Instruments validated in Brazil for assessing oral health literacy in adolescents: an integrative literature review

Instrumentos validados no Brasil para avaliação de letramento em saúde bucal de adolescentes: uma revisão de literatura integrativa

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ABSTRACT
Adolescence is a stage of life where there are major physical and biological transformations concomitant with psychological and social ones, which occur with the development of sexuality and which influence the human being's personality and other aspects of life. Health literacy (HL) can be understood as an individual's ability to access, understand, evaluate and put into practice basic health information. Adolescent oral health literacy (OHL) is an area that is little explored, despite the importance of this formative stage in the individual approach to healthy lifestyles and behaviors. The objective of this study was to carry out an integrative literature review on research instruments validated in Brazil for OHL among adolescents. The search strategy was carried out in August 2023, with a broad search for studies that assessed OHL in adolescents, in the Virtual Health Library (VHL), US National Library of Medicine (PubMed) and Scientific Electronic databases. Library Online (Scielo). The keywords used were “health literacy” and “oral health” and “adolescents”. Inclusion criteria: free full texts; only: articles, books and documents, clinical trials, meta-analyses, controlled and randomized trials, analyzes and systematic reviews; without limitations of date or language. Exclusion criteria: studies without the three descriptors present in the text simultaneously, theses and monographs, abstracts, letters to the editor. 47 articles were found in VHL, 118 in PubMed and 13 in Scielo. Nineteen articles were analyzed and presented according to: author, title, year of publication, type of study, objectives, sample size and age group, sample recruitment, data collection tool, limitations and health outcomes. The only research instrument on adolescent OHL validated in Brazil was the BREALD-30 questionnaire, a Brazilian version of the Rapid Estimate of Adult Literacy in Dentistry, which measures literacy through word recognition. An important research gap in this field was revealed.

Keywords: health literacy, oral health, surveys and questionnaires, teenagers.

RESUMO
A adolescência é uma etapa da vida onde há grandes transformações físicas e biológicas concomitantes às psicológicas e sociais, que acontecem com o desenvolvimento da sexualidade e que influenciam na personalidade do ser humano e outros aspectos da vida. O letramento em saúde (LS) pode ser entendido como a capacidade do indivíduo de acessar, compreender, avaliar e colocar em prática informações básicas de saúde. O letramento em saúde bucal (LSB) do adolescente é uma área pouco explorada, apesar da importância dessa etapa formativa na abordagem individual de estilos de vida e comportamentos saudáveis. O objetivo deste estudo

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**Palavras chave:** adolescentes, inquéritos e questionários, letramento em saúde, saúde bucal.

1 **INTRODUCTION**

In adolescence, the life stage of major discoveries and emotional instabilities, we observe the influence of interpersonal relationships on risk or health protection behaviors (Jorge et al., 2018). With the development of sexuality, major physical and biological transformations concomitant with psychological and social transformations are found. These transformations influence the personality of human beings among other aspects of their lives (Barbosa et al., 2020). At this important stage of human training, health promotion strategies are needed to incorporate healthy behaviors that last throughout life. Most Brazilian health policies are targeted at children or adults. Among adolescents, the majority of actions have been curative, not contemplating health promotion efficiently. Preventive policies and actions aimed at the adolescent are necessary, considering their previous knowledge skills and motivation in the development of social, personal, self-knowledge and life skills, so that their choices are in favor of a healthy life (Sørensen et al., 2012; Rocha et al., 2017). When considering health promotion policies, Health Education (LS) is configured as an existing proposal.

The expression LS seems to have been translated into Brazilian Portuguese since 1991, from when instruments were used, created or improved to evaluate the levels of LS, in distinct populations (Pinheiro, 2021; Martins et al., 2022). "Health literacy", "Health literacy", "Health
literacy" are the translations of the term "health literacy" into Brazilian Portuguese. The theoretical model presented in 2012 was translated into Brazilian Portuguese in the same year, but the publication was only available in 2015 (Martins et al., 2015). Initially, the Dictionary of Health Sciences Specialties (DECS) introduced the term "health literacy" as the translation of the term "health literacy." The Brazilian Health Literacy Network (REBRALS) has asked DECS management to change the translation of the term "health literacy" from "health literacy" to "health literacy", since the terms "literacy" and "literacy" have different meanings in Brazilian Portuguese (Soares, 2004; Tfouni, 2002). In Portugal, the translation of the term "health literacy" into Portuguese is "Health literacy". This Portuguese term has also been considered in Brazil. Therefore, in Brazil, publications are available that consider the three translations presented. The term "health literacy" appears to have been first used by James Dixon in 1959 in Philadelphia (Pennsylvania, United States), citing it as one of the tools that could be used in health disaster situations as pandemics, for economically disadvantaged populations (Dixon, 1959).

In 2008, the World Health Organization (WHO) considered LS as an intermediate determinant in health fundamental to empowerment and equity in health. Initially, the LS definition considered people's need for prior knowledge, skills, and motivation to access, understand, evaluate, and apply health-related information. In 2021, the term Letrada Organization in Health (OLS) (Abrams et al., 2014) was considered in the definition of LS, since it was realized that the organization of the health service can corroborate for people to access, understand, evaluate and apply health-related information. It has to be considered that other models have been developed around the world (WHO, 2008; Sørensen et al., 2012; Abrams et al., 2014; Martins et al., 2015; Nutbean & Lloyd, 2021; Sørensen et al., 2022).

Children, adolescents, the elderly, ethnic minorities, people with special needs and the disadvantaged stand out as vulnerable groups at low levels of LS. In this context, awareness of the importance of LS as a determinant of people's quality of life has stood out. LS levels can be assessed by considering different health conditions. Among these conditions, LSB levels have been assessed since 2015 (Junkes et al., 2015; Lima et al., 2019;

The quality of the tools for assessing LSB levels should be considered in the context of research, teaching and health services. Thus, in 2012, a delphi study was conducted, with the participation of 47 experts on the subject, who sought standardization and definition of terms referring to the evaluation of the quality of measuring instruments. In this study, the following
steps were presented to assess the quality of the measuring instrument: reliability, validity, responsiveness and interpretability. Reliability refers to the internal consistency and reproducibility of the measurement, as well as the evaluation of measurement errors. Validity is subdivided into content and face validity; construct validity and discriminant validity. Responsiveness refers to the ability of the measuring instrument to identify changes in what is being measured as a consequence of observable facts or interventions that are intended to alter the scores being measured in the measuring instrument. Interpretability, on the other hand, concerns the interpretation of the results of the evaluations that consider the measuring instrument (Mokkink, et al., 2012). LS has been identified, since 2022, as a heterogeneous phenomenon, with diverse origins and evolving (Martins et al., 2022, Martins, et al., 2023). Instruments have been developed that evaluate LS considering the general health of people, as well as instruments directed to certain health conditions or specific populations (Marques e Lemos, 2017). Regarding oral health, some instruments have been developed (Cruvinel, et al., 2017; Bado, et al., 2018; Firmino, et al., 2020; Lins,et al., 2020). However, it seems that instruments that aim to evaluate oral health literacy (BLS) among adolescents are scarce. It is therefore proposed to identify and evaluate instruments used in Brazil for measuring LSB levels among adolescents.

2 METHODS

The literature review called integrativa provides expanded information on a subject, making up a body of knowledge. It uses judicious research methods employed to provide the best knowledge produced about a given research problem, so that these are critically evaluated by professionals with clinical skills and then incorporated into care practice. It presents different purposes such as defining concepts, reviewing theories or methodological analysis of studies on a given topic (Ercole et al., 2014), allowing also the combination of data from empirical and theoretical literature that can be directed to the identification of spaces in the areas of studies.

2.1 IDENTIFICATION

This integrative literature review, with different methods combined, aimed at broadening the possibilities of analysis of scientific knowledge regarding the validation of questionnaires on adolescent BLS in Brazil. This method synthesized the results obtained in research on the theme,
in a comprehensive, systematic and orderly manner. The synthesis of knowledge about the current validated methods for measuring the LSB of adolescents in Brazil can point out possible scientific gaps to be addressed in future studies. For a broader coverage for the identification of data, a broad question containing the central terms of the search was elaborated, generating the guiding question that guided the review: which instruments for the assessment of adolescent BLS were validated in Brazil?

2.2 SEARCH STRATEGY

The search strategy was conducted in August 2023, with a broad search for studies that evaluated LSB in adolescents. Research was carried out on articles in the databases Virtual Library on Health (VHL), US National Library of Medicine (PubMed) and Scientific Electronic Library Online (published). The keywords used were identified in the Descriptors in Health Sciences (DeCS), of which the terms in Portuguese were used: "literacy in health" and "oral health" and "adolescents". During the database search, only the "and" connective was used to make combinations of the terms.

2.3 ELIGIBILITY CRITERIA

To meet the inclusion criteria, the following studies were eligible: articles, books and documents, without date or language limitations. With regard to the exclusion criteria, studies were not eligible without the three descriptors present in the text simultaneously, theses and monographs, abstracts, letters to the editor, studies involving LS not specific for Dentistry or that used instruments not validated for use in Brazil, duplicity articles in the researched bases, articles not available in full. The process of inclusion and exclusion of this integrative review followed the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses -PRISMA, and for transparency in reporting the results (Hutton et al., 2015), a flowchart was used indicating this procedure, presented in the results of the research, in Figure 1.

2.4 ANALYSIS OF ARTICLES

Only two of the authors evaluated the articles independently, by title, objective, methodology, results, and conclusion, during the search in the databases. In moments of
persistent disagreements between these two authors, the last author was consulted, for having more experience in scientific research.

3 RESULTS

According to the combination of the keywords selected in DeCS and the pre-established search filters, the survey resulted in 47 articles in VHL, 118 in PubMed and 13 in Scielo. After reading the title, the objective, the methodology, the results, the conclusion and the application of the eligibility (inclusion) and ineligibility (exclusion) criteria, they were selected: 13 in the VHL; 16 were elected in PubMed and no articles were elected in Scielo. All were read in full for eligibility to be certified, leaving, then, 19 articles selected through the search strategies.

The process flow chart for this integrative review is depicted in Figure 1.

Figure 1: Flowchart of the process of exclusion and inclusion of the integrative review, following PRISMA recommendations.

During the process of reading in full the articles selected for this research, the main results were extracted in a synthesized form. The publication period of the 18 articles ranged from 2015
to 2022, with 17 in the English language. All articles are quantitative and epidemiological. The presentation of the results obtained was made in a descriptive manner by means of Table 1, where the nine articles found in PubMed and the ten articles found in the VHL are distributed in chronological order. Only the data considered most relevant for the present study were evidenced, and presented according to: author, year of publication, location, database, type of study, objectives, sample size, age group and sample recruitment, data collection tool, limitations and health outcomes.

Table 1: Distribution of the 18 articles found in VHL and Pubmed in August 2023 on validated questionnaires for oral health literacy in adolescents, as to author, title, year of publication and database; type of study; objectives; sample size, age group and sample recruitment; data collection tool; limitations and outcomes in health.

<table>
<thead>
<tr>
<th>Author, year/ Place of study, Database</th>
<th>Study design</th>
<th>Objectives</th>
<th>Sample size, age group and recruitment</th>
<th>Tool data collection</th>
<th>Limitations</th>
<th>Health outcomes</th>
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<tbody>
<tr>
<td>Tsé Carrie K, et al., 2015. Hong Kong, China Pubmed</td>
<td>Pilot study, transverse, experimental, randomized</td>
<td>Conduct a pilot study to evaluate the effectiveness of three major media outlets - Twitter, Facebook and YouTube - in supporting adolescent's LSB</td>
<td>Random sample 22 adolescents (aged 14 to 16) from an English school</td>
<td>Social media use and dental experience were collected through a questionnaire. One LSB pre and post test (REALD-30)</td>
<td>Cross-sectional study, small sample number, Self-reported experience, participants were recruited group high socioeconomic status</td>
<td>Audiovisual social media from Facebook and YouTube can be more effective for oral health promotion (SB) in a sample of school teens</td>
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<td>Neelima M, et al., 2018. Mysoe, India. Pubmed</td>
<td>Cross-sectional study</td>
<td>Evaluate LSB and SB status among adolescents from pre-university colleges</td>
<td>401 (201 adolescents from public and 200, private schools) aged 15 to 20. 50 adolescents paired by gender, drawn by simple random sampling</td>
<td>Structured questionnaire socio-demographic information, previous medical and dental visits, oral hygiene and dietary practices. WHO Oral Health Assessment Form for Adults-2013 and Rapid Estimate Adult Literacy in Medicine REALMD-20 scale</td>
<td>Cross-sectional study, urban area only, major cultural differences. The questionnaire used measures the recognition of SB-related words, not testing the conceptual understanding of what is read</td>
<td>The LSB was significantly associated with the type of institution, course, dental history and number of dental visits</td>
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<tr>
<td>Author(s)</td>
<td>Type of Study</td>
<td>Participants</td>
<td>Methods</td>
<td>Results/Findings</td>
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<tr>
<td>Muhammad Ashraf, 2018. Saudi Arabia. Pubmed</td>
<td>Population-based cross-sectional study</td>
<td>Investigate the frequency of going to the dental office and its predictors among adolescent males</td>
<td>376 male adolescents aged 13 to 14 years. Multi-stage random sampling to recruit participants from public schools</td>
<td>WHO SB Questionnaire for Children</td>
<td>Cross-sectional study Data collection male only. Data collection of girls by male researchers was difficult due to Arab culture. Self-referenced data</td>
<td>Going to the dental office was common in males. Pain was the reason and a predictor for dental care, and a small proportion of adolescents had dental appointments to routine dental examinations.</td>
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<tr>
<td>Khudanov, Bakhtinur <em>et al.</em>, 2018. Tashkent, Uzbekistan. VHL</td>
<td>Experimental randomized educational trial longitudinal</td>
<td>Determine if an SB Education Program Using a Qscan Device could improve the state of oral hygiene and LSB of adolescents</td>
<td>One hundred adolescents aged 14 to 16 years, randomization of swapped blocks: (i) control group (traditional learning) and (ii) experimental group (Qscan device-based learning that allows visualization of biofilm through fluorescence)</td>
<td>Socio-demographic questionnaire, knowledge, attitude behavior. SB was examined (plaque index, cpod, periodonto) at baseline, 6 months and 18 months after interventions Knowledge, behavior and attitude questionnaire</td>
<td>Sample collected in the same area with equal financial condition. The use of Qscan allowed each dentist to select the most severe area of the mouth in particular, while educating students</td>
<td>The inclusion of QLF light-induced fluorescence technology in a learning program school was helpful in improving the state of oral hygiene and LSB of Uzbekistan's adolescents.</td>
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<td>Wiener R. Constance <em>et al.</em>, 2020. West Virginia, USA, Pubmed</td>
<td>Randomized educational trial Experimental transverse control</td>
<td>Determine whether a peer-assisted learning approach would impact SB knowledge/attitudes/beliefs and skills for high school children</td>
<td>245 high school students. between 13 and 20 years of age, 52.3% of the male sex. Convenience sampling. Cluster designating schools: one for intervention with use of media or a control, with SB handouts</td>
<td>Pre-test and post-test with evaluation of SB knowledge/attitudes/beliefs and a self-report of brushing and flossing (SB behaviors)</td>
<td>Cross-sectional study, self-reported brushing</td>
<td>Peer-assisted learning for knowledge of oral hygiene attitudes and behaviors had similar results when the teacher provided handouts and activity sheets or when providing interactive media and technologies</td>
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<tr>
<td>Authors</td>
<td>Methodology</td>
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<td>Questionnaire Validation</td>
<td>Findings</td>
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<td>Dutra, Laio da Costa, <em>et al.</em>, 2019</td>
<td>Analytical population-based cross-sectional study used pilot study STROBE s Investigate whether the ability to recognize and read SB terms is associated with the number of teeth with carious lesions cavitated in adolescents</td>
<td>746 adolescents, 15 to 19 years. Probability sampling by two-stage conglomerates (schools and teenagers) stratified by city administrative district and type of school (public or private)</td>
<td>Parents answered a sociodemographic questionnaire and adolescents BREALD-30.</td>
<td>There is a need for dentists to improve their use of language when communicating with patients, for decision making. Adolescents with lower levels of BLS had a higher number of teeth with cavitated carious lesions, regardless of their socioeconomic level and history of dental visits.</td>
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<td>Lima, Larissa Chaves Morais de, <em>et al.</em>, 2019, Campina Grande, PB, Brazil. VHL</td>
<td>Questionnaire validation with analytical and cross-sectional approach to evaluate psychometric properties (reliability and validity)</td>
<td>750 adolescents: 375 aged 12 and 375 aged 15 to 19, 10 public schools and 17 private schools randomly drawn. Present were evaluated on the day of data collection.</td>
<td>Semi-structured questionnaire, objective questions addressing sociodemographic characteristics, questionnaire Brazilian Economic Classification, BREALD-30 and Functional Literacy. Clinical data on dental caries Indicator (FLI)</td>
<td>BREALD-30 has shown satisfactory psychometric properties for use in adolescents Brazilian. Considering Brazil's size and cultural diversity, it will be interesting to observe whether psychometric properties are maintained with adolescents from other regions.</td>
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<td>Lopes, Roanny Torres, <em>et al.</em>, 2020. Campina Grande, Paraíba, Brazil. VHL</td>
<td>Cross-sectional, analytical study with pilot study.</td>
<td>Evaluate sociodemographic, family, and behavioral factors associated with LSB in adolescents</td>
<td>746 adolescents aged 15 to 19 years. (16 public and 16 private) from 131 urban schools. Probabilistic sampling by conglomerates complex samples</td>
<td>Socio-demographic questionnaire was sent to parents, scale of assessment of adaptability and family cohesion, screening test alcohol, smoking and involvement with substances, type of dental service used in the last consultation, BREALD-30</td>
<td>Cross-sectional study. The questionnaire used measures the recognition of SB-related words, not testing the conceptual understanding of what is read</td>
<td>Brazilian adolescents with better socioeconomic status, from families with &quot;entangled&quot; cohesion and &quot;rigid&quot; or &quot;structured&quot; adaptability and whose parents were married showed better levels of LSB</td>
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<td>#Neves, Érick Tássio Barbosa, <em>et al.</em>, 2020. Campina Grande, Paraíba, Brazil. VHL</td>
<td>Cross-sectional study with pilot study</td>
<td>To evaluate the association between the prevalence of cavitated tooth decay and LSB family characteristics and sociodemographic factors in early adolescence</td>
<td>740 12-year-old schoolchildren. 520 pupils from 14 public schools and 249 pupils from 18 private schools, selected at random</td>
<td>Diagnosis of dental caries. Responsible for students provided information on sociodemographic data and students provided information on the characteristics of the BREALD-30 family. Economic Classification Criteria, FACES-III</td>
<td>Cross-sectional study. The questionnaire used measures the recognition of SB-related words, not testing the conceptual understanding of what is read</td>
<td>A low level of BLS, sociodemographic factors, and a low level of familial cohesion are predictors of cavitated caries lesions in early adolescence</td>
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<tr>
<td>Neves, Erick Tássio Barbosa, <em>et al.</em>, 2021. Paraíba, Campina Grande, Brazil</td>
<td>A population-based, observational, cross-sectional study used a pilot study</td>
<td>To evaluate the association of contextual and Individual factors with LSB in early adolescence</td>
<td>740 12-year-old adolescents, randomly selected by probability sampling by conglomerates in two stages of Campina Grande schools. 14 public and 18 private schools. 520 public and 249 private schools. 29 left</td>
<td>Eight variables were considered and socioeconomic information collected with caregivers. Brazilian version of Family Adaptability and Cohesion Scales (FACES III) to measure family functionality, and BREALD-30</td>
<td>Cross-sectional study. The questionnaire used measures the recognition of SB-related words, not testing the conceptual understanding of what is read</td>
<td>Individual and contextual factors were associated with BLS in early adolescence. Female gender, mother’s schooling above 8 years and balanced family function were associated with better scores. Adolescents enrolled in schools with higher failure rates had slightly worse LSB scores</td>
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<td>Lima, Larissa Chaves Morais, <em>et al.</em>, 2021. Campina Grande, Paraíba, Brazil.</td>
<td>Cross-sectional and analytical study STROBE</td>
<td>Evaluate the association between functional literacy and recognition of the word “bruxism” among adolescents</td>
<td>375 12-year-old schoolchildren and 368 from 15 to 19 years. Public and private schools. Sample calculation, with an increase of 20% in the total number of Parents/caregivers responded to a socio-demographic judgment. BREALD-30, recognition of the word “bruxism” was used as a dependent variable</td>
<td>Cross-sectional study. The questionnaire measures the recognition of SB-related words, not testing the conceptual understanding of what is read. Recognition of the term “bruxism” among 12-year-olds was influenced by the presence of health insurance and higher level of functional literacy. At the age of 15, he was influenced by the higher level of functional literacy, the lower number of people at home, the higher level of schooling of the person in charge and going to the dentist</td>
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<td>Silver, Isolda Mirelle de Lima Ferreira, et al., 2021a. Campina Grande, Brazil. Pubmed</td>
<td>Cross-sectional, analytical, school-based study used pilot study</td>
<td>Explore the association between family cohesion and self-perception of the need for dental treatment among adolescents</td>
<td>746 pupils aged 15 to 19 enrolled in 16 public and 16 private schools, randomly selected in the city's six administrative districts. Sampling conglomerate probabilistic analysis carried out in two stages. The students were selected by simple sampling draw at each school. Parents/guardians provided information on sociodemographic data. BREALD-30. Supervised brushing, topical fluoride application and clinical examination. Diagnosis of tooth decay using Nyvad criteria. FACES III: self-perception of need for dental treatment, toothache, cohesion and family adaptability.</td>
<td>Cross-sectional study, self-report. The questionnaire used measures the recognition of words related to SB, not testing the conceptual understanding of what is read.</td>
<td>Tooth decay, pain and tooth loss, and family cohesion have influenced self-perception of the need for dental treatment in adolescents. Include environmental assessment of the family is of great relevance in the expansion of healthy behaviors in adolescents.</td>
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<tr>
<td>Silver, Isolda Mirelle de Lima Ferreira, et al., 2021b. Campina Grande, Brazil. Pubmed</td>
<td>Population-based cross-sectional analytical study used pilot study</td>
<td>Investigate whether LSB and school context are associated with caries untreated teeth in the anterior teeth of adolescents</td>
<td>746 students aged 15 to 19. Probabilistic cluster sampling in two traineeships (schools and adolescents). 32 schools were selected by random draw with proportional distribution of teenagers in the six administrative districts of the city. Parents completed a sociodemographic questionnaire and absence/presence of private health plan. Two examiners were trained for the diagnosis of dental caries using the Nyvad and BREALD-30 criteria.</td>
<td>Cross-sectional study. The questionnaire used measures the recognition of words related to SB, not testing the conceptual understanding of what is read.</td>
<td>The presence of tooth decay, toothache reported in the last 6 months, tooth loss, and family cohesion of the agglutinated type influenced the self-perception of the need for dental treatment in adolescents aged 15 to 19 years.</td>
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<td>Authors</td>
<td>Study Type</td>
<td>Description</td>
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<tr>
<td>Lopes, Roanny Torres, et al., 2021.</td>
<td>Cross-sectional, analytical study</td>
<td>Evaluate associations between BLS and family, sociodemographic and dental service characteristics in adolescents.</td>
<td>740 adolescents aged 12 years. Probabilistic cluster sampling in 14 public schools and 18 private ones, simple randomization procedure. Cluster.</td>
<td>BREALD-30, FACES III and asked about the type of dental service (public or private) they used in the last consultation. Socio-economic Questionnaire to Caregivers</td>
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<td>Moura, Mirella de Fatima Liberato, et al., 2021.</td>
<td>Cross-sectional, randomized, pilot study</td>
<td>Investigate associations between family environment, adolescents with ADHD, and BHS with experience of early adolescent caries</td>
<td>448 12-year-olds in public and private schools randomized</td>
<td>Cross-sectional study Lack of a definitive diagnosis for ADHD. The questionnaire used measures recognition of SBA-related words by not testing conceptual understanding of what is read. Adolescents with more symptoms of ADHD, lower BLS, lower household income, and families with more residents in the household had greater experience of caries.</td>
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<td>He, Jinfeng et al., 2022.</td>
<td>Analytical, cross-sectional, multi-level analysis</td>
<td>Assess the effects of socio-demographic factors, dental status, SB knowledge and health-related behaviors in dental visits in adolescents 12 years old</td>
<td>953 Adolescents of 12 years, of which 48.3% were public schools and 51.7% were private; 49.1% (n=468) were boys. Two-stage probabilistic cluster sampling. Then the schools were randomly selected with probability proportional to size</td>
<td>Self-reported questionnaire with demographic variables, socioeconomic situation, dietary habit, SB behavior, SB-related knowledge, SB-related attitude; The codified oral impact scale on daily performance (OIDP) and SB-related quality of life impact (QVRS) Cross-sectional study Failed to collect economic family history data. Main study outcome self-reported higher risk of memory bias. The dental visits of 12-year-old adolescents in the district of Longhua were affected by multidimensional factors. Strengthening SB education and cultivating good oral hygiene habits can be a viable intervention to improve effectively the overall level of SB in adolescents.</td>
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</table>
Ardekani, F Movaseghi, et al., 2022 Shiraz, Fars, province of Iran. Pubmed

Randomized educational (experimental) trial transverse controlled

Determine the effect of theory-based education on the behavior of SB and its psychological determinants, including LSB

162 high school girls aged 14-15. Allocation was made at the cluster level, 4 schools were randomly divided into control and experimental groups; intervention groups (n = 77) and control groups (n = 85)

A questionnaire to evaluate demographic information, knowledge, behaviors of SB and the PMT constructs LSB Protection Motivation Theory and another questionnaire to evaluate knowledge in SB

Cross-sectional study Study conducted only with girls. Girls who abandoned research. Self-report

After educational intervention, mean SB improved in the group. There was a decrease in the biofilm index

Baskaradoss, Jagan Kumar et al., 2022. Kuwait, Kuwait. Pubmed

Cross-sectional, population-based study

Evaluate the association between caregiver BLS and SB status of special youth

214 special young pair/caregiver 6 to 12 years and 12 to 21 years. Two-stage cluster sampling technique: four special youth schools were randomly selected

Respondents reported on demographic and socioeconomic factors, medical and dental condition of the special child. Comprehensive Measure of Knowledge in SB (CMOHK) questionnaire. Gingival index and plaque index were examined

Cross-sectional study, non-probabilistic sampling for selection of participants, low levels of caregiver conceptual knowledge and cultural issues

Lower levels of caregiver BLS were associated with higher plaque scores for your child. Marketing campaigns awareness to improve LSB and caregiver attitude can help improve oral hygiene for special young people

Source: Survey data, 2023.

4 DISCUSSION

Few questionnaires have been developed to evaluate the LSB of adolescents (Tse et al., 2015), and these instruments must demonstrate good psychometric properties, for this they need to be evaluated as to their quality (as evaluation of reliability, validity, responsiveness and interpretability). The evaluation of questionnaires used in scientific research on this topic for adolescent audiences is important to ensure that the results obtained are accurate and reliable, ensuring that they can be generalized to the target population. The tools for evaluation, when they demonstrate adequate psychometric properties, are useful and capable of presenting
scientifically robust results (Keszei et al., 2010; Mokkink et al., 2010), and can collaborate with health professionals in identifying failures in health education and improving SB policies, allowing an intervention closer to the reality of the population in which they operate (Lins et al., 2020). Only five evaluation instruments described in the world literature measure LS in adolescents (9 to 19 year-old participants) (Perry, 2014). Although most of these evaluation instruments have good internal consistency for this age group, there is a shortage of valid instruments to evaluate the construct in adolescents (Perry, 2014; Vilella, et al., 2016).

In Brazil, until the end of 2015, there was only one instrument for measuring the LSB in adolescents, translated and validated into Brazilian Portuguese, the Brazilian Rapid Estimate of Adult Literacy in Dentistry (BREALD-30), (Baldo e Mialhe 2019; Tsé et al., 2015; Lins 2020) and therefore an emerging theme in the scientific community (Bado e Mialhe, 2019). A low level of LSB is one of the predictors of cavitated caries lesions in adolescence, associated with socioeconomic factors and a low level of family cohesion (Neves et al., 2020), correlated with low values of social capital (Knorst, 2022). The adolescent's LSB is an area little explored, in spite of the importance of this formative stage in the individual approach to lifestyles and healthy behaviors. Although some authors (Lins et al., 2020; Neves et al., 2021) claim that there is a gap in the literature on instruments for evaluating LSB in adolescents, LSB levels have been evaluated among Brazilian adolescents.

According to Lins et al. (2020) , only four LSB evaluation instruments have validation for use in Brazil in adults, and, only one of these has demonstrated validity and reliability for application in adolescents in the country, Brazilian Portuguese version of the Rapid Estimate of Adult Literacy in Dentistry, BREALD-30. The present review of integrative literature meets these authors, because it also came across this same instrument in most Brazilian investigations on the subject, analyzed (Dutra et al., 2019; Lima et al., 2019; Lopes et al., 2020; Moura et al., 2020; Neves et al., 2020; Lopes et al., 2021; Neves et al., 2021; Prata et al.org (see recital 21). The research that evaluated LSB in Hong Kong adolescents (Tse et al., 2015) used the same validated instrument for Japan, Rapid Estimate of Adult Literacy in Dentistry, REALD-30, with 14 to 16 year olds; In India, Rapid Estimate Adult Literacy in Medicine and Dentistry, REALMD-20, for 15 to 20 year olds (Neelima et al., 2018) was used; And in Kwuait, the Comprehensive Measure of Oral Health Knowledge tK, was applied to people 6 to 12 years and 12 to 21 years of age (Baskarados The other studies analyzed (Wiener et al., 2020; Khudanov et al., 2020;
Neves et al., 2021) did not mention the questionnaire used to measure the LSB of adolescents in their research.

The questionnaires mentioned above are different in terms of structure, content and psychometric properties. REALMD-20 was developed as a tool that evaluates the patient's ability to read medical and dental terminology. It is a brief 20-item screening tool that is used to evaluate LSB and help fill the blank space of doctor-patient communication. The high feasibility of the tool saves time for the doctor/dentist, with easy-to-understand instructions for participants (Neelima et al., 2018). It has not yet been used in epidemiological studies beyond the validation process, making it impossible to analyze and compare the results, as well as to evaluate the effectiveness of the tools in the national territory (Lins et al., 2020).

The REALD-30 was developed especially for the context of SB. It consists of 30 common dental words with varying degrees of difficulty, which were taken from the dictionary of the American Dental Association. Words or terms from brochures and written materials provided to dentists and patients were also included. It is based on an interview, requiring participants to read aloud a list of 30 words related to SB, in a time of 2 minutes (Tsé et al., 2015).

According to Junkes et al. (2015), the BREALD-30 is a Brazilian version of the Rapid Estimate of Adult Literacy in Dentistry, which also consists of 30 dental words, which the respondent must read aloud, covering etiological, anatomical, preventive and curative aspects of adverse oral conditions. The instrument measures the LSB based on word recognition, organized in ascending order of difficulty of pronunciation.

Most articles using BREALD-30 presented the analysis of only one skill relative to LSB as a limitation of research (Firmino et al., 2017). There is a decontextualization of the words presented to the interviewee, which are randomly arranged for the reading, not allowing the examiner to distinguish whether the individual understands and is capable of applying the item in his daily life in a critical manner, or whether he was merely able to pronounce it. By evaluating the construct in its multidimensionality, this type of tool for measuring the degree of LSB fails, although it makes possible a quick and easy administration, as well as a general analysis of the level of literacy of the individual.

Most of the epidemiological studies found in this review using BREALD-30 were conducted in Paraíba, Northeast of the country (Dutra et al., 2019; Lima et al., 2019; Lopes et al., 2020; Moura et al., 2020; Neves et al., 2020; Lopes et al., 2021; Neves et al., Prata et al. 2021).
The surveys presented an irregular national distribution, which impaired the analysis of the degree of LSB in the different demographic and socioeconomic contexts of Brazil. The lack of data in the other regions of the country, in contrast to the greater concentration of studies in the South (60%), reflects the need for a fairer disposition of the investigations (Lins et al., 2020).

In the category of conceptual knowledge, the CMOHK stands out (Baskarados et al., 2022). It was developed by a group of American researchers (Macek et al., 2010) It consists of 23 questions: 10 questions that evaluate the basic knowledge of the interviewees, six questions that evaluate the knowledge about prevention and treatment of dental caries, five questions that evaluate the knowledge about prevention and treatment of periodontal disease, and two questions that evaluate oral cancer. This instrument has no validated version for Brazilian Portuguese.

Articles were also located that present validated instruments for Brazilian Portuguese for the evaluation of LSB in adults, which could be adapted for the adolescent public. Among these instruments are the three questionnaires: Brazilian Short version of the Oral Health Literacy Assessment (OLHA-B-15) (BADO, et al., 2018); Short-form of Health Literacy Dental Scale (HeLD-14) (Mialhe et al., 2020) and Brazilian Oral Health Literacy-Adults Questionnaire (BOHL-AQ) (Almeida et al., 2022). The Oral Health Literacy for Diabetics (OHL-D) questionnaire (Martins et al., 2020) was validated for adults diagnosed with diabetes mellitus. And the two Brazilian Portuguese version of the Hong Kong OHL Assessment Task for Pediatric Dentistry (HKOHLAT-P) (Firmino, 2019; Firmino et al., 2020) and ShortForm of the Brazilian Oral Health Literacy Assessment Task for Pediatric Dentistry(BOHLAT-P-30) (Firmino, 2022) have been validated for parents/guardians of pediatric dental patients.

This integrative literature review presented as a limitation the low amount of evidence found on LSB evaluation instruments in adolescents validated in Brazil, limiting the ability to understand how LSB can affect the health of adolescents within the school environment in the long term. However, he employed judicious research methods providing the best knowledge produced about the investigated problem, and the results could support the critical evaluation of professionals, to then be incorporated into the practice of care. In addition to the fact that no studies were found that consider all the potential factors associated with LSB among adolescents, the need for the development and evaluation of LSB instruments for this age group in the country was verified.
The use of validated questionnaires in the country to measure the LSB of adolescents is important because it allows an accurate and reliable assessment of the knowledge and understanding of adolescents about basic information and services of SB. This can help healthcare professionals identify gaps in the methods of health education currently employed and improve SB policies, allowing intervention closer to the reality of the population in this age group in which they operate. In addition, the use of these questionnaires can help identify adolescents with low LSB levels and provide information for the development of specific educational programs to improve the knowledge and understanding of these adolescents about SB.

5 FINAL CONSIDERATIONS

The only research instrument on adolescent BLS validated in Brazil was the BREALD-30 questionnaire, a Brazilian version of the Rapid Estimate of Adult Literacy in Dentistry, which measures literacy through word recognition. There has been an important lack of research in this field. It is suggested to apply this questionnaire in adolescents from different regions and contexts of the country, as well as the validation of other instruments, with different approaches, to measure LSB based on the ability of the adolescent to search, understand and use SB information. The validation of questionnaires on this topic in the country could allow professionals to intervene in education and SB closer to the reality of the population in which they operate. By considering the LSB levels recorded among school adolescents, public health managers can develop strategies that aim to assist humanized SB, thus improving the quality of life of the adolescent school community (teachers and students), their family and their surroundings.
REFERENCES


