

## Characteristics of self-medication assessment instruments in Brazil: an integrative review

*Características dos instrumentos avaliativos de automedicação no Brasil: revisão integrativa*  
*Características de los instrumentos de evaluación de la automedicación en Brasil: revisión integradora*

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### Abstract

**Objective:** To describe the characteristics of self-medication assessment instruments with evidence of validity in Brazil. **Methods:** An integrative review, without temporal delimitation, with collection in the LILACS, Scopus, PubMed, MEDLINE and Web of Science databases. Ten studies related to five instruments were included. **Results:** The most convergent domains were sociodemographic aspects, self-medication practice, reasons, medications used and recommendation/sources. Self-medication was assessed by only one instrument with evidence of validity, but it was multidimensional, making its application difficult. The instruments showed good reliability indices, however, of the five, one did not measure reliability. The good psychometric properties of the self-medication and temporomandibular pain instrument stand out (Kappa: 0.810, Cronbach's alpha: 0.844). **Conclusion:** The different instruments analyzed present limitations in evidence of validity, showing the need to develop an instrument focused on self-medication that is reliable and valid.

**Descriptors:** Brazil; Self Medication; Psychometrics; Validation Study.

#### Whats is already known on this?

The Brazilian population has a high consumption of medications, and a large portion consists of self-medication practice. The increasing use of medications without professional guidance creates risks to people's health.

#### What this study adds?

This review characterizes different self-medication assessment instruments, summarizing their strengths, reliability and validity indices and their weaknesses.



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### Resumo

**Objetivo:** Descrever as características dos instrumentos avaliativos de automedicação com evidências de validade no Brasil. **Métodos:** Revisão integrativa, sem delimitação temporal, com coleta nas bases de dados LILACS, Scopus, PubMed, MEDLINE e Web of Science. Foram incluídos dez estudos relacionados a cinco instrumentos. **Resultados:** Os domínios mais convergentes foram aspectos sociodemográficos, prática da automedicação, motivos, medicamentos utilizados e indicação/fontes. A automedicação foi avaliada por apenas um instrumento com evidências de validade, porém multidimensional, tornando difícil sua aplicação. Os instrumentos apresentaram bons índices de confiabilidade, porém, dos cinco, um não mediu a confiabilidade. Destacam-se as boas propriedades psicométricas do instrumento de automedicação e dor temporomandibular (Kappa: 0,810, alfa de Cronbach: 0,844). **Conclusão:** Os diferentes instrumentos analisados apresentam limitações nas evidências de validade, mostrando a necessidade de desenvolver um instrumento focado na automedicação que seja confiável e válido.

**Descritores:** Brasil; Automedicação; Psicometria; Estudo de Validação.

### Resumen

**Objetivo:** Describir las características de los instrumentos de evaluación de la automedicación con evidencia de validez en Brasil. **Métodos:** Revisión integradora, sin delimitación temporal, con recolección en las bases de datos LILACS, Scopus, PubMed, MEDLINE y Web of Science. Se incluyeron diez estudios relacionados con cinco instrumentos. **Resultados:** Los dominios más convergentes fueron aspectos sociodemográficos, práctica de automedicación, motivos, medicamentos utilizados e indicación/fuentes. La automedicación fue evaluada mediante un solo instrumento con evidencia de validez, pero fue multidimensional, lo que dificulta su aplicación. Los instrumentos mostraron buenos índices de confiabilidad, sin embargo, de los cinco, uno no midió la confiabilidad. Se destacan las buenas propiedades psicométricas del instrumento de automedicación y dolor temporomandibular (Kappa: 0,810, alfa de Cronbach: 0,844). **Conclusión:** Los diferentes instrumentos analizados presentan limitaciones en la evidencia de validez, mostrando la necesidad de desarrollar un instrumento enfocado a la automedicación que sea confiable y válido.

**Descriptores:** Brasil; Automedicación; Psicometría; Estudio de Validación.

## INTRODUCTION

Self-medication is defined as the practice of selecting and using medications previously prescribed by a clinician to treat an individual's self-recognized dysfunctions or symptoms.<sup>(1)</sup> This practice can be beneficial (responsible) or potentially risky (inadequate) and, when responsible, is linked to some economic and social benefits, allowing greater empowerment of patients when involved in their treatment, combined with guidance from other professionals to minimize medication-related problems.<sup>(2)</sup>

In turn, inappropriate self-medication occurs when a person uses medication in a way that poses risks to their health or that of another person.<sup>(3)</sup> Such losses may result from incorrect self-diagnosis, incorrect choice of therapy, failure to recognize adverse effects, drug interactions, contraindications, inadequate storage or dose error.<sup>(1)</sup> From this perspective, self-medication is a public health concern, requiring changes in society's habits in order to avoid hospitalizations due to drug poisoning caused to humans.<sup>(4)</sup>

The Brazilian population has a high consumption of medications, and a large portion consists of self-medication practice.<sup>(5)</sup> It is believed that 79% of people over 16 years of age use medications without prescription/ guidance from qualified health professionals.<sup>(6)</sup> With the advent of the COVID-19 pandemic, there was an intense search for medications to strengthen the immune system or even to treat symptoms, in addition to a lot of information on TV and the internet that has influenced people to consume medications on their own.<sup>(7)</sup>

In Brazil, there is a growing number of instruments that assess self-medication. Therefore, it is necessary to analyze the evidence of its psychometric properties (validity and reliability) to help researchers use quality tools.<sup>(8)</sup> The increasing use of medications without guidance from a health professional poses risks to people's health. Assessing how this practice has been measured at national level is an essential strategy for promoting the rational use of medications, which requires using appropriate and tested instruments that demonstrate evidence of validity among the population in which it will be used. Therefore, this study aimed to describe the characteristics of self-medication assessment instruments with evidence of validity in Brazil.

## METHODS

This is an integrative literature review, which completed five phases: 1) guiding question elaboration in a clearly and specifically; 2) search or sampling in the literature, i.e., sample selection after

defined inclusion and exclusion criteria; 3) data collection, i.e., extraction of data from selected articles; 4) critical analysis of included studies; 5) discussion of results.<sup>(9)</sup>

When developing the research question for the integrative review, the PCC strategy (acronym for Population, Concept and Context) was used. Using this strategy made it possible to identify the following keywords: Population – Questionnaires, Concept – Self-medication and Context – Brazil. In this regard, the following guiding question was reached: what are the characteristics of self-medication instruments with evidence of validity in Brazil? In order to screen the largest number of articles on the topic, the search equation was used: (“self-medication”) AND (Brazil).

Original articles used as selection criteria, developed with a Brazilian population aged  $\geq 18$  years, without temporal or language delimitations, were included. Data collection took place from December 2021 to March 2022. Articles without self-medication as a central objective, articles that measure self-medication in health professionals, reviews, repeated and with a qualitative approach were excluded. Articles that presented evidence of validity of the instruments used to measure self-medication were included.

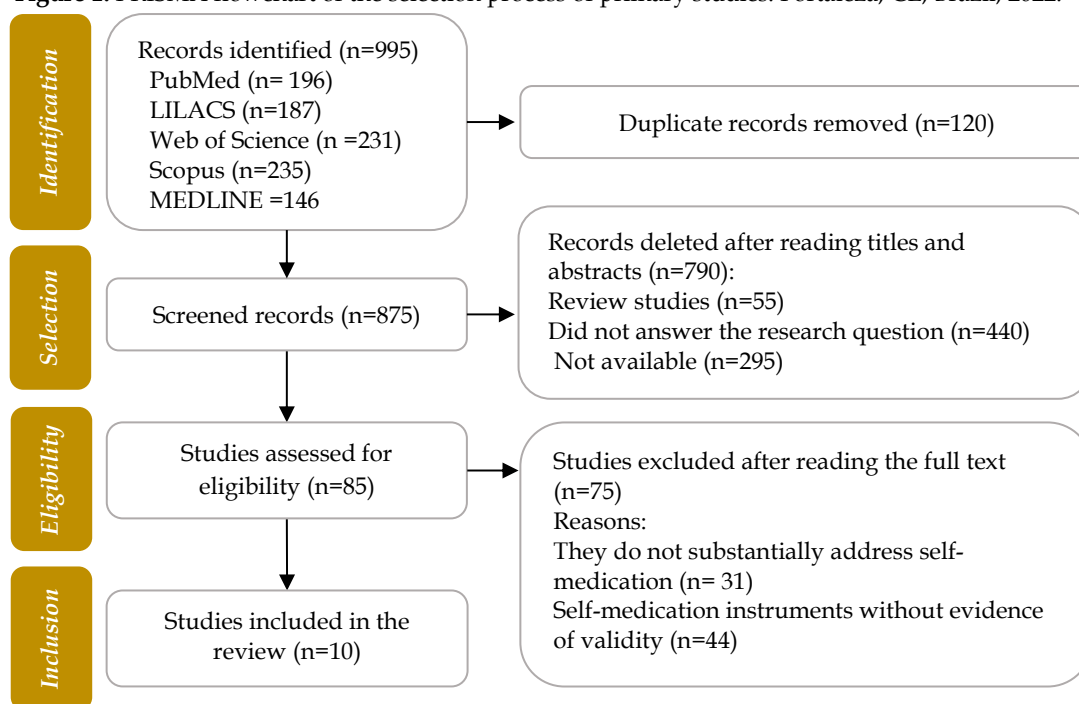
The Latin American and Caribbean Literature in Health Sciences (LILACS), Scopus, PubMed, MEDLINE and Web of Science databases were used. In each database, adapted strategies were used to search for articles, according to their access specificities. For a more refined search that met the objectives of the study, specific filters related to the year, study designs, full texts and study design were not used.

To extract data from primary studies, it was carried out with the help of an instrument prepared by the authors themselves containing the following information: authors; year of publication; public; objectives; type of self-medication measure; study design; place; level of evidence; type of validity; instrument; main results; and conclusions.

Data were collected by two authors, autonomously, to reduce possible biases in the phases of this review. Study selection was done by reading the title, abstract and full text. In situations of disagreement, argumentation took place between the two authors to reach agreement, without the need for assessment by a third reviewer.

Initially, 196 articles were selected from PubMed, 187 from LILACS, 231 from Web of Science, 235 from Scopus and 146 from MEDLINE, totaling 995 articles. After applying the inclusion and exclusion criteria, a final sample of ten articles was obtained. The flowchart follows the primary study selection process adapted from the Preferred Reporting Items for Systematic Review and Meta-Analyses (PRISMA) (Figure 1).

**Figure 1.** PRISMA flowchart of the selection process of primary studies. Fortaleza, CE, Brazil, 2022.



Source: own authorship, 2022.

The studies were classified according to the levels of evidence of the Agency for Healthcare Research and Quality (AHRQ), being: level 1 – meta-analysis of multiple randomized controlled trials; level 2 – studies with an experimental design; level 3 – quasi-experimental and cohort studies; level 4 – descriptive studies (non-experimental) or qualitative approaches; level 5 – case or experience reports; level 6 – with expert opinions.<sup>(10)</sup>

A chart was created to organize study data using Microsoft Office Excel 2016®, allowing the comparison of differences and similarities between research and data organization. Subsequently, data was extracted from included studies on self-medication assessment instruments with evidence of validity in the Brazilian population, qualitatively synthesizing the main characteristics described on the topic.

The articles were analyzed descriptively based on three groups of results. The first consisted of study characteristics. To this end, the authors, year, study objective/design, self-medication measure, location/sample, instrument name, mode of application, response and scoring characteristics, and aspects of self-medication analyzed, such as practice time, used categorizations and chronology, among others.

The second point covered evidence of validity (reliability), considering internal consistency and reproducibility criteria based on Cronbach's alpha and Kappa coefficients, respectively. The third considers the instrument constituents, which involves knowing the factors/aspects contained. The fourth consisted of analyzing the construction of written material in light of health literacy assumptions, considering content and language.<sup>(11)</sup>

## RESULTS

Of the studies found, only ten articles used some evidence of validity process to measure self-medication. Of the selected studies, only one was methodological. The rest were cross-sectional. The majority focused on the prevalence and factors associated with self-medication (n=5) in the general population (n=4) and in the household (n=6), with emphasis on the Brazilian National Survey on Access, Use and Promotion of the Rational Use of Medications (PNAUM - *Pesquisa Nacional sobre Acesso, Utilização e Promoção do Uso Racional de Medicamentos*) (n=5). Regarding the time elapsed to measure self-medication, there was variation in studies, with the most frequent time being the last 15 days. In all studies, the instrument was applied through interviews, as shown in Chart 1.

**Chart 1.** Characterization of scientific production that used validated questionnaires to assess self-medication practice. Fortaleza, CE, Brazil, 2022.

Author/year	Level de evidence	Objective/design	Type of measure/time	Place/sample	Instrument/application
Arrais <i>et al.</i> (2016) <sup>(5)</sup>	4	*To identify the prevalence and factors associated with self-medication in Brazil. *Cross-sectional (survey)	*Consuming a medication *Continuous use for three months and possibly 15 days	Household/general population (n=41,433)	*PNAUM - *Interview
Aquino <i>et al.</i> (2010) <sup>(12)</sup>	4	*To identify the behavior of health university students in relation to the self-medication practice. *Cross-sectional	*Self-medication of medication use in general *Last 15 days	University/university students (n=223)	*Name not given *Interview
Sousa <i>et al.</i> (2018) <sup>(13)</sup>	3	*To check the prevalence and factors associated with adverse drug events (ADE). * Cohort	*Self-medication of at least one medication: - Self-medication and adverse reaction *Last 15 days	Domicílio/comunidade população em geral (n=41.443)	*PNAUM *Interview
Dias <i>et al.</i> (2019) <sup>(14)</sup>	3	*To build and validate a self-	*Self-medication in mild, moderate and	Dental office/patients with	*Name not given

		medication questionnaire. *Methodological	severe in relation to temporomandibular pain *Last six months with pain	temporomandibular disorders (n=110)	*Interview
Gonzaga <i>et al.</i> (2021) <sup>(15)</sup>	4	*To identify the frequency of use and the profile of the self-medication population with dyspeptic symptoms. *Cross-sectional (survey)	*Self-medication in the adult population with dyspepsia *Last 90 days	Household/population with dyspepsia (n=717)	*PNAUM *Interview
Loyola Filho <i>et al.</i> (2005) <sup>(16)</sup>	4	*To check the prevalence of consumption of prescribed and non-prescribed medications. *Cross-sectional	*Self-medication: 1. Prescribed and non-prescribed 2. Just not prescribed *Last 15 days	Household/elderly population (n=1,742)	*BHAS *Interview
Loyola Filho <i>et al.</i> (2002) <sup>(17)</sup>	4	*To check the prevalence and factors associated with self-medication. *Epidemiological study	*Self-medication: 1. Prescribed and non-prescribed 2. Just not prescribed *Last 90 days	Household/general population (n=1,200)	*BHAS *Interview
Moreira <i>et al.</i> (2020) <sup>(18)</sup>	4	*To describe and assess the medication use profile *Cross-sectional	*Using over-the-counter medications *Last 30 days	Primary care/general population (n=1,159)	* PNAUM *Interview
Pereira <i>et al.</i> (2021) <sup>(19)</sup>	4	*To identify self-medication practices among pregnant women. *Cross-sectional	*Self-medication: 1. Over-the-counter 2. Subject to medical prescription 3. Medicinal, herbal medication and vitamins *Last 60 days	Prenatal consultation/pregnant women (n=297)	* Not reported *Interview
Pons <i>et al.</i> (2017) <sup>(20)</sup>	4	*To check the predisposing factors associated with self-medication practice. * Cross-sectional (survey)	*Took any over-the-counter medication, except contraceptives/with a yes or no answer *Last 15 days	Household/general population (n=31,573)	*PNAUM *Interview

Note: PNAUM - Brazilian National Survey on Access, Use and Promotion of Rational Use of Medications; BHAS - The Bambuí Health and Aging Study.

Source: own authorship, 2022.

As for chronological order, the first instrument validated in Brazil was the questionnaire The Bambuí Health and Aging Study (BHAS), used with older adults<sup>(16)</sup> and people aged 18 or older.<sup>(17)</sup> The second validated questionnaire is about self-medication practice by university students,<sup>(12)</sup> however it does not detail the signs of validity.

The third questionnaire is from the PNAUM team,<sup>(5,13,15,18,20)</sup> presenting a domain relating to the behavior of using medication without a prescription, which considered “self-medication” the use of medication without a medical or dental prescription.

The fourth instrument measures self-medication and temporomandibular pain.<sup>(14)</sup> This instrument presents the psychometric properties in detail. The fifth questionnaire measures self-medication by pregnant women.<sup>(19)</sup> The following questions were used: which medications did you use during self-medication? What symptom did you feel to practice self-medication? Why did you practice self-medication? From whom was the recommendation for self-medication obtained? Chart 2 provides detailed information regarding instrument names, articles, type of validity and description (constituents of self-medication and validity).

**Chart 2.** Main dimensions, validity and reliability of questionnaires assessing self-medication in Brazil. Fortaleza, CE, Brazil, 2022.

Instrument	Articles	Type of validity	Description
BHAS	Loyola Filho <i>et al.</i> (2005) <sup>(16)</sup> Loyola Filho <i>et al.</i> (2002) <sup>(17)</sup>	Reliability	Constituents (n=8): sociodemographic; health conditions; self-medication practice; use of health services; lifestyle; psychosocial aspects; reproductive history; physical functionality. Validity: cognitive interview and pilot test for validity. Does not inform the test or the index. Reliability: 10% of the sample was used.
PNAUM	Arrais <i>et al.</i> (2016) <sup>(5)</sup> Sousa <i>et al.</i> (2018) <sup>(13)</sup> Pons <i>et al.</i> (2017) <sup>(20)</sup> Moreira <i>et al.</i> (2020) <sup>(18)</sup>	Reliability	Constituents (n=7): sociodemographic; disease events; use of continuous medication; acute disease events treated with medication; pharmacy services; self-medication behaviors; lifestyle. Evidence of validity: six pilot studies were carried out in different capitals of Brazil with (n=251) people. A new interview was carried out with 12% of the sample. Reliability: the reproducibility of variables was tested, with Kappa coefficient values ranging from 0.72 to 0.88, showing high agreement.
Self-medication in university student questionnaire	Aquino <i>et al.</i> (2010) <sup>(12)</sup>	Validity not specified	Constituents (n=4): sociodemographic; self-medication behavior/practices; type of medication and motivation for self-medication. Evidence of validity: previous cognitive interviews with university students at the institution and pilot test. Reliability: not reported.
Self-medication and temporomandibular pain questionnaire	Dias <i>et al.</i> (2019) <sup>(14)</sup>	Content validity Validity of the instrument's internal structure Reliability	Constituents (n=4): temporomandibular pain/orofacial pain; types of medications; opinion/attitude regarding self-medication and care/treatment of temporomandibular disorders. Evidence of validity: content validity with (n=3) expert judges in temporomandibular and orofacial pain. Validity was carried out through factor analysis, using the Kaiser-Meyer-Olkin (KMO) coefficient, and Bartlett's test of sphericity showed a good correlation (0.66). Self-medication was classified according to intensity as mild, moderate and severe, based on the score, which can vary from 34 to 170 points. Reliability: Kappa coefficient was 0.810 and Cronbach's alpha was 0.844.
Self-medication in pregnant women questionnaire	Pereira <i>et al.</i> (2021) <sup>(19)</sup>	Content validity	Constituents (n=6): sociodemographic; lifestyle habits; self-medication practice; motivation; recommendation and source.

			<p>Evidence of validity: content validity carried out by two professors with experience in the area. A pre-test was carried out with (n=5) pregnant women to assess instrument validity.</p> <p>Reliability: a pre-test was carried out with (n=5) pregnant women to assess reliability, but there is no access to coefficient data.</p>
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Source: own authorship, 2022.

## DISCUSSION

The use of instruments that assess self-medication is a relevant strategy for strengthening the promotion of rational use of medications. In this review, several questionnaires that measure this construct were identified in Brazil, however there is no “gold standard” for this measurement and there are few instruments that present evidence of validity. Despite a variety of instruments, a better understanding of characteristics of self-medication measures, the constituents and validity processes of this construct is necessary. This understanding will contribute to the construction of future instruments that can assess adequate and reliable self-medication.

From the results presented here, the use of self-medication assessment instruments with incomplete and poorly detailed validity properties was evident, as only one study referred to the stages of development and validity of content and internal structure.<sup>(14)</sup> Such properties are necessary to test whether items express the attribute that we really want to measure.<sup>(21)</sup>

Regarding instrument characteristics, the level of evidence varied between 3 and 4. This result can be explained by the fact that most studies adopt a cross-sectional design on prevalence and factors associated with self-medication.<sup>(5,13,15-18,20)</sup> Review of studies on therapeutic adherence verified the need for studies with a higher level of evidence to obtain advances on the subject.<sup>(22)</sup> Studies with methodological designs that produce more robust levels of evidence contribute to improving self-medication measurement.

Among the characteristics of the instruments identified here, the application of the instrument to the adult population prevailed. In this population group, there is a higher prevalence of self-medication in the world. Supporting our findings, in another review on self-medication in the world population, it was observed that one third of adults practice self-medication.<sup>(23)</sup> There are inconsistencies in BHAS application, developed to study health and aging; however, this instrument has been used for audiences aged 18 and over, disregarding the cognitive and literacy peculiarities of different age groups.<sup>(17)</sup>

Another important feature is the way to measure self-medication, considering the time needed to measure this event. There was a variation in the measurement time of this attribute, which considered the duration of symptoms/events, ranging from acute/brief symptoms to chronic/long symptoms. Most studies dealt with acute/brief symptoms, adopting a short retrospective period of time, such as the last 15 days from the day of application of the instrument, such as the PNAUM<sup>(5,13,15,18,20)</sup> and the self-medication in university student questionnaire.<sup>(13)</sup> Choosing a specific time interval can influence self-medication understanding and assessment. By limiting ourselves to a short retrospective time frame, there is a risk of not fully capturing the extent and frequency of self-medication, especially in contexts where symptoms may persist for longer periods.

On the other hand, the chronic/long events observed adopted the period of the last three (PNAUM) and six months, as the self-medication instrument in temporomandibular dysfunction.<sup>(14)</sup> In the case of measuring self-medication in pregnant women, the last 60 days pregnant were considered.<sup>(19)</sup> In Brazil, several studies on the self-medication practice use different time intervals to measure self-medication practice, which can make comparisons of prevalence between studies difficult. It is a fact that, if we consider a smaller number of days in contrast to months, this becomes more likely to see a higher prevalence of self-medication. Therefore, measuring self-medication must always consider the relationship between the event or symptoms and the time elapsed to validate an instrument for this practice.

Among the main findings of this study are the constituents used to assess self-medication. Thus, it was observed that PNAUM and BHAS presented a large number of dimensions. It is worth highlighting that these were not exclusive to self-medication, in contrast, with specific instruments to measure self-medication, they portray the dimensions of this practice in a targeted way.<sup>(12,14,19)</sup> Therefore, the constituents that most converged between the identified instruments are sociodemographic, self-medication practice/behavior, motivation, type of medication and recommendation/sources. Although studies address a variety of dimensions, the inclusion of more targeted and specific instruments for self-medication

may be crucial to understanding more specific details of this health behavior. The combination of general and specific elements can provide a more complete and detailed view of self-medication, taking into account both their interactions and other areas of health.

Understanding the constituents or dimensions of self-medication will contribute to constructing an instrument capable of assessing this practice in an expanded way, based on motives or beliefs, behaviors and recommendations. In addition to these elements, there was an absence of the “knowledge” dimension, which is expanded with health literacy. This construct involves skills in accessing, understanding, assessing and using health information, in order to define the best behavior (practice) adopted in their routine, whether related to health care or improving subjects’ quality of life.<sup>(24)</sup>

It is worth highlighting that a person’s limited ability to understand health information is a global problem.<sup>(25)</sup> Studies show that low medication literacy (an aspect of health literacy) is associated with inappropriate self-medication behavior or risk.<sup>(26-28)</sup> Incorporating health/medication literacy skills, such as accessing, understanding, assessing and applying information to make decisions regarding the safe use of medications, becomes relevant for reducing the risks associated with self-medication. Therefore, improving the population’s level of medication literacy is a relevant task for health services.

Regarding the types of validity used, it was found that less than half carried out content validity. In this process, there was little detail in the assessments carried out by the authors. The researcher must plan the data collection procedure, considering the selection of an appropriate and precise measuring instrument, which requires a correct assessment of the qualities of the instrument that will be applied, taking into account validity, reliability and practicality. Content validity is an essential step for the development of new measures, however it may present limitations, requiring the addition of psychometric measures.<sup>(29)</sup>

Among the instruments identified, the temporomandibular pain questionnaire and self-medication stand out,<sup>(14)</sup> which underwent rigorous validity development, resulting in 41 items, submitted to appearance and content validity by three judges. Furthermore, instrument internal structure validity showed good correlation between all variables. Even developing a risk stratification for self-medication, considered of great relevance for the health service, the study still has a limitation in the sense that it cannot be extrapolated to other audiences.

The other questionnaires identified presented limitations in the validity or application process. BHAS and PNAUM, despite being used to mediate self-medication, are not exclusive to this construct, in addition to presenting several sessions, which makes application difficult. Regarding validity indicators, a pilot test was carried out, using a percentage of the sample to measure reliability.<sup>(30-31)</sup>

In the study on the development of an instrument that measures self-medication in academics,<sup>(12)</sup> a questionnaire with evidence of validity was used, applied among university students in the health area. Validity data and analyzes are not included in the study, but it is noted that the questionnaire was previously validated through cognitive interviews and pilot testing with university students from the same institution. It is noteworthy that no statistical validity data were found in the literature.

On the other hand, the self-medication instrument for pregnant women<sup>(19)</sup> used a questionnaire developed based on the internal validity of two judges (professors with expertise in the field), with appearance, content and construct validity being carried out. Furthermore, the study portrays the performance of a pre-test with five pregnant women to assess instrument validity and reliability.

Another important psychometric property is reliability, which is the ability to reproduce a result consistently across time and space.<sup>(32)</sup> In this review, it was found that, of the five questionnaires, the instrument that measures self-medication in university students does not measure instrument reliability. Of the instruments that present the reliability measure, BHAS portrays the use of 10% of the sample of participants to assess, but data on the alpha and Kappa coefficients were not found in the literature. PNAUM demonstrated high agreement based on the Kappa coefficient, allowing us to verify the reliability of the instrument’s items. The reliability of the temporomandibular dysfunction and self-medication questionnaire<sup>(14)</sup> was determined by the Kappa coefficient and Cronbach’s alpha. Thus, it was possible to verify that the Kappa coefficient showed good reproducibility of the items and that Cronbach’s alpha was high, showing good precision and internal reliability, with almost perfect internal consistency. The self-medication instrument for pregnant women<sup>(19)</sup> used only five pregnant women for the reliability process, but does not provide relevant data.



One of the aspects that can compromise the understanding of the instruments and, consequently, the quality of results obtained, is health literacy. Therefore, the instruments must be adapted to the level of health literacy according to the population extracts.

From this perspective, adopting health literacy assumptions becomes an important strategy for constructing the items of an instrument. In this way, content and language guidelines<sup>(11)</sup> were developed that can guide the preparation of written materials. It was found that PNAUM presents some limitations with regard to these guidelines, presenting sentences with more than 15 words, more than one central idea at a time, use of acronyms and more than five alternatives per sentence. The document structure demands certain numerical and health skills, and inadequacy in these aspects leads to difficulty in filling out.

The fourth questionnaire<sup>(14)</sup> presents five alternatives per sentence, making it easier to follow the instrument's sequence of responses, but some items are not in the second person and there are sentences with more than 15 words. BHAS presents items that also exceed 15 words, which may compromise research subjects' interpretation. Thus, Pereira *et al.*,<sup>(19)</sup> despite having excluded pregnant women who did not have reading fluency, they used 30% of pregnant women with elementary literacy. Therefore, some questions that contain technical elements in the area of medications stand out, such as: from whom was the recommendation for self-medication obtained? It is worth highlighting that health literacy is emerging as great relevance in assessing these questionnaires and which must integrate the validity and cultural adaptation of these instruments.

This review demonstrates the need to qualify our studies on self-medication, understanding that evidence of validity and the existence of constituents consistent with the construct are crucial to improve the data collection process, clarify the dimensions of self-medication and assess self-medication, which can then be carried out in a broader and clearer way. Therefore, we must aim to better develop the psychometric properties of questionnaires, advancing evidence of validity (such as the validity of the internal structure) in order to better understand this dimension.

The need to seek instruments that assess self-medication in an expanded way becomes an emerging demand, since the context of the SARS-CoV-2 pandemic has transformed people's way of life, adopting behaviors such as self-medication.<sup>(33)</sup> One can mention, as an immediate consequence of the pandemic, the emergence of mental disorders, making the growth of self-medication visible.<sup>(34)</sup> Even though the pandemic has passed, the numbers of self-medication have been growing in Brazil.<sup>(35)</sup> Thus, better understanding the elements that involve this construct permeate by directing attention to a health need that urgently needs to be prioritized.

The limitation of this study lies in the unavailability of access to data on evidence from some studies, some found in other articles and others not available in the literature, and this limiting scenario was verified mainly in older studies. In this way, the capacity for greater analysis of evidence of validity was compromised.

This research identified new gaps in self-medication assessment. Although there are instruments that stratify the risk of self-medication, they are limited to a very specific group. Therefore, it is necessary to build and validate an instrument for the general population that can have methodological rigor and be reliable. Furthermore, it is important to assess self-medication practice in different aspects, such as before, during and after pregnancy.

Validated instruments were identified that stratify the risk of self-medication, but only a very limited group, making it necessary to construct and validate an instrument for the general population with methodological rigor, resulting in a valid and reliable instrument. Filling such gaps can help to outline strategies aimed at strengthening the promotion of rational use of medications.

## CONCLUSION

Dimensional and validity elements of the instruments used to measure self-medication practice in Brazil were identified, but there are gaps to be filled. Examples of this include: scarcity or absence of specific validated self-medication assessment instruments and assessment of specific self-prescribed medications; assessment of instrument applicability according to target population group; more objective and uniform investigation of self-medication practice time; increased investigation of harms and interactions; and application of the fundamentals of health literacy in the development of these instruments. It is hoped that such gaps will be addressed in future studies. It is also hoped to have contributed to science by identifying them, which is believed to be a robust part of the relevance of this study.

## CONTRIBUTIONS

Contributed to the conception or design of the study/research: Barreto MAF, Negreiros FDS, Cestari VRF, Moreira TMM. Contributed to data collection: Barreto MAF, Negreiros FDS, Moreira TMM. Contributed to the analysis and/or interpretation of data: Barreto MAF, Negreiros FDS, Cestari VRF, Moreira TMM. Contributed to article writing or critical review: Barreto MAF, Negreiros FDS, Cestari VRF, Moreira TMM, Maia CAAS, Sampaio. Final approval of the version to be published: Barreto MAF, Negreiros FDS, Cestari VRF, Moreira TMM, Maia CAAS, Sampaio.

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