMID: 23014142. doi:10.1097/GCO.0b013e328359f131.
3. Pichard C, Melzer K, Kayser B (2004) Physical activity: the health benefits outweigh the risks. Current Opinion in Clinical Nutrition and Metabolic Care 7: 641–647.
4. Garriguet D, Colley RC. A comparison of self-reported leisure-time physical activity and measured moderate-to-vigorous physical activity in adolescents and adults. Health Rep 2014; 25(7):3–11. PMID: 25029491.
5. Prince SA, Adamo KB, Hamel ME, Hardt J, Connor Gorber S, Tremblay M. A comparison of direct versus self-report measures for assessing physical activity in adults: A systematic review. Int J Behav Nutr Phys Act 2008; 5(1):56–80. PMID: 18990237. doi: 10.1186/1479-5868-5-56.
6. Butte N, Wong W, Treuth M, Ellis K, Smith E. Energy requirements during pregnancy based on total energy expenditure and energy deposition. Am J ClinNutr 2004; 79.1078-87.
7. Lof M, Forsum E. Activity pattern and energy expenditure due to physical activity before and during pregnancy in healthy Swedish women. Br J Nutr 2006; 95: 296-302.
8. Hegaard HK, Hedegaard M, Damm P, Ottesen B, Petersson K, Henriksen TB. Leisure time physical activity is associated with a reduced risk of preterm delivery. Am J ObstetGynecol2008; 198: 180e1-5. [Cited 2008 March
9. Available from: URL: http://www.ajog.org/article/S0002-9378(07)01023-X/fulltext
10. Helmerhorst HJ, Brage S, Warren J, et al.: A systematic review of reliability and objective criterion-related validity of physical activity questionnaires. Int J BehavNutr Phys Act, 2012, 9: 103. [Medline] [CrossRef]
11. Makabe S, Makimoto K, Kikkawa T, et al.: Reliability and validity of the Japanese version of the short questionnaire to assess health-enhancing physical activity (SQUASH) scale in older adults. J Phys Ther Sci, 2015, 27: 517–522. [Medline] [Cross Ref]
12. Chasan-Taber L, Schmidt MD, Roberts DE, et al.: Development and validation of a Pregnancy Physical Activity Questionnaire. Med Sci Sports Exerc, 2004, 36: 1750–1760. [Medline] [CrossRef]
13. Borodulin KM, Evenson KR, Wen F, et al.: Physical activity patterns during pregnancy. Med Sci Sports Exerc, 2008, 40: 1901–1908. [Medline] [Cross Ref]
14. Harrison CL, Thompson RG, Teede HJ, et al.: Measuring physical activity during pregnancy. Int J BehavNutr Phys Act, 2011, 8: 19. [Medline] [Cross Ref]
15. Ota E, Haruna M, Yanai H, et al.: Reliability and validity of the Vietnamese version of the Pregnancy Physical Activity Questionnaire (PPAQ). Southeast Asian J Trop Med Public Health, 2008, 39: 562–570. [Medline]
16. Chandonnet N, Saey D, Alméras N, et al.: French Pregnancy Physical Activity Questionnaire compared with an accelerometer cut point to classify physical activity among pregnant obese women. PLoS ONE, 2012, 7: e38818. [Medline] [Cross Ref]
17. Matsuzaki M, Haruna M, Nakayama K, et al.: Adapting the Pregnancy Physical Activity Questionnaire for Japanese pregnant women. J ObstetGynecol Neonatal Nurs, 2014, 43: 107–116. [Medline] [Cross Ref]
18. YaseminÇirak, GülDeniz Yilmaz, et al.: Pregnancy physical activity questionnaire (PPAQ): reliability and validity of Turkish versionJ. Phys. Ther. Sci. 27: 3703–3709, 2015
19. Portney LG, Watkins MP: Foundations of clinical research: Applications to practice. East Norwalk CT: 3 ed. Upper Saddle River, New Jersey Pearson Prentice Hall.2009