



**UNIVERSIDADE FEDERAL DE MINAS GERAIS**  
**CENTRO DE PÓS GRADUAÇÃO DA FACULDADE DE MEDICINA**  
**CIÊNCIAS DA SAÚDE/ SAÚDE DA CRIANÇA E DO ADOLESCENTE**

**CLÁUDIA MACHADO SIQUEIRA**

**PROPRIEDADES PSICOMÉTRICAS DO *SURVEY OF WELL-BEING OF***  
***YOUNG CHILDREN* - VERSÃO BRASIL (SWYC-BR) PARA CRIANÇAS**  
**NASCIDAS PREMATURAS ENTRE QUATRO E 24 MESES DE IDADE**

**BELO HORIZONTE**

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Propriedades psicométricas do *Survey Of Well-being Of Young Children* -  
Versão Brasil (SWYC-BR) para crianças nascidas prematuras entre  
quatro e 24 meses de idade

Tese apresentada à Faculdade de Medicina da Universidade Federal de Minas Gerais como requisito do Programa de Pós-Graduação em Ciências da Saúde – Área de concentração Saúde da Criança e do Adolescente para obtenção do título de Doutor.

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## ABSTRACT

**Introduction:** Children born preterm are at higher risk of developmental-behavioral disabilities, and require systematic follow-up in the first years of life. In low- and middle-income countries, the paucity of standardized and validated developmental-behavioral screening tools impairs the identification of at-risk children and early intervention. In this context, the “Survey of Well-being of Young Children” (SWYC) could be an option of screening tool for children under 66 months of age. The SWYC assess developmental-behavioral domains, parents' concerns and family risk factors. It was adapted to Brazilian Portuguese in 2014. **Overall objective:** To conduct an exploratory research on the psychometric properties of SWYC-BR in the first two years in children born preterm. **Methods:** The psychometric measures of SWYC-BR in the first 24 months of corrected gestational age (CGA) were analyzed in a convenience sample of children born preterm in public hospitals in Belo Horizonte, Minas Gerais. The internal consistency/reliability of the “Developmental Milestones” questionnaires (DM-SWYC-BR) and “Baby Pediatric Symptom Checklist” subscales (BPSC-BR) were analyzed by Cronbach's Alpha (CA) and Composite Reliability (CR). The concurrent validity of DM-SWYC-BR was performed in relation to two reference standard tests: the Bayley Scales of Infant and Toddler Development III (Bayley III), and the Ages & Stages Questionnaires, 3rd edition - Brazil (ASQ-BR). Due to lack of normative data, all test result were considered altered when the child's score was less than -1SD below the mean. Sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), the area under the Receiver Operating Characteristic (AUC) curve were calculated; and Spearman's rank correlation coefficient and Cohen's Kappa concordance coefficient. The construct validity of DM-SWYC-BR was analyzed by the analysis of variance (ANOVA) of the mean scores in the presence of protective and risk factors for child development at 12 months of GCA and by the intraindividual stability of the scores between 4-24 months of GCA. **Results:** A total of 1069 observations were analyzed at 4-24 months. At 4 months, the sample were 51.3% female, 33% born less than 32 weeks' gestational age and 37.2% weight birth less than 1500 grams. About 9% were adolescent mothers, with an average of 10.7 (+2.62) years of study. The families classified in the lowest economic classification (D/E) were 19% and 13.5% beneficiaries of the Bolsa Familia Program. Internal consistency of the DM-SWYC-BR questionnaires and the BPSC-BR subscales showed AC and CR values  $\geq 0.60$  at all ages. Correlated between results on DM-SWYC-BR and Bayley, Spearman's coefficient was 0.26, sensitivity 34.0%, specificity 85.7%, PPV 28.4%, NPV 88.6%, AUC 0.59 and Kappa 0.18, considering overall observations. Correlated between results on DM-SWYC-BR and ASQ-BR, Spearman's coefficient 0.64, sensitivity 57.6%, specificity 90.6%, PPV 54.1%, NPV 91.8%, AUC 0.74, Kappa 0.47, in overall observations. At 12-months'CGA (N = 178), explored the construct validity of DM-SWYC-BR by analysis of variance of means scores results: children with birth weight less than 1500 grams ( $p = 0.02$ ) whose parents/caregivers were “very much” concerned with development-learning ( $p = 0.001$ ) and were at risk of domestic violence ( $p = 0.06$ ), mean scores were lower than others. Children breastfed at 12 months'CGA ( $p = 0.04$ ) and in the families benefiting from the Bolsa Familia Program ( $p = 0.05$ ) result higher mean scores than others. Analysed longitudinal intra-individual stability of measures of DM-SWYC-BR at 4-24 months'CGA (N = 41), 75.6% of the children presented stable scores over time. **Conclusion:** The DM-SWYC-BR and BPSC demonstrated acceptable internal consistency/reliability. There was no agreement between DM-SWYC-BR and Bayley III. DM-SWYC-BR showed satisfactory accuracy measures for follow-up of development in preterm infants in most of the ages. In the analysis of construct validity, MD-SWYC-BR's scores varied

in the presence of determinants for child development at 12 months of IGC, and the intra-individual stability of measures of the scores was demonstrated over time in the firsts 24 months of children born preterm. Considered results of psychometric qualities, comprehensiveness and viability, the SWYC-BR was a promising tool for monitoring the development of preterm infants in Brazil.

**Keywords:** Preterm, Growth and Development, Infant Behavior, Protective Factors, Risk, Screening, Psychometrics