INTERMED's reliability to assess health complexity in primary care: A Brazilian cross-section study

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Primary health care (PHC) faces an increasing number of patients with complex healthcare needs (physical and mental multimorbidity, functionality decrease, and health service overuse). [1] Thus, there is growing recognition of the importance of using a valid and reliable method or instrument to identify individual healthcare needs in PHC practice. [2] A method or instrument of this nature could help in the planning and personalized delivery of care and facilitate the stratification of the assisted population into different levels per health care needs [3] and age groups.

The INTERMED case complexity is used in hospitals [4], ambulatory, [5] and PHC [6] settings to assess case complexity; biopsychosocial and person-centered approaches form its foundation. Recently, we demonstrated its validity in a Brazilian PHC setting that cares for some of the most medically and socially vulnerable people in the world [7].

This study measured the agreement, inter-rater reliability, and internal consistency of the INTERMED in a Brazilian PHC setting.

We conducted between December 2018 to July 2019, a cross-sectional study with Brazilian adult patients, interviewed using demographic questionnaire, developed to this study and the INTERMED tool. One researcher (CAO) consecutively invited in 3 Brazilian PHC services, a non-probabilistic sample who sequentially arrived at the reception of PHC services. Individuals living in the area covered by the service were eligible for inclusion. We excluded those who did not complete the interviews.

The INTERMED is a semi-structured interview with a total score ranging from 0 to 60, and each domain score ranging from 0 to 15, [8] that synthesizes and standardizes data from 4 domains: 1) biological, 2) psychological, 3) social, and 4) health system, each of which has 5 items described as health risks and needs with an ordinal score ranging from 0 (no need of health care) to 3 (immediate need of health care). A 20/21 cutoff point has been used in specialized services to differentiate complex (≥21) from non-complex patients (≤20). [9]

The researcher who translated the Portuguese version of the instrument [10] trained the CAO, enabling her to train other professionals. In December 2018, CAO trained a nurse, a psychologist, and an occupational therapist on the meaning of each INTERMED item and anchor point score, totalizing four hours of training. For the INTERMED score calibration, the lead researcher and the professionals applied the instrument to three pilot patients in the health units at the time of the research.

The lead researcher formed pairs with other professionals (nurse, psychologist and occupational therapist), and each rater independently scored each item. Intraclass correlation, weighted Cohen's kappa (κ), Kendall's tau-b (τ), and McDonald's omega correlation (ω) coefficients were used to measure the agreement of domains and total INTERMED score between the lead researcher and the other raters.

We invited 128 patients, 125 of them agreed to participate (participation rate: 97.7%). One patient did not complete the interview and was excluded from the analysis. The mean age was 45.5 (± 15) years.

The analysis for intraclass correlation, without distinction between raters, ranged from 0.85 (95% CI 0.76, 0.90) for the psychological and health system domain to 0.93 (95% CI 0.89, 0.95) for the INTERMED total score, Table 1. In patient screening (cut-off score 20/21), the agreement between the group of 3 raters and the lead researcher was 97.6%, as demonstrated by the kappa value (0.90, P < 0.001), which was considered excellent. Excellent agreement was achieved for the INTERMED items, ranging from psychiatric dysfunction and residential instability (both κ = 0.81), treatment experience (κ = 0.84), job and leisure problems (κ = 0.85), poor social support (κ = 0.86), and chronicity (κ = 0.88).

To the best of our knowledge, this is the first published study of the reliability of the face-to-face INTERMED interview version with PHC patients: Other studies have reported reliability in tertiary and secondary contexts [11], creating a milestone for PHC. We demonstrated the adequate reliability for using this tool. Previous INTERMED reliability studies in hospital and ambulatory care contexts demonstrated the importance of the instrument for facilitating communication between patients, professionals, and the health system, improving the quality of care, increasing treatment adherence, and organizing personalized care planning. Another important result was the diversity of professional disciplines in complexity screening (nurse τ = 0.85 and κ = 0.88, psychologist τ = 0.88 and κ = 0.88, and occupational therapist τ = 0.68 and κ = 0.68) ranging from moderate to excellent agreement, indicating compatibility with the multidisciplinary aspect of PHC.

Since we did not include other raters who work in PHCs belonging to the multidisciplinary team (doctor, nutritionist, and physiotherapist) a gap in reliability was caused, making it difficult to compare the reliability of all the diversity in the primary care team. The second limitation is that we conducted the research only in PHC context, without comparing other levels of care (tertiary and secondary) to generalize the data.

This study showed that the INTERMED had adequate reliability to help multidisciplinary teams assess the complexity of patient health needs.

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Table 1. Comparison of INTERMED means and standard deviations between raters and lead researcher.

Domains	Raters*				Lead researcher				Lead researcher and group of three raters	
Empty Cell	mean	s.d	min	max	mean	s.d	min	max	Intraclassc	CI 95%
Biologicala	4.98	3.29	0	12	5.11	3.22	0	14	0.90	0.86–0.93
Psychologicala	3.91	2.81	0	11	3.48	2.96	0	11	0.85	0.80–0.90
Sociala	1.55	2.13	0	10	1.64	2.25	0	10	0.89	0.82–0.93
Health systema	2.26	2.13	0	10	2.04	2.00	0	8	0.85	0.76–0.90
Total scoreb	12.0	7.44	0	37	12.9	7.30	0	38	0.93	0.89–0.95

*Group of the three raters' values. a Range 0–15. b Range 0-60. c p≤ 0.001.