

Brazilian Scale for Evaluation of Mental Health Care Needs: Development and evidence of validity

Joana Moscoso Teixeira de Mendonça

Hospital Israelita Albert Einstein

Ana Alice Freire Sousa

Hospital Israelita Albert Einstein

Ilana Eshriqui

Hospital Israelita Albert Einstein

Flávio Rebutini

Universidade de São Paulo

Daiana Bonfim

Hospital Israelita Albert Einstein

Daniella Sampaio Zorzi

Hospital Israelita Albert Einstein

Camila Monteiro

Hospital Israelita Albert Einstein

Talita Rewa

Hospital Israelita Albert Einstein

Leticia Yamawaka de Almeida (✉ leticia.almeida@einstein.br)

Hospital Israelita Albert Einstein

Research Article

Keywords: Mental Health, Primary healthcare, validation, scale

Posted Date: January 11th, 2023

DOI: <https://doi.org/10.21203/rs.3.rs-2450855/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License. [Read Full License](#)

Additional Declarations: No competing interests reported.

Abstract

Background

Mental health disorders represent the top leading causes of burden worldwide. At this context, initiatives to identify Care Needs in Mental Health (CNMH) are urgent, to assure integral and quality care. Nonetheless, there is a gap in valid tools to support primary healthcare (PHC) professionals' decision-making to the provision of the proper mental health care, at the right place. The present study aimed to develop and search for evidences about the validity of the Brazilian Scale for Evaluation of Mental Health Care Needs (MHcare-BR).

Methods

Considering CNMH as the latent variable, a group of experts developed 130 dichotomous items, which were submitted to assessment by a heterogeneous panel of judges from different regions in Brazil ($n = 73$). Collected data subsidized the Content Validity Ratio (CVR) calculation, which resulted in a second version of the scale comprising 43 items. Subsequently, it was applied to 879 individuals to find evidences about the internal-structure validity by using the Exploratory Factor Analysis (EFA). Dimensionality was assessed through Robust Parallel Analysis and the model was tested through cross-validation to find MHcare-BR final version. Further, the MHcare-BR's score was subjected to normalization.

Results

The final version of MHcare-BR comprised 31 items, which were divided in two blocks: "self-referred" block, with 5 dimensions (social relationships; functionality; autonomy; impulsiveness and aggressiveness"; and spirituality); and "health professional evaluation" block, comprising 3 dimensions (violence; self-aggression and suicidal behavior; and caregiving plan). Model explained variance reached 62.70%. Closeness of dimensionality values pointed out a multi-dimensional model (UNICO = 0.79; ECV = 0.0.69 and MIREAL = 0.22). All indicators were within adequate and satisfactory limits, without any cross-loading, Heywood Case or collinearity/multi-collinearity issues capable of pointing out items redundancy and overlapping. Reliability indices also reached adequate levels ($\alpha = 0.82$; $\omega = 0.80$; $g_{lb} = 0.93$ and ORION ranging from 0.79 to 0.95, between domains). MHcare-BR's score normalization pointed towards four CNMH strata (Low CNMH: 0 to 1; Moderate CNMH: 2 to 3; High CNMH: 4 to 6; Very High CNMH: 7 or more).

Conclusions

The MHcare-BR scale is a synthesized instrument, comprising users' self-evaluation and PHC professionals' clinical assessment. It showed satisfactory validity evidences, which were consistent, reliable and robust; capable of accurately measuring CNMH in the primary care territory, in Brazil.

Introduction

Mental health disorders represent the top leading causes of burden worldwide, with an important increase since 1990⁽¹⁾. However, the scientific literature has shown that the gap on care provided to users presenting some sort of psychic pain has been one of the major challenges for healthcare systems, since most people with mental disorders do not get the treatment they need⁽²⁻⁴⁾.

Accordingly, the development of actions focused on consolidating and broadening the offer of mental healthcare services, as well as the timely access to resources, are seen as priority worldwide⁽¹⁻⁴⁾. It is essential highlighting that these actions must be in compliance with current recommendations for healthcare systems, which are moored in propositions for community-based diversified services, including primary healthcare (PHC) and the person-centered care approach, considering human rights⁽³⁻⁵⁾.

In light of the foregoing, one must acknowledge two structuring elements for the organization of MH care: the first one regards resources' allocation given the somehow limited scenario, whereas the second element refers to the logic of caregiving, which must be guided by the psychosocial model to ensure autonomy, freedom and citizenship exercise. In both cases, individuals' needs are featured as the origin of all propositions.

In conceptual terms, one can identify different meanings and classifications for the term need in the literature on health; they are mainly used at service planning and provision scope⁽⁶⁻⁷⁾. With respect to MH, studies have leaned on discussing the perceived need of services to observe how people perceive their need of determining the type of care/treatment provided to them (or not), and factors related to it⁽⁸⁻¹⁷⁾.

This corpus of evidence has been developed in high-income countries, based on different designs, populations and data-collection techniques. However, there is a gap in tools used to evaluate the dimensions surrounding the needs experienced by subjects (which can end up in losses in their routines) to support healthcare professionals in decision-making processes related to the provision of the proper care, at the right place.

Thus, the aim of the present study is to suggest the elaboration of an instrument to stratify the care needs in MH (CNMH), at individuals' level. It must provide subsidies to professionals at the time to set the care priorities and the most efficient use of resources. If one takes into consideration the assumptions about the MH field, it is important highlighting that the concept of need exceeds multiple factors and is not limited to clinical features. Therefore, the present study focused on developing and validating the Brazilian Scale for Evaluation of Mental Health Care Needs (MHcare-BR).

Method

This psychometric study focused on the evaluation of evidence of content validity and internal structure, according to the American Educational Research Association (AERA), American Psychological Association (APA), and the National Council on Measurement in Education (NCME) (2014)⁽¹⁸⁾. Each one of the study stages will be detailed in the following sections.

Stage 1: Content Validity Evidences

The development of the items took place from workshops conducted with 15 MH and PHC experts; these workshops were produced by an expert researcher in Psychometry. This researcher provided a theoretical reference about the basic concepts of Psychometry to the participants, as well as invited them to elaborate items based on four main dynamics: the definition of the latent variable the scale aims at measuring; bibliographic search concerning this latent variable; writing down the items in small groups; and the discussion, in a larger group of participants, about the proposed items to enhance their writing by seeking consensus about their clarity and pertinence at the time to measure the latent variable.

CNMH was the defined latent variable. The model of care for chronic conditions, proposed to assure integrality of care in context of healthcare networks⁽¹⁹⁾ was used as theoretical fundamental for the discussions; as well as the International Classification of Functionality, Disability and Health (CIF)⁽²⁰⁾; the Intervention Guide for mental, neurological and substance use disorders in non-specialized health settings: mental health Gap Action Programme (mhGAP)⁽²⁾; and the Instrument to assess the quality of life provided by the World Health Organization (WHOQOL-100)⁽²¹⁾.

Initially, 130 dichotomous items were written (with answer options “yes” and “no”), and they were taken by experts as elements significantly effecting individuals’ lives and influencing professionals’ decision-making. These items were organized into seven propositions for dimensions, namely: social, autonomy, functionality, interpersonal relationships, spirituality, and clinical aspects assessed by health professionals. Option was made to draw the instrument to be applied at two different moments, in order to cover both the individual’s perception about its needs at the different proposed dimensions and the professional evaluation concerning the subject’s clinical frame.

This first version of the scale was assessed by a heterogeneous panel of judges (healthcare service professionals and professors) from different regions in Brazil. They were recruited based on the snowball technique⁽²²⁾. Invitations were made through WhatsApp and e-mail. After reading the Informed Consent Form (ICF) and accepting to join the study, the subject was guided to go to a questionnaire, which comprised sociodemographic and professional questions, besides the scale items. Data collection and management were carried out through Research Electronic Data Capture (REDCap®)⁽²³⁾.

In order to assess each item in the scale, the judges were asked to answer four questions related to the items’ relevance and clarity, based on dichotomous answers (“yes” or “no”), namely: i) is the item clear?; ii) is the item relevant to measure CNMH; iii) is the language in the item easy to be understood?; iv) is it necessary changing any word in the written proposition? Besides, there was an open question available in each item for the inclusion of comments whenever judges saw it as important. These results allowed calculating the Content Validity Ratio (CVR)⁽²⁴⁾, depending on the number of judges in the panel⁽²⁵⁻²⁶⁾. CVR was applied to validate the item’s relevance in order to assess whether the item effectively measures the latent variable (CNMH). CVR was represented into CVR-I (the item’s CVR) and CVR-E (Scale CVR), which is the average of the criteria’s CVR.

Different from studies that have used the items’ means, the present study applied a hierarchical flow, since other indicators, such as item’s clarity, were only analyzed after part of the judges show the relevance of the item. The application at this step tends to inflate the mean recorded for CVR and to launch items that do not measure the latent variable to the next stage. Accordingly, as pointed out by⁽²⁷⁾, the item can be relevant, but the words can be problematic. Thus, the second step referred to the items’ clarity, actually, to whether the items are well-written, in terms of semantics). The third step aimed at assessing the need of changing the items’ text. Mean CVR was just applied to items that have adhered to the phenomenon.

Stage 2: Evidences Of Internal Structure Validity

The scale version reviewed by the judges (MHCare-BR, version 2) was applied to users registered in 11 PHC services. It is important pointing out that PHC services selection took into account the inclusion of at least one unit in each geographic region in the country, and their location in populous municipalities participating in the PlanificaSUS project⁽²⁸⁾, which is carried out in 18 federative units in Brazil. It is executed through the Program of Support for the Institutional Development of the Unified Health System (PROADI-SUS).

Thus, data collection was carried out in PCH services in five Brazilian regions: one in the Northern region (Roraima), one in the Northeastern region (Pernambuco), two units in the Mid-Western region (Mato Grosso), five in the Southeastern region (three in São Paulo and two in Minas Gerais), and two in the Southern region (Paraná).

The process to make this stage operational took place between November 2021 and August 2022. It was carried out by a research team encompassing health professionals who received theoretical and practical training (10-h workload). After the previous contact with the management of services focused on mixing the schedule of activities, the leader researcher had virtual meetings with professionals from each unit in order to introduce the study proposition, to clarify doubts and to organize the collection flow of data referring to clinical evaluation items (it was performed by health professionals).

The following inclusion criteria were taken into consideration: to be over 18 years and to be in the PHC units for assistance in individual consultation with physicians, nurses or health professionals composing the multi-disciplinary team. Users who showed up in the service for emergency assistance, for dental emergency or for health procedures (vaccination, bandage changing and medication administration) were excluded from the study.

Data collection was carried out at two different moments: at first, users were approached by researchers in PHC units' waiting room; then, they were invited to join the research, after reading and signing the ICF. At this time, they had to answer to a questionnaire comprising sociodemographic items, and items about clinical profile, as well as part of the aforementioned scale. Data were recorded by researchers using REDCap platform in tablets.

At the end of the approaching moment, the participant was identified with a colorful paper bracelet to ensure data-collection continuity. Then, it was guided to inform the health professional about its participation in the study, right at the beginning of the consultation. Hence, the second moment of the data-collection procedure was featured by the clinical assessment performed at user's assistance, when the health professional would clinically assess the participant based on a printed version of the scale for professionals – the questionnaire was collected by the research team at the end of the day and then the data were entered into the REDCap platform.

Data analysis

Exploratory Factor Analysis (EFA)

The Exploratory Factor Analysis (EFA) used to test the internal structure. The first fundamental stage lies on assessing whether data could be factorial through Measure of Sampling Adequacy (MSA). Bartlett sphericity, determinant of the matrix and Kaiser-Meyer-Olkin (KMO) were also assessed at this stage. Besides the database evaluation, the individual analysis of the items was assessed, based on recommendations⁽²⁹⁾. Item inadequacy for being factored could have affected the model's solution. The missing factors were treated through the technique of multiples imputations⁽³⁰⁾.

Dimension testing was performed through Parallel Analysis, based on *Optimal Implementation of Parallel Analysis (PA)* with Minimum rank factor analysis, which minimizes residues' common variance⁽³¹⁾. PA was implemented through permutation with 500 random matrices. It has been taking as one of the most robust and accurate techniques to test dimensions^(32–35). The extraction of factors was carried out through the ULS technique (Unweighted Least Squares), which reduces the matrices' residues⁽³⁶⁾. Promin oblique rotation would be applied, if the instrument emerges as multidimensional⁽³⁷⁾.

UNICO (One-dimensional Congruence > 0.95), ECV (Explained Common Variance > 0.80 – QUINN)⁽³⁸⁾ and MIREAL (Mean of Item Residual Absolute Loadings < 0.30) were adopted as evaluation indicators for one-dimensionality⁽³⁹⁾.

Parameters for instruments' quality

The instrument's explained variance must be close to 60%⁽⁴⁰⁾. Initial factorial loads of 0.30 are recommended when the sample comprised less than 300 individuals⁽⁴⁰⁾ and the communities must register values higher than 0.40⁽⁴¹⁾. Item maintenance in, or removal from, the model will depend on the magnitude of factorial loads, communalities, on the existence of cross loading, on Heywood cases and on the interpretability of factors. In order to increase decision-making accuracy, when it comes to item maintenance or removal, option was made to use the unique directional correlation (η) through Pratt's Measure⁽⁴²⁾.

Goodness of fit index

Parameters adopted for goodness of fit (GOFs) cutoff were based on the study by⁽⁴³⁾. Minimum indices for adequacy were NNFI (Non-Normed Fit Index \geq 0.97); GFI (Goodness Fit Index \geq 0.93); AGFI (Adjusted Goodness Fit Index \geq 0.91), and RMSR (Root Mean Square of Residuals \leq 0.10). CFI (Comparative Fit Index \geq 0.97) and RMSEA (Root Mean Square Error of Approximation \leq 0.07) were also used.

Reliability

Reliability was measured based on 4 indicators: Cronbach alpha⁽⁴⁴⁾; Greatest Lower Bound – glb⁽⁴⁵⁾, Omega⁽⁴⁶⁾, - all of the three through Bayesian estimation; and ORION (Overall Reliability of Fully-Informative prior Oblique N-EAP scores⁽⁴⁷⁾).

Stage 3: Score Standardization

Initially, an exploratory descriptive study of CNMH general scores was carried out. Items and total scores' results were represented by the frequency of answers, median (Md), inter-quartile interval (IIQ), amplitude (amp), minimum (min), maximum (max).

A regularized linear regression with elastic net, based on the adoption of the instruments' score as dependent variable and of items as predictors was applied to identify the instrument's items that can work as relevant markers, and their weights were used to assess CNMH. The holdout was applied as cross-validation technique – 50% of the sample for training and 50% of it for testing.

The first standardization stage was carried out based on the identification of score cuts linked to participants' distribution. Although this process is common in standardization studies, it can lead to distortions, because the score is not directly analyzed, but taken as consequence of participants' position in the cutoff points. The discriminating analysis of each CNMH limits and scores was used to achieve higher accuracy of scores in the limits and to assess the predictive ability of the individuals' classification. The discriminating analysis aims at best understanding the group's differences and at predicting the likelihood of an entity (individual or object) to remain in a given class or specific group, based on the metrics' various independent variables⁽⁴⁸⁾, in order to enable determining what independent variables are the most accountable ones for the differences in the mean score profiles of the two or more groups⁽⁴⁸⁾. Thus, it is possible confirming whether the cuts established by the distribution have the ability to properly classify the individuals within the limits.

Data were analyzed in statistical Factor 12.01.01, SPSS v.23 and JASP 16.04 software.

Results

Stage 1: Content Validity Evidences

The content validation stage counted on the participation of a panel of judges comprising 73 health professionals from different categories (nurses, psychologists, PHC physicians, psychiatrists and other professionals from the multi-team) distributed within the five Brazilian regions: 54.1% of them were from the Southeast, 19.4% from the South, 15.2% from the Northeast, 5.5% from the North and 5.5% from the Midwest. Most of them were female (72.2%), were in the mean age of 39.6 years (SD = 9.61), had a post-graduation degree (84.7%) and were working in PHC unit (31.9%), Mental health specialized services (22.2%), PHC multidisciplinary team (6.9%), universities (6.9%), health secretariats (16.6%) and others (16.6%).

If one takes into consideration the participation of these 73 judges, CVR was set at critical value of 0.11. Thus, items that have recorded indices equal to or higher than the critical value were selected to the internal structure stage. It has led to the permanence of 43 of the 130 items that emerged as relevant initial propositions. All relevant items also recorded clarity values higher than CVR's critical value for this item. Table 1 presents the CVR values recorded for items in the preliminary version of the scale.

Table 1
 – CVR values recorded for items in the preliminary version of the scale

Items	Relevance	Clarity
16. Do you have Family support?	0.17	0.78
23. Do you have friends?	0.14	0.75
24. Do you talk to your friends?	0.11	0.64
35. Are you able to go to healthcare services by yourself?	0.11	0.72
36. Whenever you need, can you take your medication at the times scheduled by the doctor?	0.11	0.67
37. Are you able to perform your work tasks?	0.17	0.56
38. Are you able to keep working?	0.11	0.53
40. Can you catch up with your school assignments?	0.14	0.58
42. Are you able to bath by yourself?	0.14	0.75
43. Do you perform your daily hygiene by yourself?	0.17	0.72
44. Do you get dressed by yourself?	0.14	0.75
47. Are you able to shop for your daily supplies by yourself?	0.11	0.69
51. Can you socially interact with people?	0.17	0.56
56. Are you able to keep friendships?	0.14	0.78
58. Are you able to control your impulsiveness?	0.17	0.61
59. Are you able to control your verbal aggressiveness?	0.22	0.64
60. Are you able to control your physical aggressiveness?	0.19	0.56
63. Do you have good Family relationships?	0.14	0.67
68. Do you perform any leisure activity?	0.11	0.69
77. Do you find a meaning for your life?	0.11	0.67
78. Do you feel that your life has a purpose?	0.11	0.69
79. Can you admire things around you?	0.14	0.61
83. Are you hopeful with your life?	0.11	0.64
89. Was the user a witness of violence?	0.22	0.56
90. Was the user an author of violence?	0.19	0.47
91. Was the user a victim of violence?	0.25	0.47
92. Does the user present a clinical profile compatible to depressive syndrome?	0.25	0.44
93. Does the user present clinical profile compatible to psychotic syndrome?	0.22	0.39
94. Is the user an elderly with dementia signs?	0.25	0.36
95. Does the user present signs of disorder due to alcohol abuse?	0.19	0.42
96. Does the user present disorder due to drug abuse?	0.19	0.42
97. Does the user have will for dying?	0.14	0.42
98. Does the user have suicidal ideas?	0.19	0.42
99. Does the user plan to suicide?	0.19	0.44
100. Has the user attempted suicide?	0.19	0.47
101. Does the user think about self-aggression?	0.17	0.44
102. Does the user present imminent risk of self-aggression?	0.17	0.33
103. Does the user have history of self-aggression?	0.17	0.44
104. Does the user present psychomotor agitation?	0.19	0.39
105. Does the PHC team have a hard time handling this case?	0.14	0.39
106. Does the user deny its disease?	0.17	0.44

Items	Relevance	Clarity
107. Is the user unaware of its condition?	0.11	0.44
108. Does the user resist the proposed caregiving plan?	0.22	0.42

Stage 2: Internal validation evidences

Initially, 1,219 users who have attended the 11 PHC units during the data collection time have accepted to join the survey. However, the ones who did not finish the evaluation by the health professional block were excluded from the sample. Thus, this stage counted on the participation of 879 users, in the mean age group of 45 years (standard deviation = 16.7). Table 2 presents the socioeconomic profile of the survey participants.

Table 2
– Socioeconomic profile of survey participants

Variable	n	%
Sex	833	
Female	619	74.3
Male	214	25.7
State	880	
São Paulo	461	52.4
Minas Gerais	141	16.0
Pernambuco	35	4.0
Roraima	48	5.4
Mato Grosso	97	11.0
Paraná	98	11.1
Schooling	824	
< 5 years	18	2.2
>=5 years and < 9 years	359	43.6
>=9 years and < 12 years	351	42.6
>=12 years	96	11.6
Marital Status	824	
Single	300	36.4
Married/ common-law marriage	383	46.5
Widow/ widower	63	7.6
Separated / Divorced	44	5.3
Others	34	4.1
Social program beneficiary	821	
No	624	76.0
Yes	197	24.0
Sanitation system in the house	808	
Sewage system	695	86.0
Others (cesspool or without sewage system)	113	14.0
Electric power available in the house	818	
No	17	2.1
Yes	801	97.9

The instrument was applied in the field; it had 23 items in the “self-referred” block and 20 items in the block that represented “health professional evaluation”. The evaluation of sample adjustment measures was the first step of this process and it aimed at assessing database factorability. Three items comprising the “self-referred” block did not present adequate factorability; thus, they were removed from the analysis, based on recommendations by Lorenzo-Seva and Ferrando (2021)⁽²⁹⁾. The analysis was carried out with the 40 remaining items. These items’ MSA pointed towards good factorability: KMO = 0.73, Bartlett Sphericity = 6,568.1 (df = 1,891; p < 0.0001) and matrix determinant < 0.000001.

Initial PA had 40 items and presented the possibility of reaching 11 dimensions. Therefore, the analysis was carried out once more by establishing the 11-dimension model as initial configuration. The analysis showed several items with adjustment issues, and it has led to successive removal of items to adjust it to the two model principles: the quantitative and interpretative ones. The selection of items to be removed took into account the set of primary indicators: factorial loads, communicability, Eta for Pratt's Importance Measure and model adjustment indices. The items were removed until finding the two congruent principles; this process resulted in changes in the number of instrument dimensions – the model presented adjustment to 8 dimensions after 19 items were removed from the initial model. This model with 40 items kept the adequate factorability: KMO = 0.75, Bartlett Sphericity = 8,425.4 (df = 903; p < 0.0001) and matrix determinant < 0.000001. Model explained variance reached 62.70%.

Closeness of dimensionality values pointed out a multi-dimensional model: UNICO = 0.79; ECV = 0.0.69 and MIREAL = 0.22. Table 3 indicates the values recorded for the closeness of dimensionality indicators of the 31 items that have remained in the model.

Table 3
– I-Unico, I-ECV and I-Real values of the items

Variable	I-UniCo	I-ECV	I-REAL
V1 Do you have friends?	0.828	0.596	0.329
V2 Do you talk to your friends?	0.895	0.667	0.308
V4 Are you able to go to healthcare services by yourself?	0.990	0.874	0.115
V5 Are you able to perform your work tasks?	0.959	0.773	0.229
V6 Are you able to keep working?	0.965	0.787	0.219
V8 Are you able to bath by yourself?	0.018	0.017	0.655
V9 Do you perform your daily hygiene by yourself?	0.004	0.004	0.741
V10 Can you get dressed by yourself?	0.025	0.024	0.591
V7 Are you able to shop for your daily supplies by yourself?	0.866	0.634	0.332
V3 Are you able to keep friendships?	0.998	0.940	0.077
V11 Are you able to control your impulsiveness?	0.999	0.969	0.066
V12 Are you able to control your verbal aggressiveness?	1.000	0.979	0.066
V13 Are you able to control your physical aggressiveness?	0.997	0.927	0.109
V14 Can you find a meaning for your life?	0.989	0.872	0.177
V15 Do you feel that your life has a purpose?	0.988	0.862	0.181
V16 Can you admire things around you?	0.994	0.898	0.104
V17 Are you hopeful with your life?	0.991	0.878	0.142
V18 Was the user a witness of violence?	0.888	0.659	0.167
V19 Was the user the author of violence?	0.975	0.815	0.105
V20 Was the user a victim of violence?	0.975	0.813	0.118
V21 Does the user have a will for dying?	0.997	0.934	0.140
V22 Does the use have suicidal ideas?	0.985	0.849	0.225
V23 Does the user have suicide plans?	0.990	0.877	0.186
V24 Has the user attempted suicide?	0.967	0.792	0.291
V25 Does the user think about self-aggression??	0.960	0.774	0.272
V26 Does the user present imminent risk of self-aggression??	0.980	0.830	0.222
V27 Does the user have history of self-aggression??	0.963	0.781	0.255
V28 Does the PHC team have a hard time handling this case?	0.998	0.940	0.111
V29 Does the user deny its disease?	0.999	0.948	0.121
V30 Is the user unaware of its condition?	0.986	0.854	0.168
V31 Does the user resist the proposed caregiving plan?	0.998	0.944	0.120

The final model (Table 4) presented 5 dimensions for the “self-referred” block, which comprised 17 items: 3 items for “social relationships”, 4 items for “functionality”, 3 items for “autonomy”; 3 items for “impulsiveness and aggressiveness”; and 4 items for “spirituality”. Block “health professional evaluation” comprised 14 items divided into 3 dimensions: “violence”, with 3 items; “self-aggression and suicidal behavior”, with 7 items; and “caregiving plan”, with 4

items. Additional file 1 presents the Portuguese version of MHCare-BR. Factorial loads recorded for the “self-referred” block ranged from 0.40 to 0.98, communicability ranged from 0.15 to 0.94 and Pratt’s measure values ranged from 0.45 to 0.97. Block “health professional evaluation” recorded values for factorial load ranging from 0.38 to 0.85, communicability ranged from 0.26 to 0.59 and Eta for Pratt’s measure ranged from 0.41 to 0.84. There were no Heywood Case, cross-loading or collinearity/multi-collinearity issues capable of pointing out items redundancy and overlapping.

Table 4
– factorial loads, communicability and Pratt's Measure

		ITEM	Factorial Loads								h^2	
			D1	D2	D3	D4	D5	D6	D7	D8		
Self-referenced dimension	Social relationships	V1	Do you have friends?	0.854	-0.080	0.017	-0.025	0.086	0.048	0.094	-0.101	<i>0.738</i>
		V2	Do you talk to your friends?	0.912	-0.053	-0.007	-0.043	0.107	0.024	0.038	-0.027	<i>0.838</i>
		V3	Are you able to keep friendships?	0.345	0.084	-0.032	0.133	-0.117	0.012	-0.153	0.095	<i>0.200</i>
	functionality	V4	Are you able to go to healthcare services by yourself?	0.115	0.319	-0.003	0.053	-0.055	-0.024	-0.053	0.003	<i>0.157</i>
		V5	Are you able to perform your work tasks?	-0.060	0.814	-0.029	-0.035	0.057	-0.004	0.044	0.001	<i>0.623</i>
		V6	Are you able to keep working?	-0.009	0.853	-0.050	-0.047	0.015	0.072	0.016	0.002	<i>0.675</i>
		V7	Are you able to shop for your daily supplies by yourself?	0.089	0.407	0.189	0.043	0.048	-0.038	-0.003	-0.085	<i>0.328</i>
	autonomy	V8	Are you able to bath by yourself?	0.095	0.005	0.741	-0.079	0.073	-0.002	0.006	0.039	<i>0.582</i>
		V9	Do you perform your daily hygiene by yourself?	-0.041	-0.068	0.986	0.024	-0.021	0.012	-0.032	0.020	<i>0.946</i>
		V10	Do you get dressed by yourself?	-0.065	0.099	0.726	0.047	-0.069	0.003	0.024	-0.049	<i>0.562</i>
	Impulsiveness and aggressiveness	V11	Are you able to control your impulsiveness?	0.006	-0.037	0.009	0.596	0.069	-0.041	-0.030	0.064	<i>0.385</i>
		V12	Are you able to control your verbal aggressiveness?	-0.012	0.012	-0.005	0.866	-0.056	0.017	-0.046	0.084	<i>0.699</i>
		V13	Are you able to control your physical aggressiveness?	0.031	-0.039	-0.003	0.587	0.081	0.024	0.148	-0.189	<i>0.430</i>
	spirituality	V14	Do you find a meaning for your life?	0.035	0.009	-0.007	0.084	0.718	0.034	0.007	-0.022	<i>0.587</i>
		V15	Do you feel that your life has a purpose?	0.074	0.098	-0.032	0.039	0.619	-0.001	-0.008	0.035	<i>0.468</i>
		V16	Can you admire things around you?	-0.070	-0.058	-0.001	-0.049	0.719	-0.026	0.019	-0.033	<i>0.462</i>
		V17	Are you hopeful with our life?	0.065	0.073	0.017	-0.019	0.494	-0.106	-0.065	0.084	<i>0.319</i>
Healthcare professional evaluation dimension	violence	V18	Was the user a witness of violence?	0.025	0.044	0.021	0.027	-0.049	0.665	0.080	-0.038	<i>0.463</i>
		V19	Was the user an author of violence?	-0.038	0.019	0.029	-0.012	-0.008	0.545	-0.085	0.140	<i>0.308</i>
		V20	Was the user a victim of violence?	0.023	-0.002	-0.028	-0.006	-0.009	0.770	-0.002	-0.020	<i>0.590</i>
	Self-	V21	Does the user	0.033	-0.023	-0.069	0.034	-0.114	0.033	0.586	-0.037	<i>0.381</i>

aggression and suicidal behavior	have a will for dying?										
	V22	Does the user have suicidal ideas?	-0.117	0.052	0.014	0.083	-0.025	-0.039	0.706	-0.029	<i>0.478</i>
	V23	Does the user have plans to suicide?	-0.150	-0.036	-0.003	0.013	0.195	-0.030	0.534	0.134	<i>0.385</i>
	V24	Has the user attempted suicide?	-0.022	-0.083	0.024	-0.057	0.165	0.181	0.636	-0.046	<i>0.504</i>
	V25	Does the user think about self-aggression?	0.063	0.074	-0.003	0.003	-0.061	-0.048	0.657	0.030	<i>0.418</i>
	V26	Does the user present imminent risk of self-aggression?	0.112	0.076	-0.005	-0.027	-0.171	-0.101	0.528	0.105	<i>0.359</i>
	V27	Does the user have history of self-aggression?	0.062	-0.016	0.023	-0.018	-0.020	0.160	0.525	-0.005	<i>0.348</i>
Caregiving plan	V28	Does the PHC team have a hard time handling this case?	0.042	-0.091	0.046	-0.071	-0.036	-0.007	0.076	0.440	<i>0.290</i>
	V29	Does the user deny the disease?	-0.006	0.035	-0.021	-0.015	0.024	-0.043	0.022	0.856	<i>0.732</i>
	V30	Is the user unaware of its condition?	0.075	-0.024	0.029	0.019	-0.059	-0.038	0.219	0.382	<i>0.261</i>
	V31	Does the user show resistance to the proposed caregiving plan?	-0.038	-0.013	0.000	0.042	0.047	0.103	-0.073	0.869	<i>0.723</i>

GOFs reached adequate levels: NNFI = 0.97, CFI = 0.98; BIC = 2,249.18; GFI = 0.98; AGFI = 0.96, RMSEA = 0.03 and RMSR = 0.03. Accordingly, reliability indicators based on the Bayesian approach have indicated good levels: Cronbach's alpha = 0.82 [CI95% 0.80–0.83], omega = 0.80 [CI95% 0.78–0.82] and glb = 0.93 [CI95% 0.92–0.94]. ORION recorded for the dimensions ranged from 0.79 to 0.95. Factorial solution-quality indices were satisfactory for FDI, SR and EPTD. Table 5 shows the synthesis of the final model for all indicators.

Table 5
– Synthesis of models

	Index	Technique	FINAL MODEL
Exploratory	Adequacy of correlation matrix	Determinant of the matrix	< 0.000001
		Bartlett	8,471.6 (df = 465)
		KMO (Kaiser-Meyer-Olkin)	0.74
	Explained Variance (AP)		62.70%
	Correlation (r =)		-0.24 to 0.81
Reliability	Cronbach's Alpha		0.82 [IC95% 0.80–0.83]
	McDonald's Omega		0.80 [IC95% 0.78–0.82]
	Greatest Lower Bound – glb		0.93 [IC95% 0.92–0.94]
	ORION*		0.80; 0.79; 0.82; 0.86; 0.83; 0.75; 0.95; 0.89
goodness of fit	Non-Normed Fit Index		0.97
	Comparative Fit Index (CFI)		0.98
	Schwarz's Bayesian Information Criterion (BIC)		2249.18
	Goodness of Fit Index (GFI)		0,98
	Adjusted Goodness of Fit Index (AGFI)		0.96
	Root Mean Square Error of Approximation (RMSEA)		0.03
	Root Mean Square of Residuals (RMSR)		0.03
One-dimensional Assessment	One-dimensional Congruence (UNICO)		0.876
	Explained Common Variance (ECV)		0.684
	Mean of item residual absolute loading (MIREAL)		0.224
Quality and Effectiveness	Factor Determinacy Index (FDI)*		0.89; 0.89; 0.90; 0.93; 0.91; 0.86; 0.97; 0.94
	Sensitivity Ratio (SR)*		2.02; 1.96; 2.16; 2.52; 2.22; 1.73; 4.49; 2.85
	Expected percentage of true differences (% EPTD)*		89.5; 88.5; 90.9; 90.9; 89.7; 87.2; 95.5; 92.1%
* for domains 1 to 8, respectively			

After overcoming the evidences of internal structure adequacy we can go to score configuration and to its standardization.

Stage 3: Score standardization

The score of the instrument must be interpreted; thus, the higher the score of the instrument, the higher the CNMH. Blok 1, "self-referred", comprises 17 items within 5 dimensions. Score zero (0) means higher need of care, whereas block 2, "health professional evaluation" comprises 14 items within 3 dimensions. Score (1) points out higher need of care. A way to calculate the domain was set instead of reversing the score of the two items in domain 1. The calculation was Block score 1 = 17 (number of items in the domain) – the number of answers "1"; thus, Block 1 = 17 (17 - Σblock1) and Block 2 is the sum of answers. In order to get the instrument's total-score we have:

$$\text{CNMH} = (17 - \Sigma\text{block1}) + \Sigma\text{block2}$$

It led to a score amplitude that may range from zero (0) (lower need) to 31 (higher need). We must make it clear that items in Block 1 can be seen as CNMH reducers and items in Block 2 are taken as CNMH boosters.

Table 6 shows the frequency of answers given to items in the questionnaire. There is clear prevalence of "yes" answers for all items comprising Block 1. Despite such prevalence, two items stood out for "no" answers. Item 06, "can you remain at work?", recorded the highest rate of "no" answers among all items (17.60%). Item 11, "can you control your temper?", also showed higher frequency (16.405). With respect to Block 2, differently from Block 1, items recorded the highest frequency for "no" answers. However, this block has shown the two items with the highest frequency for need of care; both were linked to violence. Item 18, "was the user a witness of violence?", recorded 23.20% and item 20, "Was the user a victim of violence?", recorded 18.30%.

Table 6
– Frequency of answers to the items

			Frequency of answers to the item (N/%)		
Questions/ Score			No	Yes	
Self-referenced dimension	Social relationships	V1	Do you have friends?	88 (10.00)	795 (90.00)
		V2	Do you talk to your friends?	111 (12.60)	772 (87.40)
		V3	Are you able to keep friendships?	47 (5.30)	836 (94.70)
	Functionality	V4	Are you able to go to healthcare services by yourself?	40 (4.50)	843 (95.50)
		V5	Are you able to perform your work tasks?	113 (12.80)	770 (87.20)
		V6	Are you able to keep working?	155 (17.60)	728 (84.40)
		V7	Are you able to shop for your daily supplies by yourself?	63 (7.1)	820 (92.90)
	Autonomy	V8	Are you able to bath by yourself?	14 (1.60)	869 (98.40)
		V9	Do you perform your daily hygiene yourself?	11 (1.20)	872 (98.8)
		V10	Do you get dressed by yourself?	17 (1.90)	866 (98.10)
	Impulsiveness and aggressiveness	V11	Are you able to control your impulsiveness?	145 (16.40)	738 (83.60)
		V12	Are you able to control your verbal aggressiveness?	113 (12.80)	770 (87.20)
		V13	Are you able to control your physical aggressiveness?	49 (5.50)	834 (94,50)
	Spirituality	V14	Do you find a meaning for your life?	103 (11.70)	780 (88.30)
		V15	Do you feel that your life has a purpose?	94 (10.60)	789 (89.40)
		V16	Can you admire things around you?	47 (5.30)	836 (94,70)
		V17	Are you hopeful with your life?	115 (13)	768 (87.00)
Health professional evaluation dimension	violence	V18	Was the user a witness of violence?	677 (76.70)	206 (23.30)
		V19	Was the user an author of violence?	828 (93.80)	55 (6.20)
		V20	Was the user a victim of violence?	721 (81.70)	162 (18.30)
	Self-aggression and suicidal behavior	V21	Does the user have the will of dying?	844 (95.60)	39 (4.40)
		V22	Does the user have suicidal ideas?	855 (96.80)	28 (2.30)
		V23	Does the user have suicidal plans?	863 (97.70)	20 (2.30)
		V24	Has the user attempted suicide?	832 (94,20)	51 (5.80)
		V25	Does the user think of self-aggression??	868 (98.30)	15 (1.70)
		V26	Does the user present imminent risk of self-aggression?	869 (98.40)	14 (1.60)
		V27	Does the user have history of self-aggression?	854 (96.70)	29 (3.30)
	Caregiving plan	V28	Does the PHC team have a hard time handling this case?	855 (96.80)	28 (3.20)
		V29	Does the user deny its disease?	871 (98.60)	12 (1.40)
		V30	Is the user unaware of its condition?	864 (97.80)	19 (2.20)
		V31	Does the user resist the proposed caregiving plan?	866 (98.10)	17 (1.9)

Scores just presented greater different due to the results recorded for the scores closer to minimum limit; they got farther from the median, which, in this case, was closer to the minimum when they were in the upper quartile. Accordingly, three initial classifications were suggested. The first classification model had three limits and comprised the first cut in percentile 75; the second limit ranged from 76 to 90, and the last group in percentile >91. The second model counted on 4 limits: up to percentile 50, percentile 51 to 75, from 76 to 90, and the last cut in percentile 91+. The last tested model reached up to percentile 75, from 76 to 90, from 91 to 95, and percentile >0.95.

Results recorded for the discriminant analysis applied to model 1 were $MBox = 469.99$; $p < 0.001$; $\lambda_{\text{Wilks}} = 0.24$; $F_{(2, 880)} = 1,371.94$; $p < 0.001$; canonical correlation = 0.87. Model 2 presented result for the discriminant analysis of $MBox = 866.61$; $p < 0.001$; $\lambda_{\text{Wilks}} = 0.109$; $F_{(2, 879)} = 2,386.15$; $p < 0.001$; canonical correlation = 0.944. Model 2 was able to properly classify 97.8% of the cases, the discriminant analysis applied to model 3 recorded the following results: $MBox = 109.50$, $p < 0.001$. $\lambda_{\text{Wilks}} = 0.13$; $F_{(2, 879)} = 1,843.95$; $p < 0.001$; canonical correlation = 0.929 – it allowed properly classifying 88.4% of original cases. Thus, model 2 was the one presenting the best way to establish the cuts for the classification limits. Table 7 presents the classification limits, percentiles and scores for the instrument.

Table 7
– MHCare-BR scale scores' limits, classification and interpretation

Strata names	Percentile limit	Score
Low CNMH	Up to 50	0 and 1
Moderate CNMH	51 to 75	2 and 3
High CNMH	76 to 90	4 to 6
Very High CNMH	90+	7+

After setting the classification and interpretation limits, it is essential better understanding how the items have influenced the instrument's score and identifying the items capable of having stronger influence on score formation. In order to do so, we have applied a regularized linear regression with the elastic net algorithm by using the instrument's total score and the items as predictors. Regression recorded $\lambda = 0.01$ with MSE (mean standard error) in the training database of 0.002 and in the test database of 0.003. The model recorded $R^2 = 99.70\%$ with Mean Absolute Percentage Error (MAPE) = 6.49% and RMSE (root mean squared error) = 0.06. Table 8 points out the β coefficients of the instrument's items. The result has confirmed that items presenting the highest frequency of answers to the opposite of the trend of answers in the answer blocks are the very items presenting β values higher than 0.12. Thus, items 18 and 20 rose as the ones having the highest potential for CNMH and items 6 and 11 were the ones tending to reduce the instrument's scores in a more relevant way. They could even be pointed out as reducers.

Table 8
Coefficient β of the items

Item	Coefficient (β)
V01. Do you have friends?	-0.0913
V02. Do you talk to your friends?	-0.1112
V03. Are you able to keep friendships?	-0.0712
V04. Are you able to go to healthcare services by yourself?	-0.0632
V05. Are you able to perform your work tasks?	-0.1102
V06. Are you able to keep working?	<i>-0.1204</i>
V07. Are you able to shop for your daily supplies by yourself?	-0.0922
V08. Are you able to bath by yourself?	-0.0451
V09. Do you perform your daily hygiene by yourself?	-0.0368
V10. Do you get dressed by yourself?	-0.0257
V11. Are you able to control your impulsiveness?	<i>-0.1205</i>
V12. Are you able to control your verbal aggressiveness?	-0.1037
V13. Are you able to control your physical aggressiveness?	-0.0702
V14. Do you find a meaning for your life?	-0.1004
V15. Can you feel that your life has a purpose?	-0.1047
V16. Can you admire things around you?	-0.0687
V17. Are you hopeful for your life?	-0.1066
V18. Was the user a witness of violence?	<i>0.1291</i>
V19. Was the user an author of violence?	0.0818
V20. Was the user a victim of violence?	<i>0.1269</i>
V21. Does the user have the will of dying?	0.0682
V22. Does the user have suicidal ideas?	0.0598
V23. Does the user plan suicide?	0.0513
V24. Has the user attempted suicide?	0.0766
V25. Does the user think about self-aggression??	0.0375
V26. Does the user present imminent risk of self-aggression?	0.0194
V27. Does the user have history of self-aggression?	0.0586
V28. Does the PHC team have a hard time handling this case?	0.0523
V29. Does the user deny its disease?	0.0294
V30. Is the user unaware of its condition?	0.0553
V31. Does the user resist the proposed caregiving plan?	0.0474

If we analyze the answers, mainly those to items 18 and 20 (Block 2) and to items 6 and 11 (Block 1), we can clearly see the change in the behavior of answers given to the items as the priority limit increases. For example, 51.9% of participants who were classified in limit 4 (very high CNMH) seem to have witnessed violence and 49.4% were victims of violence; as for limit 1 (low CNMH), these limits were 9.4% and 4.1%, respectively. As expected, answers in Block 1 presented reversed trend, 95.3% have reported to be able to remain at work (limit 1) and 95.5% have reported to be able to control their temper. With respect to limit 4, indices were 44.4% for item 6 (work) and 39.5% for item 11 (impulsivity). Although users in limits 1 and 2 can be classified as having lower need of mental care, it is essential assessing what was the answer given to items related to violence. Frequency of answers of items with the highest beta are present at Table 9.

Table 9
– Frequency of answers per limits of items with the highest beta

	Low NCSM	Moderate NCSM	High NCSM	Very high NCSM
V06. Are you able to keep working?	95.3% (n = 464)	75.4% (n = 159)	66.3% (n = 69)	44.4% (n = 36)
v11. Are you able to control your impulsiveness?	95.5% (n = 465)	81.5% (n = 172)	66.3% (n = 69)	39.5% (n = 32)
V18. Was the user a witness of violence?	9.4% (n = 46)	33.2% (n = 70)	46.2% (n = 48)	51.9% (n = 42)
V20. Was the user a victim of violence?	4.1% (n = 20)	28.9% (n = 61)	39.4% (n = 41)	49.4% (n = 40)

Note: Frequency refers to “no” answers.

After analyzing the items, we proceed to the analysis of the scores of the dimensions, blocks and instrument score. The results indicate that all dimensions had range of scores found, which may indicate, preliminarily, the possibility of the instrument capturing nuances of the information provided by the user and by the professional. However, blocks 1, 2 and the instrument's total score did not have their full amplitude used. Block 1 of a maximum possible score of 17 reached 14, block 2 of a maximum possible score of 14 reached 13 and the instrument's maximum score of 31 had its highest value of 19 (Table 10).

Table 10
Median, minimum, maximum, range and interquartile range

	Median	Minimum	Maximum	Range	Interquartile range
dimension 1 – Social relationships	3	0	3	3	0
dimension 2 – Functionality	4	0	4	4	0
dimension 3 – Autonomy	3	0	3	3	0
dimension 4 - impulsiveness e aggressiveness	3	0	3	3	0
dimension 5 – Spirituality	4	0	4	4	0
dimension 6 – Violence	0	0	3	3	1
dimension 7 – Self-aggression and suicide behavior	0	0	7	7	0
dimension 8 – Caregiving plan	0	0	4	4	0
Total Block 1 – Self-referred	1	0	14	14	2
Total Block 2 – PHC's professionals evaluation	0	0	13	13	1
Total Instrument	1	0	19	19	3

The analyses allowed establishing an instrument in compliance with stable evidences of internal structure validity, as well as classification and interpretation limits capable of being considered sensitive to users' adequate framing.

Discussion

The MHCare-BR scale was developed and presented evidences on content and internal structure validity. It showed eight dimensions: five were self-referred by users (Social relationships, Functionality, Autonomy, Impulsiveness and Aggressiveness, and spirituality) and three were evaluated by PHC's professionals (Violence, Self-aggression and Suicidal Behavior, and Caregiving Plan), with 31 items: 17 in the self-referred block and 14 in PHC's professionals evaluation block.

Scales are developed to measure a phenomenon highlighted by a theory or concept that point towards its existence, but that cannot be directly measurable. In order to do so, the idea is to identify factors related to a given latent variable, allowing to find a reasonably accurate way to measure the phenomenon⁽⁴⁹⁾. A scale validation takes place when it really measures what it was supposed to measure⁽⁴⁹⁻⁵⁰⁾.

CNMH is a complex latent variable. The literature provides a series of factors related to this variable, such as socioeconomic, clinical and disability factors⁽⁷⁾. Other aspects, such as experiencing insecurity and hopelessness, fast social changes, risk of violence and physical illnesses, are related to higher vulnerability to common mental disorders of people in poverty situations, especially in Low and Middle-Income countries (LMIC), like Brazil⁽⁵¹⁾.

The Brazilian Health Ministry technical recommendations to mental health care point out some scales to support PCH users' tracking and/or monitoring⁽⁵²⁾, depending on the assessed condition, such as Patient Health Questionnaire (PHQ-9) for Depression⁽⁵³⁾, Clinical Dementia Rating Scale⁽⁵⁴⁾, Overall Anxiety

Severity and Impairment Scale (OASIS)⁽⁵⁵⁾, CAGE⁽⁵⁶⁾ and Alcohol Use Disorders Identification Test (AUDIT) for alcohol abuse⁽⁵⁷⁾. However, none of these scales are indicated to support the stepped care decisions. It is important to highlight that these scales focus on quantifying symptoms and, in general, do not include the individuals' perception about mental disorders impairments.

The literature points out that functional impairment and how it is perceived by the individual, could indicate where the care should be provided in the Care Provision Network⁽⁷⁾. Alvares (2012)⁽⁵⁸⁾ claims the importance and need of considering the presence of mental disorder and individuals' functionality, as main factors to assess and determine conducts related to individuals' health.

Furthermore, the literature recommends that mental disorder severity classification (mild, moderate or severe) should be done after the diagnoses, considering the disease development evaluation, and an independent measurement of disability parameters, in order to avoid collinearity⁽⁵⁹⁾. In agreement with this recommendation, the DSM-V diagnostic handbook, highlights that functionality evaluation should be performed separated from diagnostic considerations; and at this context indicates the functionality measurement known as WHODAS 2.0⁽⁶⁰⁾.

The MHCare-Br scale, validated by the present study, resemble some WHODAS 2.0 domains, since both were developed based on CIF⁽²⁰⁾. Besides, both aim at identifying healthcare needs, establishing clinical priorities, and helping resources allocation, regardless of the disorders' etiology. However, although WHODAS 2.0 items were developed to directly correspond to CIF disability dimensions, the MHCare-R did not present such straight correspondence, including other aspects related to the CNMH construct, such as Spirituality, Impulsiveness and Aggressiveness, Violence, Self-Aggression and Suicidal Behavior, and Caregiving Plan.

Among MHCare-BR dimensions related to WHODAS 2.0⁽⁶⁰⁾, we highlight the "Social Relationships" dimension, which matched the domain 4 – Relationship – of WHODAs 2.0 and the domain "Social and Interpersonal Functioning" of CIF⁽²⁰⁾, assessing interactions with other people and difficulties faced because of a health condition. Items in this MHCare-Br's dimension, also match the Work and Social Adjustment Scale (WSAS)⁽⁶¹⁾, applied to measure functioning losses due to health issues. Both scales assess the existence of social relationships and the ability to keep them. It is known that social support improves individuals' sense of self-efficacy, that it leads to broaden understanding, respect, encouragement and self-realization; a fact that can help individuals' to keep their emotions relatively stable, even if they are under distress⁽⁶²⁾.

The dimension "functionality" in MHCare-BR, which assesses hard time dealing with daily activities, including those associated with domestic duties, labor and attend to health services, shows similarities with the Domain 5 – Life Activities – in WHODAS 2.0⁽⁶⁰⁾, the items "d850 remunerated job; d830 Higher education; d220 be multi-task" in CIF⁽²⁰⁾, and with WSAS⁽⁶²⁾. By analyzing results recorded for this dimension in our sample, we could conclude that not being able to remain at work recorded high frequency regardless of the CNMH strata. This finding pointed out that item 6, "Are you able to keep working?", deserves closer attention and must be considered a marker that points out CNMH regardless of the final score.

Dimension "Autonomy", resembles the Domain 3 – Self-care – in WHOAS 2.0⁽⁶⁰⁾, and the items "d510-d650 combination of multiple self-care factors and domestic life tasks" in CIF⁽²⁰⁾. This dimension is relevant, considering that when one seeks to broaden individuals' functionality, the main focus lies on ensuring its autonomy to perform practical daily tasks.

Although, impulsiveness and aggressiveness symptoms are assessed as part of a broader psychopathology⁽⁶³⁻⁶⁵⁾ and can be observed in almost all psychiatric disorders and in some neurological or clinical diseases⁽⁶⁶⁾, these do not represent classical psychiatric diagnostics, such as schizophrenia, depression, bipolar disorder, or personality disorder. In turn, in MHCare-BR the dimension "Impulsiveness and Aggressiveness", is considered, highlighting that the presence of these symptoms can influence suicidal tendencies⁽⁶⁷⁻⁶⁸⁾ and impair treatment⁽⁶⁹⁾, and it implies in CNMH. It noteworthy that at the present study it was observed high frequencies of participants that reports not being able to control your impulsiveness, regardless of the CNMH stratum. It means that item 11 "Are you able to control your impulsiveness?", must also be considered a marker that needs attention, regardless of the final score.

Dimension "Spirituality" is in compliance with the quality-of-life instrument proposed by the World Health Organization, in its Spirituality, Religiosity and Personal Beliefs modulus (WHO-SRPB), since both of them assess how personal beliefs can influence a strategy to deal with issues by giving a meaning to human behavior and by influencing quality of life⁽⁷⁰⁾. There are other instruments available in the literature to measure spirituality⁽⁷¹⁻⁷⁷⁾. Some of them can deeply explore religion and religiosity⁽⁷⁷⁾; whereas others measure well-being and inner peace⁽⁷⁶⁾ or feelings such as forgiveness⁽⁷⁴⁾ and gratitude⁽⁷²⁾. This conceptual multiplicity concerns the diversity as spirituality is understood. Dimension "Spirituality" in the MHCare-BR scale adopts the concept referring to transcendence, to sacred, to aspects of life that gain spiritual character and meaning, that give meaning to life, that are related to the observation of beauty and nature, and to the generation of well-being⁽⁷⁰⁾.

At the present study, it was observed that 51.9% of participants classified at very high CNMH gave positive answers to item "Was the user a witness of violence?", whereas only 9.4% of respondents with low CNMH have reported to have witnessed violence. These results regarding the "violence" dimension in MHCare-Br are in compliance with evidence of association among violence, poverty and mental disorders, mainly in countries with high social inequality, such as the case of Brazil⁽⁷⁸⁾. Thus, items 18, "Was the user a witness of violence?", and 20, "Was the user victim of violence?" in this dimension are considered CNMH boosters; and deserve special attention when getting a positive answer, even if the score result shows low-to-moderate CNMH.

Dimension "Self-Aggression and Suicidal Behavior" is essential to assess CNMH, since mental disorders are linked to the most cases of suicide⁽⁷⁹⁾. There are several scales aimed at tracking suicidal behaviors and at identifying self-aggression⁽⁸⁰⁻⁸²⁾. However, if one takes suicide as a complex and multi-causal phenomenon, it is necessary having more accurate tools aimed at going beyond identifying the will to die, suicidal thoughts and plans. Thus, by assessing the risk to suicide along with factors likely related to CNMH, such as social relationships, impulsiveness, spirituality and violence, MHCare-BR contributes to a broader evaluation that can guide professionals' actions and caregiving planning in a more accurate way.

Dimension “Caregiving Plan” is an innovation, since it includes item 28 “Does PHC team have a hard time handling this case?”, which opens room for PHC’s healthcare professionals to point out the likely need of support from an expert; showing the potential to support the caregiving sharing. This item is in compliance with the collaborative caregiving model in Brazil, the so-called “Matriciamento”, which consider the recommendation to PHC professionals request specialist support when needs to approach a complex case⁽⁸³⁾. These and the other items in this dimension represent important factors that can interfere with a decision about the best place for the treatment, since they highlight challenging features for mental healthcare provision in PHC services⁽⁸⁴⁾.

The Brazilian Health Ministry⁽⁵²⁾ technical recommendations to mental health care represent an advancement since it seeks to organize the offer of mental health actions in the public health system, i.e:

“describe routines of patients’ routes, complete information about the promotion, prevention, treatment and rehabilitation actions and activities to be developed by a multi-disciplinary team in each healthcare service; they make feasible the communication among teams, services and user in a Healthcare Assistance Network, with emphasis on actions’ standardization, by organizing an assistance continuum”. (Brazilian Health Ministry, 2022)

This way of organizing caregiving based on guidelines is similar to the approach of Stepped care protocols^(85–86), which are a sequential approach whose majority of patients has access to low intensity treatments, and that offers less restrictive interventions, as well as cheaper interventions for most people; after this step those who remain symptomatic can access more intensive and costly therapies.

Another approach to scale caregiving lies on defining who are the patients eligible for low or high intensity therapies based on an initial evaluation to stratify them. Stratified care scaling was more effective and cost-effective to treat depression symptoms than the scaled care protocols (Stepped Care) in a recent randomized clinical trial study⁽⁸⁷⁾.

By stratifying CNMH, the MHCare-BR scale can subsidize objective elements to decision-making processes linked to the best location for the treatment provided to an individual or group of individuals^(88–89). Accordingly, by stratifying people who present CNMH, MHCare-BR has the potential to support PHC professionals to choose what interventions can be adequate, according to each CNMH suggested strata. Thus, it contributes to rational use of technical and human resources by concentrating them in groups with very high CNMH.

Furthermore, since the MHCare-BR has the potential to standardize caregiving-sharing criteria among different services in the care provision network, it potentially supports joint planning of caregiving among different attention levels, by helping joint decision-making processes and by favoring collaborative care. It is worth highlighting that MHCare-Br encompasses different dimensions in one single instrument, and it simplifies and fastens a broad CNMH evaluation, a fact that brings easiness to its implementation in the clinical practice.

Among limitations faced in the present study, it is important highlighting that data collection was carried out among users who seek the PHC service, independently of previous mental health care conditions/ needs identified. It may have influenced the scale score, however considering the high burden of mental health disorders⁽¹⁾, one must acknowledge its applicability within this context. Therefore, we recommended that future studies should be conducted with sub-populations with some identified CNMH.

Conclusion

Considering the mental health disorders as a worldwide public health concern and the scenarios of limited resources, it is essential developing strategies and tools capable of supporting PHC professionals in decision-making about the adequate care, at the right moment, to a given patient. The adoption of a heterogeneous population (multi-regional and multi-cultural) at the present study has broadened the possible extrapolation results to the most diverse regional environments. Given the extensive applied strategies to identify evidences of content and internal structure validity, MHCare-BR scale can be considered a valid, adequate, reliable and consistent instrument capable of assessing CNMH, in order to subsidize Brazilian PHC professionals to face challenges related to decision-making in the mental health care practice.

Declarations

The study was approved by the Ethics Committee of Hospital Israelita Albert Einstein (CAAE: 12395919.0.0000.0071). Informed Consent Form was presented, and inclusion occurred conditionally to consent to participate.

The authors declare that they have no competing interests

Funding: This work was supported by the Program of Support for the Institutional Development of the Unified Health System (Law No. 12,101, of November 27, 2009), through Ordinance No. 3,362, of December 8, 2017 – Technical Opinion No. 2 /2021 - CGGAP/DESF/SAPS/MS (0019478128) and dispatch SAPS/GAB/SAPS/MS (0019480381). The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Authors' contributions: “IE, LYA and CM performed data collection coordination. FR analyzed and interpreted data. JMTM and LYA interpreted data and has a major contribution in writing the manuscript. DB coordinated the research and provided technical support. JMTM, AAFS, IE, FR, DSZ, TR, DB, CM and LYA made substantial contributions to the conception of the study, read and approved the final manuscript.”

Acknowledgements: We acknowledge PHC managers and professionals from all 11 PHC services participating the study and Albert Einstein Center for Studies, Research and Practice in Primary Healthcare (CEPPAR).

Availability of data and materials: The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

References

1. GBD 2019 Mental Disorders Collaborators. Global, regional, and national burden of 12 mental disorders in 204 countries and territories, 1990–2019: A systematic analysis for the Global Burden of Disease Study 2019. *The Lancet Psychiatry*. 2022 Jan;9(2):137–50. Doi: 10.1016/S2215-0366(21)00395-3
2. OPAS, 2018; OPAS. MI-mhGAP Manual de Intervenções para transtornos mentais, neurológicos e por uso de álcool e outras drogas na rede de atenção básica à saúde. Versão 2.0. Brasília, DF: Organização Pan-Americana da Saúde; 2018. Licença: CC BY-NC-SA 3.0 IGO.
3. Scale up services for mental disorders: a call for action. *The Lancet*. 2007 Oct;370(9594):1241–52. Doi: 10.1016/S0140-6736(07)61242-2
4. Kakuma R, Minas H, van Ginneken N, Dal Poz MR, Desiraju K, Morris JE, et al. Human resources for mental health care: current situation and strategies for action. *The Lancet*. 2011 Nov;378(9803):1654–63. Doi: 10.1016/S0140-6736(11)61093-3.
5. OPAS, 2021; Organização Pan-Americana da Saúde. Orientações sobre serviços comunitários de saúde mental: promoção de abordagens centradas na pessoa e baseadas em direitos. Brasília, D.F.: OPAS; 2022. Disponível em: <https://doi.org/10.37774/9789275726440>.
6. Gustavsson E. From needs to health care needs. *Health Care Analysis*. 2013 Jan 24;22(1):22–35. Doi: 10.1007/s10728-013-0241-8
7. Aoun S, Pennebaker D, Wood C. Assessing population need for mental health care: a review of approaches and predictors. *Ment. Health Serv. Res*. 2004 Mar;6(1):33–46. Doi: 10.1023/b:mhsr.0000011255.10887.59
8. Orr J, Bernstein CN, Graff LA, Patten SB, Bolton JM, Sareen J, et al. Factors associated with perceived need for mental health care in multiple sclerosis. *Mult. Scler. Relat. Disord*. 2018 Oct;25:179–85. Doi: 10.1016/j.msard.2018.07.043.
9. Reaume SV, Luther AWM, Ferro MA. Physical morbidity and mental health care among young people. *J Adolesc Health*. 2021 Mar;68(3):540-47. doi: 10.1016/j.jadohealth.2020.06.040.
10. Sanmartin MX, Ali MM, Chen J, Dwyer DS. Mental health treatment and unmet mental health care need among pregnant women with major depressive episode in the United States. *Psychiatr Serv*. 2019 Jun;70(6):503–6. Doi: 10.1176/appi.ps.201800433
11. Lamoureux-Lamarche C, Berbiche D, Vasiliadis HM. Perceived need for mental health care and associated factors and outcomes in older adults consulting in primary care. *Can J Psychiatry*. 2022 Jul;67(7):553-564. doi: 10.1177/07067437211055430.
12. Fleury MJ, Grenier G, Bamvita JM, Perreault M, Caron J. Variables associated with perceived unmet need for mental health care in a canadian epidemiologic catchment area. *Psychiatr Serv*. 2016 Jan;67(1):78-85. doi: 10.1176/appi.ps.201400363.
13. Seekles WM, Cuijpers P, van de Ven P, Penninx BW, Verhaak PF, Beekman AT, van Straten A. Personality and perceived need for mental health care among primary care patients. *J Affect Disord*. 2012 Feb;136(3):666-74. doi: 10.1016/j.jad.2011.10.009.
14. Villatoro AP, Mays VM, Ponce NA, Aneshensel CS. Perceived need for mental health care: the intersection of race, ethnicity, gender, and socioeconomic status. *Soc Ment Health*. 2018 Mar;8(1):1-24. doi: 10.1177/2156869317718889.
15. Meadows GN, Burgess PM. Perceived need for mental health care: findings from the 2007 Australian survey of mental health and wellbeing. *Aust N Z J Psychiatry*. 2009 Jul;43(7):624-34. doi: 10.1080/00048670902970866.
16. Rens E, Dom G, Remmen R, Michielsen J, Van den Broeck K. Unmet mental health needs in the general population: perspectives of Belgian health and social care professionals. *Int J Equity Health*. 2020 Sep 29;19(1):169. doi: 10.1186/s12939-020-01287-0.
17. Forbes MK, Crome E, Sunderland M, Wuthrich VM. Perceived needs for mental health care and barriers to treatment across age groups. *Aging Ment Health*. 2017 Oct;21(10):1072-1078. doi: 10.1080/13607863.2016.1193121.
18. American Psychological Association - APA [Internet]. Washington: American Educational Research Association (AERA), American Psychological Association (APA), National Council on Measurement in Education (NCME); 2014. *The Standards for Educational and Psychological Testing*; [cited 2022 dec 5]; Available from: <https://www.apa.org/science/programs/testing/standards>
19. Mendes EV. As redes de atenção à saúde. Brasília: Organização Pan-Americana da Saúde; 2011.
20. World Health Organization. *The International Classification of Functioning, Disability, and Health*. Geneva: World Health Organization, 2001.
21. Fleck MP de A. O instrumento de avaliação de qualidade de vida da Organização Mundial da Saúde (WHOQOL-100): características e perspectivas. *Ciênc. saúde coletiva*. 2000;5(1):33–8. Doi: 10.1590/S1413-81232000000100004
22. Biernacki P, Waldorf D. Snowball Sampling—Problems and Techniques of Chain Referral Sampling. *Sociol Methods Res*. 1981;10(2):141-163. Doi: 10.1177/00491241810100020.
23. PA Harris, R Taylor, R Thielke, J Payne, N Gonzalez, JG. Conde. Research electronic data capture (REDCap) - A metadata-driven methodology and workflow process for providing translational research informatics support. *J Biomed Inform*. 2009 Apr;42(2):377-81. Doi: 10.1016/j.jbi.2008.08.010
24. Lawshe CH. A quantitative approach to content validity. *Pers Psychol*. 1975;28(4):563-575.
25. Baghestani AR, Ahmadi F, Tanha A, Meshkat M. Bayesian critical values for Lawshe's content validity ratio. *Meas Eval Couns Dev*. 2019;52(1):69-73. Doi 10.1080/07481756.2017.1308227.
26. Ayre C, Scally AJ. Critical values for lawshe's content validity ratio: revisiting the original methods of calculation. *Meas Eval Couns Dev*. 2014;47(1):79-86. Doi: 10.1177/0748175613513808
27. DeVellis RF. *Scale development: theory and applications*. 4th ed. Thousand Oaks: Sage; 2017. 261 p.
28. e-Planifica [Internet]. São Paulo: PlanificaSUS; 2022 [cited 2022 Nov 15]. Available from: <https://planificasus.com.br/>

29. Lorenzo-Seva U, Ferrando PJ. MSA: The forgotten index for identifying inappropriate items before computing exploratory item factor analysis. *Methodology*. 2021 Dec 17;17(4):296–306. Doi: 10.5964/meth.7185
30. Lorenzo-Seva U, Van Ginkel JR. Multiple Imputation of missing values in exploratory factor analysis of multidimensional scales: estimating latent trait scores. *Anales de Psicología*. 2016 Apr 3;32(2):596. Doi: 10.6018/analesps.32.2.215161
31. Timmerman ME, Lorenzo-Seva U. Dimensionality assessment of ordered polytomous items with parallel analysis. *Psychol Methods*. 2011 Jun;16(2):209–20. Doi: 10.1037/a0023353.
32. Lim S, Jahng S. Determining the number of factors using parallel analysis and its recent variants. *Psychol Methods*. 2019 Aug;24(4):452–67. Doi: 10.1037/met0000230
33. Auerswald M, Moshagen M. How to determine the number of factors to retain in exploratory factor analysis: A comparison of extraction methods under realistic conditions. *Psychol Methods*. 2019 Aug;24(4):468–91. Doi: 10.1037/met0000200
34. Dobriban E, Owen AB. Deterministic parallel analysis: an improved method for selecting factors and principal components. *J R Stat Soc Series B Stat Methodol*. 2018 Nov 8;81(1):163–83. Doi: 10.48550/arXiv.1711.04155
35. Cho S-J, Li F, Bandalos D. Accuracy of the parallel analysis procedure with polychoric correlations. *Educ Psychol Meas*. 2009 Mar 11;69(5):748–59. Doi: 10.1177/001316440933222
36. Briggs NE, MacCallum RC. Recovery of weak common factors by maximum likelihood and ordinary least squares estimation. *Multivariate Behav Res*. 2003 Jan;38(1):25–56. Doi: 10.1207/S15327906MBR3801_2
37. Lorenzo-Seva U. Promin: a method for oblique factor rotation. *Multivariate Behav Res*. 1999 Jul;34(3):347–65. Doi: 10.1207/S15327906MBR3403_3
38. Quinn HO. Bifactor models, explained common variance (ECV), and the usefulness of scores from unidimensional item response theory analyses. Master's thesis, The University of North Carolina at Chapel Hill, Chapel Hill, NC, 2014. Available from: <https://cdr.lib.unc.edu/concern/dissertations/w95051780>
39. Ferrando PJ, Lorenzo-Seva U. Assessing the quality and appropriateness of factor solutions and factor score estimates in exploratory item factor analysis. *Educ Psychol Meas*. 2017 Jul 7;78(5):762–80. Doi: 10.1177/0013164417719308
40. Hair JF, Babin BJ, Anderson RE, Black WC. *Multivariate Data Analysis*. 8th ed. Intl Thomson Business Pre; 2018.
41. Costello A, Osborne J. Best Practices in Exploratory Factor analysis: Four Best Practices in Exploratory Factor analysis: Four Recommendations for Getting the Most from Your Analysis Recommendations for Getting the Most from Your Analysis. Research, and Evaluation Practical Assessment, Research, and Evaluation [Internet]. 2005 [cited 2022 Nov 15];10:7. Available from: <https://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1156&context=pape>
42. Wu AD, Zumbo BD, Marshall SK. A method to aid in the interpretation of EFA results: An application of Pratt's measures. *Int. J. Behav. Dev*. 2014 Jan;38(1):98–110. Doi: 10.1177/0165025413506143
43. Sivo SA, Fan X, Witts EL, Willse JT. The search for "optimal" cutoff properties: fit index criteria in structural equation modeling. *J Exp Educ*. 2006 Apr;74(3):267–88. Doi: 10.3200/JEXE.74.3.267-288
44. Cronbach LJ. Coefficient alpha and the internal structure of tests. *Psychometrika*. 1951 Sep;16(3):297–334. Doi: 10.1007/BF02310555
45. Woodhouse B, Jackson PH. Lower bounds for the reliability of the total score on a test composed of non-homogeneous items: II: A search procedure to locate the greatest lower bound. *Psychometrika*. 1977 Dec;42(4):579–91. Doi: 10.1007/BF02295980
46. McDonald RP. *Test theory: A unified treatment*. Psychology Press. Psychology Press: New York, 2013.
47. Ferrando P, Lorenzo-Seva U, Pere J, Ferrando. A note on improving EAP trait estimation in oblique factor-analytic and item response theory models [internet]. 2016 [cited 2022 nov 14];37:235–47. Available from: <https://www.uv.es/vispsi/articulos2.16/7Ferrando.pdf>
48. Hair JR, Black WC, Babin BJ, Anderson R, Tatham RL. *Multivariate Data Analysis*. 7th ed. Upper Saddle River, NJ: Pearson Prentice Hall, 2019.
49. Howard MC. A review of exploratory factor analysis decisions and overview of current practices: what we are doing and how can we improve? *Int J Hum Comput Interact*. 2016;32(1):51–6. Doi: 10.1080/10447318.2015.1087664
50. Messick S. *Test validity and the ethics of assessment*. New Jersey: Educational Testing Service; 1979.
51. Patel V, Kleinman A. Poverty and common mental disorders in developing countries. *Bull World Health Organ* [internet]. 2003 [cited 2022 nov 18];81(8):609-15. Available from: <https://pubmed.ncbi.nlm.nih.gov/14576893/>
52. Ministério da Saúde. Linhas de cuidado. [Internet]. Brasília: Secretaria de Atenção Primária à Saúde. [cited 2022 dez 6]. Available from: <https://linhasdecuidado.saude.gov.br/portal/>
53. Goldberg DP, Williams PA. *A user's guide to the General Health Questionnaire*. Windsor: NFER Nelson; 1988.
54. Morris JC. The Clinical Dementia Rating (CDR): Current version and scoring rules. *Neurology*. 1993 Nov 1;43(11):2412–2. Doi: 10.1212/wnl.43.11.2412-a.
55. Campbell-Sills L, Norman SB, Craske MG, Sullivan G, Lang AJ, Chavira DA, et al. Validation of a brief measure of anxiety-related severity and impairment: The Overall Anxiety Severity and Impairment Scale (OASIS). *J Affect Disord*. 2009 Jan;112(1-3):92–101. Doi: 10.1016/j.jad.2008.03.014
56. Liskow B, Campbell J, Nickel EJ, Powell BJ. Validity of the CAGE questionnaire in screening for alcohol dependence in a walk-in (triage) clinic. *J Stud Alcohol*. 1995 May;56(3):277–81. Doi: 0.15288/jsa.1995.56.277
57. Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG. *The alcohol use disorders identification test*. Geneva: World Health Organization; 2001. Available from: http://www.psihocator.com/images/who_msd_msb_016a.pdf
58. Álvarez AS. The application of the international classification of functioning, disability, and health in psychiatry. *Am J Phys Med Rehabil*. 2012 Feb;91(13):69–73. Doi: 10.1097/PHM.0b013e31823d4f1c.

59. Ustün B, Kennedy C. What is "functional impairment"? Disentangling disability from clinical significance. *World Psychiatry*. 2009 Jun;8(2):82-5. Doi: 10.1002/j.2051-5545.2009.tb00219.x
60. Üstün TB, Kostanjsek N, Chatterji S, Rehm J (Eds.). *Measuring health and disability: Manual for WHO disability assessment schedule WHODAS 2.0*. World Health Organization, 2010.
61. Mundt JC, Marks IM, Shear MK, Greist JM. The work and social adjustment scale: a simple measure of impairment in functioning. *Br J Psychiatry*. 2002 May;180(5):461–4. Doi: 10.1192/bjp.180.5.461
62. Qi M, Zhou SJ, Guo ZC, Zhang LG, Min HJ, Li XM, Chen JX. The effect of social support on mental health in chinese adolescents during the outbreak of COVID-19. *J Adolesc Health*. 2020 Oct;67(4):514-518. doi: 10.1016/j.jadohealth.2020.07.001.
63. Gorenstein EE, Newman JP. Disinhibitory psychopathology: a new perspective and a model for research. *Psychol Rev*. 1980;87(3):301. Doi: 10.1037/0033-295X.87.3.301
64. Mann JJ, Currier DM. Stress, genetics and epigenetic effects on the neurobiology of suicidal behavior and depression. *Eur Psychiatry*. 2010;25(5):268–71. Doi:10.1016/j.eurpsy.2010.01.009
65. Drachman R, Colic L, Sankar A, Spencer L, Goldman DA, Villa LM, et al. Rethinking "aggression" and impulsivity in bipolar disorder: Risk, clinical and brain circuitry features. *J Affect Disord*. 2022;303:331–9. Doi: 10.1016/j.jad.2022.02.047
66. Prado-Lima PAS Pharmacological treatment of impulsivity and aggressive behavior. *Braz. J. Psychiatry*. 2009 Oct;31(suppl 2):S58–65. Doi: 10.1590/S1516-44462009000600004
67. Law KC, Khazem LR, Anestis MD. The role of emotion dysregulation in suicide as considered through the ideation to action framework. *Curr. Opin Psychol*. 2015 Jun;3:30–5. Doi: 10.1016/j.copsyc.2015.01.014
68. Moore FR, Doughty H, Neumann T, McClelland H, Allott C, O'Connor RC. Impulsivity, aggression, and suicidality relationship in adults: a systematic review and meta-analysis. *eClinicalMedicine*. 2022 Mar;45:101307. Doi: 10.1016/j.eclinm.2022.101307
69. Hollander E, Swann AC, Coccaro EF, Jiang P, Smith TB. Impact of trait impulsivity and state aggression on divalproex versus placebo response in borderline personality disorder. *Am J Psychiatry*. 2005 Mar;162(3):621–4. Doi: 10.1176/appi.ajp.162.3.621
70. Fleck MP, Skevington S. Explaining the meaning of the WHOQOL-SRPB. *Arch. Clin. Psychiatry*. 2007;34:146–9. Doi: 10.1590/S0101-60832007000700018
71. Anandarajah G, Hight E. Spirituality and medical practice: using the HOPE questions as a practical tool for spiritual assessment. *Am Fam Physician* [internet]. 2001 [cited 2022 nov 15];63(1):81-9. Available from: <https://pubmed.ncbi.nlm.nih.gov/11195773/>
72. McCullough ME, Emmons RA, Tsang JA. The grateful disposition: a conceptual and empirical topography. *J Pers Soc Psychol*. 2002;82(1):112-27. Doi: 10.1037//0022-3514.82.1.112
73. Gomez R, Fisher JW. Domains of spiritual well-being and development and validation of the Spiritual Well-Being Questionnaire. *Pers. Individ. Differ*. 2003 Dec;35(8):1975–91. Doi: 10.1016/S0191-8869(03)00045-X
74. Brown RP. Measuring individual differences in the tendency to forgive: construct validity and links with depression. *Pers Soc Psychol Bull*. 2003;29(6):759-71. Doi: 10.1177/0146167203029006008
75. Borneman T, Ferrell B, Puchalski CM. evaluation of the FICA tool for spiritual assessment. *J Pain Symptom Manage*. 2010;40(2):163-73. Doi: 10.1016/j.jpainsymman.2009.12.019
76. Lucchetti G, Lucchetti ALG, Gonçalves JPB, Vallada HP. Validation of the portuguese version of the functional assessment of chronic illness therapy-spiritual well-being scale (FACIT-Sp 12) among Brazilian psychiatric inpatients. *J Relig Health*. 2015;54(1):112-21. Doi: 10.1007/s10943-013-9785-z
77. Curcio CS, Lucchetti G, Moreira-Almeida A. Validation of the portuguese version of the brief multidimensional measure of religiousness/spirituality (BMMRS-P) in clinical and nonclinical samples. *J Relig Health*. 2015;54(2):435-48. Doi: 10.1007/s10943-013-9803-1
78. Ribeiro WS, Mari J de J, Quintana MI, Dewey ME, Evans-Lacko S, Vilete LMP, et al. The impact of epidemic violence on the prevalence of psychiatric disorders in Sao Paulo and Rio de Janeiro, Brazil. *PLoS ONE*. 2013;8(5):e63545. Doi: 10.1371/journal.pone.0063545
79. Botega NJ. Suicidal behavior: epidemiology. *Psicol USP*. 2014;25(3):231–6. Doi:10.1590/0103-6564D20140004
80. Veiga FA, Andrade J, Garrido P, Neves S, Madeira N, Craveiro A, et al. IRIS: Um novo índice de avaliação do risco de suicídio. *Psiquiatria Clinica* [internet]. 2014 [cited 2022 nov 19];35(2):65–72. Available from: <https://core.ac.uk/download/pdf/61498596.pdf>
81. Saunders K, Brand F, Lascelles K, Hawton K. The sad truth about the SADPERSONS scale: an evaluation of its clinical utility in self-harm patients. *Emerg Med J*. 2014;31(10):796-8. doi: 10.1136/emered-2013-202781.
82. Ferrara P, Terzoni S, D'Agostino A, Cutcliffe JR, Pozo Falen Y, Corigliano SE, et al. Psychometric properties of the Italian version of the Nurses' global assessment of suicide risk (NGASR) scale. *Rivista Di Psichiatria*. 2019;54(1):31–6. Doi: 10.1708/3104.30938
83. Ministério da Saúde. Guia prático de matriciamento em saúde mental. Brasília, DF: Ministério da Saúde: Centro de Estudo e Pesquisa em Saúde Coletiva, 2011. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/guia_pratico_matriciamento_saude_mental.pdf
84. Bezerra IC, Jorge MSB, Gondim APS, Lima LL de, Vasconcelos MGF. "Fui lá no posto e o doutor me mandou foi pra cá": processo de medicalização e (des)caminhos para o cuidado em saúde mental na Atenção Primária. *Interface*. 2014;18(48):61–74. Doi: /10.1590/1807-57622013.0650
85. National Institute for Health and Care Excellence. Common mental health disorders: identification and pathways to care: clinical guidance [CG123]. England [cited 2022 dez 6]. Available from: <https://www.nice.org.uk/guidance/CG123>
86. van Straten A, Seekles W, van 't Veer-Tazelaar NJ, Beekman AT, Cuijpers P. Stepped care for depression in primary care: what should be offered and how? *Med J Aust*. 2010;192(S11):S36-S39. doi:10.5694/j.1326-5377.2010.tb03691.x. Doi: 10.5694/j.1326-5377.2010.tb03691.x.

87. Delgadillo J, Ali S, Fleck K, Agnew C, Southgate A, Parkhouse L, et al. Stratified Care vs Stepped Care for Depression: a Cluster Randomized Clinical Trial. *JAMA Psychiatry*. 2021;79(2):101–8. doi:10.1001/jamapsychiatry.2021.3539
88. Delgadillo J, Moreea O, Lutz W. Different people respond differently to therapy: a demonstration using patient profiling and risk stratification. *Behav Res Ther*. 2016;79:15-22. doi:10.1016/j.brat.2016.02.003
89. Lorenzo-Luaces L, DeRubeis RJ, van Straten A, Tiemens B. A prognostic index (PI) as a moderator of outcomes in the treatment of depression: a proof of concept combining multiple variables to inform risk-stratified stepped care models. *J Affect Disord*. 2017;213:78-85. doi:10.1016/j.jad.2017.02.010

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [AddFile1MHCarePortuguese.docx](#)