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Standardized tools for child development assessment in nursing (0–5years) scoping review

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ABSTRACT

Purpose: Map standardized child development assessment tools used by nurses to identify developmental concerns in children ages 0 to 5 years.
Methods: This review follows the Joanna Briggs Institute methodology for scoping reviews and is registered with the Open Science Framework. The search drew on MEDLINE, CINAHL, JBI Evidence Synthesis, PROSPERO, PubMed, Scopus, Web of Science, Cochrane, the Portuguese Open Access Scientific Repository, official organization websites, and grey literature via the New York Academy of Medicine and Google. Articles published in Portuguese, English, and Spanish through December 2025 were included. Selection and data extraction were conducted independently by reviewers.
Results: Eleven sources published between 2010 and 2025 were included, identifying 33 standardized child development assessment tools used by nurses. The tools are categorized as parental-report surveillance tools, direct observation and short-form screening tools, and comprehensive diagnostic evaluation tools. The most frequently cited tools include Denver II, Ages and Stages Questionnaires, and Bayley Scales of Infant Development. Findings reveal tensions among psychometric rigor, practical feasibility, cultural adaptation requirements, and training needs.
Conclusion: Tool selection requires balancing psychometric strength with clinical practicality. Cultural adaptation and local validation are essential for diagnostic accuracy.
Clinical implications: Systematic surveillance using standardized tools integrated into routine nursing practice facilitates early detection of developmental concerns, promotes family-centered care, and enables timely referrals to early intervention services, thereby reducing health disparities and supporting children's developmental potential.

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Introduction

Child development is a complex, cumulative process that encompasses motor, cognitive, language, sensory, emotional, and social skills (Papalia & Martorell, 2024; Souza & Veríssimo, 2013). It results from interactions between biological, psychological, and sociocultural factors and depends on the quality of care and stimulation in early childhood (Papalia & Martorell, 2024; Souza & Veríssimo, 2013). Responsive parenting, opportunities for play and learning, safe environments, and stable relationships within families and communities support healthier developmental trajectories (Gomes, 2024; Souza & Veríssimo, 2013).

Developmental concerns affect a considerable proportion of children worldwide. Prevalence estimates range from 10 to 15% in high-income countries to approximately 27.5% in parts of the Arab World and up to 43% in low- and middle-income countries, where poverty and malnutrition are major determinants (Almahmoud & Abushaikha, 2023; Gomes, 2024; Semrud-Clikeman et al., 2017). These estimates are not directly comparable, as they derive from different definitions of developmental concern, age bands, and screening instruments. Delayed detection reduces the benefits of neuroplasticity, which is more evident during the first 36 months of life and is associated with functional, academic, and mental health difficulties that may compromise autonomy and quality of life later on (Barros et al., 2020; Gomes, 2024; Radomski et al., 2025). Early identification enables timely intervention programs that engage parents as active participants and support the development of children's competencies (Lourenço, 2015; Robinson et al., 1998). The burden of developmental concerns falls disproportionately on children in low-resource and socially vulnerable settings, making early identification an equity concern as well as a clinical one (Grantham-McGregor et al., 2007; Hanlon et al., 2016).

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Clinical observation alone detects fewer than one-third of developmental concerns (Burgess et al., 2025; Gomes, 2024; Ordem dos Enfermeiros, 2010). Systematic assessment with validated tools improves detection and supports more consistent clinical judgment and decision-making (Burgess et al., 2025). Standardized tools for child development assessment are structured, validated instruments used to evaluate developmental areas through surveillance, screening, or diagnostic approaches. These tools follow protocols for administration, scoring, and interpretation, with cutoff points based on reference standards (Dai et al., 2023; Handargule et al., 2024; Sabanathan et al., 2015). In primary health care and community settings, nurses play a central role in growth and development consultations and in ongoing developmental surveillance, integrating clinical observation with standardized instruments to identify concerns, guide parents, and coordinate referrals to early intervention services (Bedford et al., 2013; Gaiva et al., 2018; Salvado, 2013).

A previous scoping review identified 246 tools developed for use in different professional contexts, of which only 67 were recommended based on psychometric properties and domain coverage (Burgess et al., 2025). Evidence also shows that there is no single gold standard for child development surveillance and that tools have been constructed for distinct purposes in research and clinical practice (Bedford et al., 2013; Ordem dos Enfermeiros, 2010; Radomski et al., 2025). For nurses working in primary health care, community programs, and hospital services, this diversity of instruments can create uncertainty about which tools are most appropriate for routine surveillance, targeted screening, or more in-depth assessment, and about how to balance feasibility, psychometric strength, and cultural relevance in everyday practice (Bedford et al., 2013; Radomski et al., 2025; Rodrigues, 2012).

The coexistence of multiple tools generates variability in clinical practice and limits the aggregation of data for population-level developmental monitoring (Bedford et al., 2013). This variability is particularly relevant for nursing, as nurses often act as frontline providers of developmental surveillance in well-child visits, home care, and community programs, and must decide which instruments to administer, how to interpret scores, and when to refer children and families for further assessment or early intervention (Bedford et al., 2013; Gaiva et al., 2018; Salvado, 2013). The use of sensitive, culturally adapted instruments is therefore a public health concern, given the impact of developmental difficulties on families, communities, and social inequities (Almahmoud & Abushaikha, 2023; Burgess et al., 2025).

Over recent decades, child development assessment has evolved from simple milestone-based observations, in which clinicians documented discrete motor and language achievements against normative age-based criteria, to more comprehensive, psychometrically validated tools that integrate multiple developmental domains and contextual factors (Sabanathan et al., 2015; Semrud-Clikeman et al., 2017). Evidence from developmental neuroscience has highlighted the importance of early brain development, synaptic plasticity, and the quality of caregiving environments in shaping long-term developmental trajectories, supporting a shift toward holistic, family-centered, and ecologically informed models of assessment that consider the child within the broader family and community context (Grantham-McGregor et al., 2007; Mughal et al., 2017; Schonhaut et al., 2025; Shonkoff et al., 2012).

Professional organizations such as the American Academy of Pediatrics (AAP), the Centers for Disease Control and Prevention (CDC), and the World Health Organization (WHO), now recommend systematic, standardized developmental surveillance in early childhood, with attention to cultural adaptation and interdisciplinary collaboration, and explicitly recognize nurses and primary care providers as key actors in implementing these recommendations (Centers for Disease Control and Prevention, 2026; Council on Children With Disabilities et al., 2006; Lipkin et al., 2020; World Health Organization et al., 2018).

Within this evolving field, standardized tools for child development assessment include parent-report questionnaires, brief observational screening instruments, and more comprehensive diagnostic instruments, each designed for different purposes in research and clinical practice (Bedford et al., 2013; Burgess et al., 2025; Radomski et al., 2025; Rodrigues, 2012; Rolim et al., 2019). Although previous reviews have mapped a wide range of developmental tools, none has specifically synthesized instruments administered or coordinated by nurses for children aged 0 to 5 years (Burgess et al., 2025). As a result, nurses in primary health care and community settings have limited consolidated evidence to guide their choice of standardized tools for routine visits, targeted screening, and referral pathways.

This study does not propose, develop, or validate a new developmental assessment tool. It is a scoping review that systematically maps and synthesizes standardized tools used by nurses to assess child development in children aged 0 to 5 years, characterizing their developmental domains, psychometric properties, clinical application conditions, and training requirements (Peters et al., 2024; Tricco et al., 2018). A scoping review design was selected because the aim is to map the breadth and nature of the available evidence, rather than to pool effect estimates or test a focused hypothesis, which is the appropriate approach for a heterogeneous and still emerging body of literature.

The main review question is:

What child development assessment tools do nurses use to identify early developmental concerns in children aged 0 to 5 years?

The secondary questions are:

- What aspects of child development are assessed by the identified tools?
- What psychometric properties are reported for the tools used by nurses?
- What are the clinical application conditions for these tools in nursing practice?
- What training do nurses need to consistently use these tools?

Together, these questions seek to provide an empirically grounded basis for nursing decisions about which standardized tools to use, in which settings, and with what training and support, thereby strengthening early developmental surveillance, referral, and family-centered care (Bedford et al., 2013; Gaiva et al., 2018; Salvado, 2013; World Health Organization, United Nations Children's Fund, World Bank Group, 2018).

Materials and methods

Protocol and registration

The review was conducted in accordance with the Joanna Briggs Institute methodology for scoping reviews (Peters et al., 2024) and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist and explanation (Tricco et al., 2018). The protocol was registered with the Open Science Framework in December 2025, prior to the execution of the final search (https://osf.io/xhncf).

Criteria for inclusion

The inclusion criteria were defined by participants, concept, and context. Participants included studies involving children aged 0 to 5 years, including newborns (0–28 days), infants (1–23 months), and preschoolers (2–5 years). This age range was selected because the period from birth to 5 years encompasses heightened neuroplasticity and rapid developmental acquisition (World Health Organization, United Nations Children's Fund, World Bank Group, 2018). Studies involving children of any sex who are typically developing, at risk, or have suspected developmental concerns were eligible, provided that nurses were involved in evaluating child development.

The concept focused on studies that examined standardized tools for assessing child development, including scales, questionnaires, checklists, and other structured tools used to systematically evaluate

developmental domains, provided these tools demonstrated psychometric properties. The context included professional settings where nurses were responsible for evaluating child development, such as primary health care, community programs, hospitals, and educational or home-based services.

Quantitative, qualitative, or mixed-methods studies, systematic reviews, official documents, and grey literature published in Portuguese, English, or Spanish were included, with no date restrictions up to December 2025. Opinion articles and letters to the editor were excluded. One source is classified as a technical report based on documentary and expert analysis (Ordem dos Enfermeiros, 2010). Although opinion articles were an exclusion criterion, this document was retained because it is an official professional standards document issued by a national nursing regulatory body, grounded in a systematic documentary review and expert panel consensus rather than individual opinion.

Search strategy

The search strategy was developed in three distinct phases (Tricco et al., 2018). In the first phase, a preliminary search was conducted across the Medline and CINAHL Complete databases (EBSCOhost), PROSPERO, the Cochrane Database of Systematic Reviews, and JBI Evidence Synthesis to identify existing reviews and relevant primary articles and to map keywords and indexing terms. These results informed the full search strategy. At this stage, two scoping reviews were identified that mapped child development surveillance tools; one focused on tools targeting at least one mental health domain, and the other included reports used by different health professionals. Both reviews differed from the present study in their methods, eligibility criteria, objectives, and review questions; notably, neither required nurse involvement as an inclusion criterion. They were included in this review because they met the remaining eligibility criteria.

In the second phase, descriptors for each database and information source were identified, and Boolean operators were used to construct the search equations presented in Table 1 and Appendix 1. The final search was conducted in Medline, CINAHL Complete (EBSCOhost), JBI Evidence Synthesis, PROSPERO, PubMed, Scopus, Web of Science, and Cochrane. Websites of official organizations, Portuguese Open Access Scientific Repositories, and grey literature were also consulted via the New York Academy of Medicine and Google. Full search strings, limits, and truncation strategies for each database are presented in Table 1 and Appendix 1 to support replication of the review. The objective was to identify published and unpublished articles, as well as grey literature, in Portuguese, English, or Spanish, with no date restrictions, up to December 2025. The search was conducted by the lead author with support from a scientific librarian. These databases were selected to combine comprehensive coverage of the nursing, biomedical, and allied health literature (CINAHL, MEDLINE, PubMed, Scopus, Web of Science) with systematic review and protocol registries (Cochrane, JBI, PROSPERO) and grey literature sources, maximizing sensitivity for nurse-relevant evidence across published and unpublished records.

Table 1
Search strategy conducted (December 2025) in MEDLINE Complete and CINAHL Complete (EBSCOhost).

Search	Query	Records retrieved
Databases		
MEDLINE Complete & CINAHL Complete (via EBSCOhost)		
#1	(Child* OR Infant* OR Preschool OR Newborn*)	7,289,590
#2	("development tools" OR "development scales")	3751
#3	(Nurs* OR "Nursing care")	4,377,785
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	520

The identified records were imported into Rayyan (Ouzzani et al., 2016), a bibliographic management software, and duplicates were removed. Titles and abstracts were independently evaluated by two reviewers against the established inclusion criteria, following a pilot test to refine them. Any discrepancies in the selection process were discussed, and when necessary, a third reviewer was involved. In the third phase, the reference lists of included sources were examined to identify additional studies. The selected articles were retrieved in full, and their citation details were imported into Zotero (Roy Rosenzweig Center for History and New Media, 2024).

Data extraction and synthesis

Data extraction was conducted independently by two reviewers using a customized extraction form developed and tested during a pilot phase to ensure clarity, reliability, and alignment with the review objectives. The form captured, for each included source, study design, country of origin, target population, standardized tools identified, developmental domains assessed, age range, administration time, reported psychometric properties (including validity, reliability, sensitivity, and specificity where available), clinical application conditions, training requirements, and the nursing role addressed. Any discrepancies between reviewers during extraction were resolved through discussion and, when necessary, by involving a third reviewer.

Following JBI methodology for scoping reviews (Peters et al., 2024), evidence was synthesized through thematic narrative synthesis rather than statistical meta-analysis. Scoping reviews are not designed to produce pooled statistical estimates or formally assess statistical heterogeneity across studies. Their purpose is to map the breadth and nature of available evidence (Tricco et al., 2018). Accordingly, no statistical comparisons between tools were conducted, and no heterogeneity statistics were calculated. Psychometric data reported across included sources were summarized descriptively, with values presented as reported by individual studies and interpreted qualitatively to identify patterns, gaps, and implications for nursing practice. This approach is consistent with the exploratory and mapping purpose of scoping reviews and does not constitute a limitation of the methodology. Reported psychometric values (for example, sensitivity, specificity, and reliability coefficients) were charted exactly as stated in each primary source, without recalculation, pooling, or statistical transformation.

The thematic component of the synthesis followed the three stages of thematic synthesis described by Thomas and Harden (2008). First, the charted data and the results sections of the included sources were coded line by line, with codes kept close to the wording of the original text. Second, codes addressing similar content were compared across sources and grouped into descriptive categories. Third, the descriptive categories were examined in relation to the review questions and organized into analytical themes. Coding and categorization were conducted independently by two reviewers, who compared their coding frames and resolved disagreements through discussion, involving a third reviewer when consensus was not reached. The resulting themes were checked against the original sources to confirm that they remained grounded in the charted data, and are reported in the Results section.

Results

Throughout this review, the following terminology is used consistently: developmental surveillance is the ongoing, longitudinal monitoring of developmental progress, integrated into routine clinical care; developmental screening is the use of brief, standardized tools to identify children at risk; developmental assessment is a more comprehensive, formal evaluation of developmental domains; and psychometric evaluation is the analysis of the validity, reliability, sensitivity, and specificity of these tools (Bedford et al., 2013; Ordem dos Enfermeiros, 2010; Radomski et al., 2025; Schonhaut et al., 2025).

The PRISMA 2020 flow diagram summarizes the selection process for the 11 included sources (Page et al., 2021). The data were summarized in a table mapping standardized tools used by nurses to detect developmental concerns in children aged 0 to 5 years, covering the following domains: tools used, developmental domains assessed, age range, timing of evaluation, training, and psychometric properties.

Fig. 1 presents the PRISMA 2020 flow diagram for study selection. Searching of databases and registers identified 2155 records, from which 178 duplicates were removed before screening. The remaining 1977 records were screened by title and abstract, and 1939 were excluded. Thirty-eight reports were sought for retrieval, all of which were obtained and assessed for eligibility; 28 were excluded (wrong population, $n = 5$; wrong outcome, $n = 23$), yielding 10 included sources. A further 11 records were identified through other methods (organizations, $n = 10$; citation searching, $n = 1$). All 11 were retrieved and assessed for eligibility, and 10 were excluded (wrong population, $n = 3$; wrong outcome, $n = 7$), yielding one additional grey-literature source. Eleven sources were therefore included in the review.

Note. Records identified through other methods correspond to grey literature and official documents retrieved from organization websites and reference-list searching. One of these sources met the eligibility criteria and is included in the review (Ordem dos Enfermeiros, 2010).

Characteristics and synthesis of evidence sources

The final sample of this scoping review comprised 11 sources published between 2010 and 2025, spanning low-, middle-, and high-income countries and diverse geographic and sociocultural contexts. Settings included Ethiopia, multiple Latin American countries, the United States, Canada, the United Kingdom, and Portugal, reflecting a range of primary health care, community, hospital, and early intervention services where nurses are involved in developmental surveillance and assessment. Six of the included sources were evidence syntheses (two scoping reviews, two integrative reviews, one umbrella review, and one narrative review), four were original research articles (two adaptation and validation studies, one participatory qualitative study using deliberative dialogue, and one cross-sectional quantitative study) and one document was a technical report based on documentary and expert analysis, as justified by the inclusion criteria.

Implementation contexts varied across child health surveillance consultations in primary health care, home care visits, community programs, educational settings, neonatal follow-up services, and hospital-based pediatric care. Across these contexts, nurses were identified as professionals frequently involved in developmental surveillance, including routine monitoring, early identification of concerns, parental guidance, and coordination of referrals to specialized assessment or early intervention services (Bedford et al., 2013; Dai et al., 2023; Gaiva et al., 2018; Ordem dos Enfermeiros, 2010; Radomski et al., 2025; Salvado, 2013). Evidence extraction used a customized data extraction form aligned with the review objectives, capturing study characteristics, identified tools, developmental domains, age ranges, administration times, psychometric properties, conditions for clinical application, training requirements, and nursing roles. Table 2 presents the characteristics of the 11 included sources, including study design, country of origin, objectives, target population, identified tools, and nursing roles.

When synthesized across sources, three broad categories of standardized tools emerged according to their methodology and purpose: parent-report surveillance tools (such as the Ages and Stages Questionnaires), brief observational screening tools (including instruments like the Schedule of Growing Skills II and locally adapted short screening scales), and more comprehensive diagnostic or assessment batteries (for example, the Bayley Scales, IPO/Portage, and other multidomain instruments used in early intervention planning) (Abessa et al., 2016; Bedford et al., 2013; Burgess et al., 2025; Ordem dos Enfermeiros, 2010; Radomski et al., 2025; Rodrigues, 2012). Psychometric properties were reported with varying levels of detail, but several tools

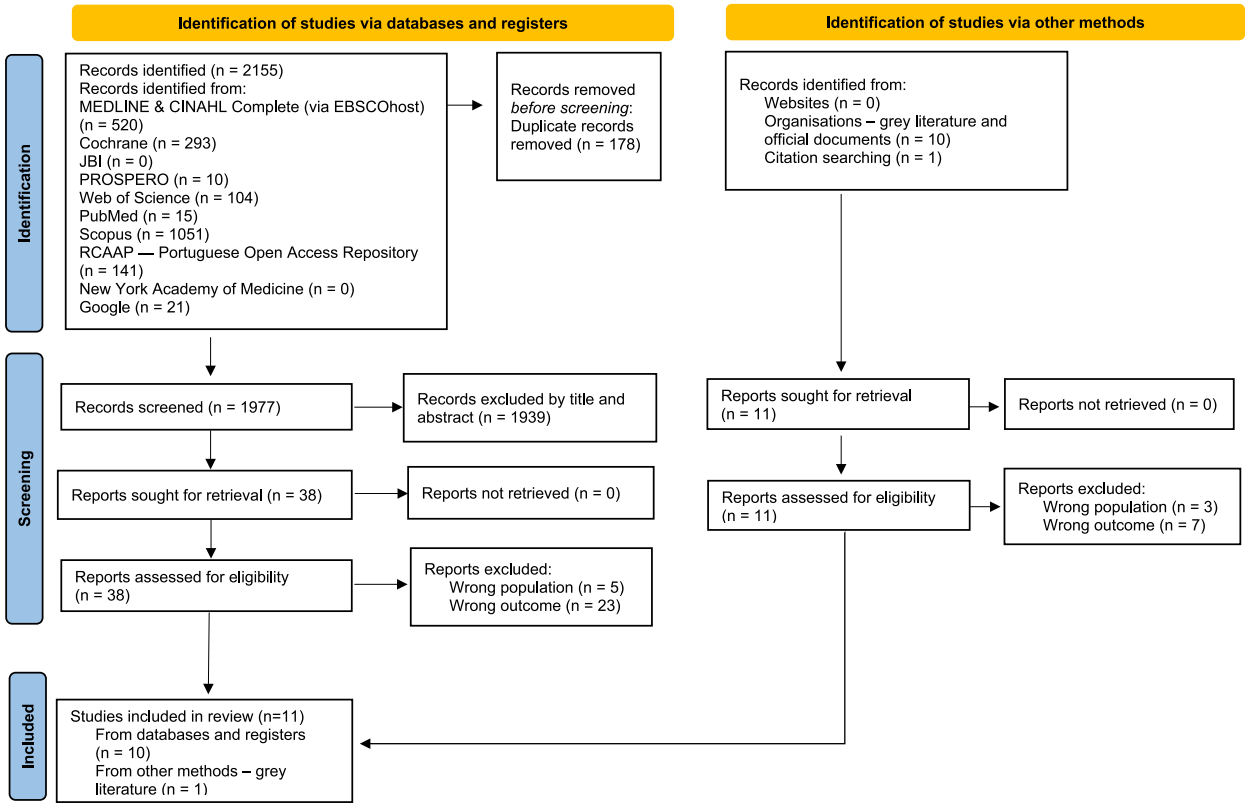


Fig. 1. PRISMA 2020 flow diagram of new systematic reviews which included searches of databases, registers and other sources.

Table 2
Characteristics of included sources ($n = 11$).

Author (Year)	Country	Study Design	Objective	Population / Sample	Tools Identified	Nursing Role Addressed	Key Findings Relevant to Review
Abessa et al. (2016)	Ethiopia	Adaptation and validation study	To adapt and standardize the Denver II Developmental Screening Test for use in a non-Western, low-income context	Children aged 0–6 years in rural/urban Ethiopia; health workers and community volunteers as administrators.	Denver II (adapted for Ethiopian context)	Health workers trained to administer the adapted tool; nurses included among administrators in primary care settings.	Denver II was successfully adapted with high inter-rater ($\kappa = 0.91$) and test-retest reliability ($\kappa = 0.84$). Demonstrates the feasibility of culturally adapting Western tools for LMICs. Supports the need for local validation before use
Bedford et al. (2013)	United Kingdom	Narrative review	To review standardized measures of child development, categorizing tools by purpose, psychometric properties, and clinical application	Children aged 0–8 years; review of tools used across health, education, and social care settings	ASQ-3, Denver II, Bayley-III, BDI-2, SGS-II, PEDS, PEDS: DM, M-CHAT-R/F, Griffiths, Mullen, Brigance, BITSEA, CDI, DSI (and others)	Explicitly discusses tools appropriate for nurses and health visitors in child health surveillance; emphasizes the nurse's role in primary care monitoring.	Identified over 30 tools across surveillance, screening, and diagnostic categories. No single gold standard exists. Short, multidimensional tools are most feasible in primary care. Cultural adaptation is essential.
Burgess et al. (2025)	Australia	Scoping review	To map the clinical utility and psychometric properties of tools for early detection of developmental concerns and disability in children under 5 years	Children aged 0–5 years; 246 tools reviewed; 67 recommended	ASQ-3 (highest recommendation); Denver II, PEDS, Bayley-III, M-CHAT-R/F, and 62 others	Nursing professionals identified as primary administrators in community and primary care settings; early detection is framed as a nursing priority	246 tools identified; only 67 met criteria for recommendation based on psychometric strength and domain coverage. ASQ-3 ranked highest for multidimensional screening. Clinical observation alone detects <1/3 of developmental concerns.
Cortez-Vergara et al. (2025)	Peru	Qualitative study — deliberative dialogue	To select the most appropriate developmental screening tool for use in Peruvian primary health care growth and developmental monitoring services (CRED)	25 multi-sectoral stakeholders (health professionals, policymakers, researchers, early childhood organizations); children 0–5 years as target population	EDI (selected); ASQ-3, EAD-3 (shortlisted); 11 tools evaluated in total	Nurses and health professionals at CRED centers identified as primary administrators; training and supervision needs were discussed explicitly	EDI was selected as the most appropriate for the Peruvian context based on psychometric evidence, acceptability, feasibility, and cost. Traffic-light scoring system facilitates immediate clinical interpretation. Training and sociocultural adaptation are identified as implementation requirements.
Hanlon et al. (2016)	Ethiopia	Adaptation and validation study	To adapt the Bayley Scales of Infant and Toddler Development for a rural Ethiopian context and to evaluate their reliability and validity	Infants and young children assessed in a rural Ethiopian community setting; nurses and community health workers involved in developmental monitoring	Bayley Scales (adapted for rural African context); context-specific developmental milestones	Nurses and community health workers identified as frontline providers of developmental monitoring; training and resource availability were highlighted as barriers	The Bayley Scales, adapted for the rural African context, showed acceptable reliability and validity, but some items had limited cultural relevance. Highlights the importance of sociocultural contextualization. Approximately 200 million children in LMICs are at risk of not reaching their developmental potential.
Mughal et al. (2017)	Canada	Cross-sectional quantitative study (secondary analysis of RCT baseline data)	To examine relationships between parenting stress (PSI-3) in mothers and fathers and developmental outcomes of late preterm infants at 4 months corrected age	108 mothers and 108 fathers of late preterm infants (34–36 weeks gestation); infants assessed at 4 months corrected age	ASQ-2 (child development outcome measure); PSI-3 (parenting stress predictor)	Mothers as primary caregivers completed the ASQ-2; nursing professionals involved in home visits and data collection within the parent RCT	ASQ-2 demonstrated good psychometric properties ($\alpha = 0.84$; test-retest = 0.89). Maternal stress (Child Domain: Mood, Acceptability) was an independent predictor of infant

(continued on next page)

Table 2 (*continued*)

Author (Year)	Country	Study Design	Objective	Population / Sample	Tools Identified	Nursing Role Addressed	Key Findings Relevant to Review
							developmental outcomes. Highlights the importance of assessing parental factors alongside developmental tools
Ordem dos Enfermeiros (2010)	Portugal	Technical report (expert consensus document)	To advise on the validity and clinical value of the SGS-II for child development surveillance by specialist nurses in child health and pediatric nursing in Portugal	Children aged 0–5 years; specialist nurses in child health and pediatric settings; Portuguese health system context	SGS-II (Schedule of Growing Skills II)	Explicitly establishes the SGS-II as a tool for use by specialist nurses; systematically used in child health surveillance consultations across Portugal and Madeira.	SGS-II is recognized internationally as a high-sensitivity and high-specificity tool. Covers 9 developmental domains. Rapid administration with an immediate graphical profile. Not validated for the Portuguese population — identified as a limitation. Recommended for continued use pending Portuguese standardization
Radomski et al. (2025)	Canada	Scoping review	To map standardized developmental assessment tools used by public health nurses, and to characterize their psychometric properties and clinical application conditions.	Children aged 0–5 years; public health nurses as administrators; primary and community health care settings. Note: some tools identified extend beyond 5 years (e.g., Brigance Screens: 0–7 years; PSC-17: 4–18 years)	ASQ-3, ASQ:SE-2, PEDS, BITSEA, PSC-17, WSST, Brigance (and others)	Public health nurses are the exclusive focus; tools reviewed specifically for nursing administration; training requirements and feasibility for nursing practice are addressed throughout	Identified tools used specifically by public health nurses. ASQ-3 is the most frequently used. WSST was developed by and for nurses. Short, multidimensional tools are most feasible. Standardized tools significantly improve detection rates over clinical observation alone. Training and organizational support are key enablers.
Rodrigues (2012)	Brazil	Integrative review	To describe and analyze standardized scales used to evaluate infant development (0–42 months) in Brazil, including objectives, populations, psychometric properties, and professional use	Infants and children aged 1–42 months; Brazilian population; health professionals, including nurses, physiotherapists, and psychologists	Bayley-II/III, Denver II, EADP, AIMS, MAI, IPO (Portage), Baby Developmental Scale (Pinto et al., 1997)	Nurses were identified among professionals using the Denver II, EADP, and Baby Developmental Scale in primary care and early intervention, highlighting the nurse's role in systematic developmental monitoring in Brazil.	Reviews 7 tools used in Brazilian clinical and research contexts. Highlights the scarcity of tools standardized for the Brazilian population. Denver II is widely used but not validated for Brazil. IPO (Portage) covers 0–6 years and is particularly suitable for early intervention planning
Rolim et al. (2019)	Brazil / Portugal	Integrative review	To evaluate the bibliographic consistency of the IPVM and SWYC, reporting reliability and validity data, and their usefulness for identifying maternal bonding risks and developmental concerns in primary care	Children aged 1–65 months (SWYC); mothers of children aged 6–13 years (IPVM); primary health care setting.	SWYC (Survey of Wellbeing of Young Children); IPVM (Maternal Attachment Perception Inventory)	Both tools were identified as appropriate for primary health care use by nurses; SWYC was validated for the Brazilian population and applicable to nursing surveillance consultations; low cost and easy administration were highlighted.	SWYC covers neuropsychomotor, social-emotional, and family context domains (1–65 months); validated for Brazil (Moreira, 2016); sensitivity comparable to ASQ-3. IPVM shows high reliability for assessing maternal bonding (6–13 years) but requires further validation in Brazil
Schonhaut et al. (2025)	Latin America (multi-country)	Umbrella review	To map early developmental screening tools constructed in Latin American countries, characterizing their psychometric properties, domains, age ranges, and	Children aged 0–5 years; Latin American populations; tools developed in or validated for Latin American contexts. Note: some tools identified extend beyond 5 years (e.g., EAD-3: 0–7	EDI, EAD-3, TADI, PRUNAPE, EEDP, TPED, IDADI-B, SIVIPRODIN, GMCD, NPed-Desk (and others)	Nurses and community health workers were identified as primary administrators in government health programs (CRED-equivalent); training requirements and feasibility for	Identified 10+ tools developed in Latin America. EDI, PRUNAPE, and EAD-3 have the more consistent regional psychometric evidence. Tools vary substantially in sensitivity, specificity,

Table 2 (*continued*)

Author (Year)	Country	Study Design	Objective	Population / Sample	Tools Identified	Nursing Role Addressed	Key Findings Relevant to Review
			context of use.	years)		primary care were discussed.	and domain coverage. Cultural specificity is a strength for regional use but limits international transferability.

Abbreviations: AIMS = Alberta Infant Motor Scale; ASQ-2/3 = Ages and Stages Questionnaires (2nd/3rd Ed.); ASQ:SE-2 = ASQ Social-Emotional; BDI-2 = Battelle Developmental Inventory; BITSEA = Brief Infant-Toddler Social and Emotional Assessment; CDI = Child Development Inventory; CRED = Control of Growth and Development (Peru); DSI = Developmental Screening Inventory; EAD-3 = Abbreviated Development Scale (3rd Ed.); EADP = Escala de Avaliação do Desenvolvimento Psicomotor; EDI = Evaluación del Desarrollo Infantil; EEDP = Escala de Evaluación del Desarrollo Psicomotor; GMCD = Global Monitoring of Child Development; IDADI-B = Inventário do Desenvolvimento e Aprendizagem para a Díade Infantil; IPO = Inventário Portage Operacionalizado; IPVM = Inventário de Percepção de Vinculação Materna; LMICs = Low- and Middle-Income Countries; MAI = Movement Assessment of Infants; M-CHAT-R/F = Modified Checklist for Autism in Toddlers; NPed-Desk = digital platform; PEDS = Parents' Evaluation of Development Status; PEDS:DM = PEDS Development Milestones; PSC-17 = Pediatric Symptom Checklist (17-item); PSI-3 = Parenting Stress Index (3rd Ed.); PRUNAPE = Prueba Nacional de Pesquisa; RCT = Randomised Controlled Trial; SGS-II = Schedule of Growing Skills II; SIVIPRODIN = Sistema de Vigilancia del Proceso de Desarrollo Infantil; SWYC = Survey of Wellbeing of Young Children; TADI = Test de Aprendizaje y Desarrollo Infantil; TPED = Test Peruano del Desarrollo; WSST = Well-being and Strengths Screening Tool.

demonstrated acceptable to high reliability and validity in the populations studied, while others were widely used in nursing practice without full national validation, highlighting both strengths and gaps in the evidence base (Abessa et al., 2016; Burgess et al., 2025; Ordem dos Enfermeiros, 2010; Rolim et al., 2019; Schonhaut et al., 2025). These patterns underpin the thematic synthesis presented in the Results and the implications discussed in subsequent sections.

Overview of identified tools and psychometric evidence

The tools most frequently cited and clinically recommended across the included sources for use in nursing and primary care contexts are the Denver II, ASQ-3, and Bayley-III (Abessa et al., 2016;Bedford et al., 2013; Burgess et al., 2025; Radomski et al., 2025). Most instruments use a multidimensional approach, covering several developmental domains simultaneously, including gross and fine motor skills, language and communication, cognition, personal–social development, socio-emotional skills, and adaptive behavior (Bedford et al., 2013; Schonhaut et al., 2025). Some tools also include additional domains, such as family context and psychosocial risk factors (e.g., SWYC) or neurological warning signs (e.g., EDI) (Cortez-Vergara et al., 2025; Rolim et al., 2019).

Reported psychometric properties and cultural validity vary across tools. ASQ-3 and PEDS are consistently described as having sensitivity and specificity generally in the 70–80% range for screening, whereas Bayley-III is regarded as a diagnostic reference standard with high reliability and concurrent validity (Bedford et al., 2013; Burgess et al., 2025; Radomski et al., 2025). Several sources highlight that cultural adaptation and local validation are important to ensure accuracy and validity, as demonstrated by adaptations of Denver II and Bayley Scales in Ethiopian and other African contexts, where good reliability was obtained but some items showed reduced cultural relevance (Abessa et al., 2016; Hanlon et al., 2016).

Tables 2 and 3 summarize, respectively, the characteristics of the included studies and the main standardized tools identified, including purpose (surveillance, screening, or diagnostic assessment), domains assessed, age range, administration time, psychometric properties, and clinical feasibility for nursing practice. Not all tools summarized in Table 3 were directly evaluated in primary studies; several were identified through evidence syntheses that explicitly addressed their suitability and implications for nursing practice (Bedford et al., 2013; Burgess et al., 2025; Radomski et al., 2025; Schonhaut et al., 2025).

Thematic synthesis

Analysis of the included sources identified standardized tools nurses use to assess child development in children aged 0 to 5 years and described the conceptual, clinical, and contextual factors related to their use.

The thematic synthesis highlighted three main themes: (1) conceptualization and importance of assessing children's development; (2) the importance of systematic surveillance and the use of standardized tools; and (3) standardized tools for evaluation and clinical practice.

Conceptualization and importance of assessing children's development

Across the included sources, child development is consistently framed as a multidimensional process shaped by biological, psychological, and social determinants, including prematurity, parental stress, maternal depression, malnutrition, and low-stimulation environments (Mughal et al., 2017; Rodrigues, 2012; Schonhaut et al., 2025). The sources converge in treating developmental delays as a global public health priority, with an estimated one in five to six children worldwide, and approximately 200 million in low- and middle-income countries, at risk of not reaching their developmental potential, with consequences for later learning, functioning, and broader societal outcomes (Grantham-McGregor et al., 2007; Hanlon et al., 2016; Schonhaut et al., 2025). On this basis, the included evidence positions developmental surveillance as a public health priority aligned with the Sustainable Development Goals (Schonhaut et al., 2025).

Importance of systematic surveillance and the use of standardized tools

The reviewed studies describe developmental surveillance and evaluation as ongoing, adaptable processes that aim to deepen understanding of a child's abilities and detect deviations from expected milestones over time (Bedford et al., 2013; Ordem dos Enfermeiros, 2010). Regular, continuous surveillance integrated into routine check-ups is recommended as a public health strategy for identifying early signs of developmental concerns (Bedford et al., 2013; Ordem dos Enfermeiros, 2010; Schonhaut et al., 2025). Early detection in primary health care is presented as a mechanism that facilitates timely intervention and access to support services (Burgess et al., 2025).

In the included sources, surveillance is described as helping identify developmental concerns and families who may benefit from additional support and early guidance to promote stimulation and caregiving practices (Bedford et al., 2013; Ordem dos Enfermeiros, 2010). Prompt identification of developmental concerns may enable more effective use of periods of heightened neuroplasticity, when children are particularly receptive to intervention (Cortez-Vergara et al., 2025; Radomski et al., 2025).

The evidence indicates that relying on unstructured observation or spontaneous parental concerns is insufficient, as many children with developmental needs remain unidentified and untreated (Radomski et al., 2025). Standardized tools provide objective criteria for comparing a child's performance with normative standards and for guiding

Table 3
Standardized instruments identified in the review.

Instrument	Type of Evaluation	Method	Domains Assessed	Age Range	Admin. Time	Psychometric Properties	Context of Use	Advantages	Limitations	References
1. Denver II	Screening / Surveillance	Direct observation and performance	Motor (gross & fine), language, personal-social	0–6 years	20 min	Inter-rater reliability: 0.99 (Ethiopian adaptation; Abessa et al., 2016)	Primary health care / Child health surveillance	Widely used; standardized kit; rapid administration	Low sensitivity for mild delays; not validated for all cultural contexts	(Abessa et al., 2016; Bedford et al., 2013; Cortez-Vergara et al., 2025; Rodrigues, 2012)
2. ASQ-3	Screening / Surveillance	Parent-completed questionnaire	Communication, gross motor, fine motor, problem-solving, personal-social	1–66 months	10–15 min	Sensitivity: 86%; specificity: 85%	Primary health care; home visits	Parental involvement; low cost; available in multiple languages	Dependent on parental literacy and language proficiency	(Bedford et al., 2013; Burgess et al., 2025; Cortez-Vergara et al., 2025)
2b. ASQ-2	Screening / Surveillance	Parent-completed questionnaire	Communication, gross motor, fine motor, problem-solving, personal-social	4–60 months	10–15 min	Cronbach's $\alpha = 0.84$; test–retest reliability = 0.89; second edition of ASQ, superseded by ASQ-3 but used in Mughal et al. (2017).	Primary health care; home visits (Canada)	Parental involvement; low cost; validated for preterm infants at corrected age	Superseded by ASQ-3; included as a distinct tool because Mughal et al. (2017) specifically used this edition.	(Mughal et al., 2017)
3. Bayley-III	Diagnostic assessment	Standardized direct observation	Cognitive, language (receptive & expressive), motor (gross & fine), social-emotional and adaptive behavior	1–42 months	50–90 min	Considered reference standard (gold standard); high construct validity and inter-rater reliability (ICC > 0.90)	Specialist rehabilitation / neonatal follow-up centers	High diagnostic accuracy; multidomain profile	High cost; requires approximately 10 days of training; impractical for routine consultations	(Bedford et al., 2013; Hanlon et al., 2016; Rodrigues, 2012)
4. SWYC	Developmental and behavioral surveillance	Parent-completed questionnaire	Global developmental, social-emotional, and family risk factors	1–65 months	< 10 min	Sensitivity similar to ASQ-3; adequate convergent validity and reliability for the Brazilian population	Primary health care / public health screening	Free access; includes mental health and family context screening	Limited evidence base outside North America and Brazil	(Rolim et al., 2019)
5. SGS-II	Developmental surveillance	Professional observation and structured testing	Postural control (passive & active), locomotor, manipulative, visual, hearing and language, speech and language, social interaction, self-care, cognitive	0–5 years	20 min	High sensitivity and specificity (international literature); not validated for the Portuguese population	Nursing child health surveillance consultations (Portugal, including Madeira region)	Immediate graphical developmental profile; practical for nursing consultations	Requires a specific physical kit; no Portuguese population norms	(Bedford et al., 2013; Ordem dos Enfermeiros, 2010)
6. PEDS	Initial triage / first-level screening	Parental-report	Parental concerns across developmental domains	0–8 years	5 min	Sensitivity: 74–79%; specificity: 70–80%	Waiting room / pre-consultation triage	Focuses on parental partnership; brief administration	Requires a second-level tool for confirmation	(Bedford et al., 2013)
7. PEDS:DM	Second-level screening	Direct milestone elicitation (observation and parental-report)	Developmental milestones across motor, language, and social domains	0–8 years	5–10 min	Greater specificity than PEDS; good concurrent validity with ASQ	Follow-up consultations	Quick administration and scoring	Less comprehensive than ASQ-3; fewer domains	(Bedford et al., 2013)
8. EDI	Screening / surveillance	Combined: professional observation and structured caregiver interview	Motor, cognitive, language, and social; includes neurological warning signs	1–59 months	15 min	Good sensitivity in at-risk groups; acceptable specificity; validated in Mexico	Primary health care (Mexico and Latin America)	Traffic-light scoring system facilitates immediate clinical interpretation; culturally adapted for Hispanic populations; free access	Limited evidence of use outside Latin America; sociocultural adaptation required for other contexts	(Cortez-Vergara et al., 2025; Schonhaut et al., 2025)

9. EAD-3	Screening / surveillance	Direct observation and performance-based tasks	Motor, language, personal-social	0–7 years	20 min	Robust validation in Colombia; adequate reliability and validity	State health programs (Colombia); primary health care	Comprehensive; includes risk assessment	Requires locally sourced kit materials; limited use outside Colombia	(Cortez-Vergara et al., 2025; Schonhaut et al., 2025)
10. TADI	Screening / diagnostic assessment	Standardized observation	Cognition, motor, language, socio-emotional	3 months–6 years	20–30 min	High internal consistency ($\alpha > 0.90$); validated in Chile	Clinical and educational settings (Chile)	Assesses the socio-emotional dimension; standardized for the Chilean population	Administration time exceeds the typical screening timeframe; limited international evidence	(Cortez-Vergara et al., 2025; Schonhaut et al., 2025)
11. PRUNAPE	Screening	Standardized observation and testing	Personal-social, motor, language	0–6 years	15 min	Sensitivity: 80%; specificity: 93%	Pediatric and nursing settings (Argentina)	Highly validated for the regional population	Requires formal face-to-face training; limited use outside Argentina	(Schonhaut et al., 2025)
12. EEDP	Screening	Standardized observation	Motor, language, social, and visual-motor coordination	0–24 months	15 min	High correlation with Bayley Scales; validated in Chile and Peru	Primary health care (Peru and Chile)	Focus on the first two years of life; low cost	Age range limited to children up to 24 months	(Cortez-Vergara et al., 2025; Schonhaut et al., 2025)
13. BDI-2 (Battelle)	Comprehensive diagnostic assessment	Multi-source: structured observation, interview, and direct testing	Personal-social, adaptive, gross motor, fine motor, communication (receptive and expressive)	0–8 years	60–90 min	High internal consistency ($\alpha = 0.99$); concurrent validity with Bayley and Vineland	Early intervention / special education settings	Detailed multidomain profile; covers developmental curriculum areas	Very long administration time; requires specialist training	(Bedford et al., 2013)
14. WSST	Multidimensional developmental and mental health screening	Structured professional observation	Developmental (motor, language, cognition) and mental health	0–5 years	20 min	Designed for clinical reliability; developed specifically for use by nurses	Community nursing settings (Canada; tool originally developed in Australia) (identified in the Canadian nursing context by Radomski et al., 2025)	Developed by and for nurses; integrates developmental and mental health screening	Access restricted outside Australia; limited international validation	(Radomski et al., 2025)
15. M-CHAT-R/F	Autism-specific screening	Parent-completed questionnaire with follow-up interview	Risk indicators for autism spectrum disorder (ASD)	16–30 months	5 min	Sensitivity >90% for ASD; specificity varies; follow-up interview reduces false-positive rate	Child health surveillance consultations at 18 and 24 months	Early identification of autism is widely internationally validated	High false-positive rate when used without follow-up interview (M-CHAT-R/F protocol required)	(Bedford et al., 2013)
16. AIMS	Motor assessment	Standardized observational assessment	Gross motor maturation (prone, supine, sitting, standing positions)	0–18 months	15 min	Good predictive validity for motor delays; concurrent validity with Bayley Motor Scale; inter-rater reliability validated in Brazilian preterm infants	Physiotherapy and nursing follow-up for at-risk infants	Non-invasive; focuses on quality of movement; easy to administer	Assesses gross motor domain only; does not cover cognitive, language, or social domains	(Rodrigues, 2012)
17. Portage (IPO)	Assessment and intervention planning	Behavioral inventory and checklist	Socialization, language, self-care, cognition, motor development (0–6 years); specific protocol for 0–4 months	0–6 years	Variable (approx. 30–60 min)	Based on behavioral analysis, validated for the Brazilian population; identifies typical behaviors by monthly age bands	Home visits; early intervention programs; educational settings	Guides individualized intervention plan; comprehensive behavior inventory	Does not specify expected behaviors by month of age for the 0–12 months range; requires continuous observation	(Rodrigues, 2012)
18. Brigance Screens	Educational screening	Standardized direct testing	Motor, language, early literacy, and numeracy	0–7 years	15 min	Good predictive validity for school readiness and academic outcomes	Childcare settings/preschool/early education	Identifies school readiness; criterion-referenced	Strong academic focus; less appropriate as a general	(Bedford et al., 2013; Radomski et al., 2025)

(continued on next page)

Table 3 (*continued*)

Instrument	Type of Evaluation	Method	Domains Assessed	Age Range	Admin. Time	Psychometric Properties	Context of Use	Advantages	Limitations	References
									developmental screening tool in health settings	
19. Mullen Scales of Early Learning	Cognitive and developmental assessment	Standardized performance-based testing	Visual reception, gross motor, fine motor, expressive, and receptive language	0–68 months	30–60 min	Good concurrent validity; useful for profiling verbal vs. non-verbal ability, including ASD assessment	Specialist clinics and research settings	Distinguishes verbal and non-verbal profiles; useful in ASD evaluation	Complex administration; not suitable for routine primary health care	(Bedford et al., 2013)
20. Griffiths Scales	Comprehensive diagnostic assessment	Standardized direct observation	Locomotion, personal-social, language, eye-hand coordination, performance, practical reasoning	0–8 years	60 min	Good correlation with IQ measures; standardized in multiple countries	Psychology/neurodevelopmental specialist settings	Holistic developmental profile	High cost; requires specialist training and specific equipment	(Bedford et al., 2013)
21. DSI	Developmental screening	Structured questionnaire and caregiver interview	Global developmental (based on Gesell milestones)	4 weeks–36 months	15 min	Adapted from Gesell developmental norms; limited recent psychometric evidence	Low-resource settings	Simple administration; minimal training required	Lacks recent psychometric evidence; limited validation data	(Bedford et al., 2013)
22. CDI	Comprehensive developmental inventory	Detailed parental-report inventory	Developmental across 8 areas, including motor, language, social, self-help, and academic skills	1–6 years	30 min	High content validity; criterion-referenced	Second-level in-depth screening	Very detailed developmental profile	Too lengthy for routine consultation; requires high parental literacy	(Bedford et al., 2013)
23. BITSEA	Social-emotional screening	Parent-completed questionnaire	Social-emotional competencies and behavioral problems	12–36 months	10 min	Adequate clinical validity for identifying social-emotional disorders; good internal consistency	Infant and toddler mental health settings	Specifically focused on early social-emotional development and behavior	Limited age range; does not assess motor, language, or cognitive domains	(Radomski et al., 2025)
24. TPED	Screening	Standardized observation	Motor, language, personal-social	0–30 months	10 min	Technically simple; standardized for the Peruvian population; limited international psychometric evidence	Primary health care (Peru)	Fast administration; free access; locally standardized	Lack of international validation; outdated standardization (> 20 years)	(Cortez-Vergara et al., 2025)
25. EADP	Screening	Standardized direct observation	Motor, language, visual-motor coordination, and social	0–24 months	20 min	Results comparable to Bayley Scales; suitable for high-volume screening in primary care settings	Primary health care; basic health units	Covers the first two years of life; validated against the Bayley Scales	Requires psychometric training; limited to 24 months	(Rodrigues, 2012)
26. MAI	Neuromotor assessment	Structured clinical observation (manipulation and direct observation)	Muscle tone, primitive reflexes, automatic reactions, and volitional movement	0–12 months	30–40 min	Predictive validity for cerebral palsy; effective at 8 months corrected age with score ≥ 13	Neonatology / high-risk infant follow-up units	Specifically designed for the early detection of neuromotor abnormalities, including cerebral palsy	Highly technical; requires specialist neuromotor training; primarily validated for preterm infants	(Rodrigues, 2012)
27. ASQ:SE-2	Social-emotional screening	Parent-completed questionnaire	Self-regulation, compliance, communication, adaptive behavior, autonomy, affect, interaction with people	3–66 months	15 min	Supplements ASQ-3; good sensitivity and specificity for social-emotional delays; validated in multiple countries	Mental health/home visiting programs	Specifically targets social-emotional development; used as a complement to ASQ-3	Subjective parental interpretation may affect accuracy; it does not assess motor, language, or cognitive domains	(Radomski et al., 2025)

28. PSC-17	Mental health screening	Parent-completed questionnaire	Attention, internalizing problems, externalizing problems	4–18 years (partially within review scope: 48–60 months only)	5 min	Good reliability in primary health care settings; validated against full PSC-35	School health nursing consultations	Identifies psychosocial and behavioral problems; brief administration	Age range starts at 4 years; it does not cover the 0–3 years developmental period	(Radomski et al., 2025)
29. IDADI-B	Developmental inventory	Parent-completed report	Comprehensive child development (motor, cognitive, language, social, self-care)	0–72 months	20 min	Standardized and validated for the Brazilian population; culturally adapted	Research and clinical settings (Brazil)	Culturally adapted to the Brazilian context; broad age range	Expanding evidence base; limited use outside Brazil	(Schonhaut et al., 2025)
30. SIVIPRODIN	Developmental surveillance	Structured checklist integrated into the child's health card	Developmental milestones by age band	0–5 years	10 min	Designed for clinical practice use; limited published psychometric evidence	Government child health programs (Latin America)	Integrated into child health record systems; low resource requirement	Low sensitivity when used in isolation; limited independent psychometric data	(Schonhaut et al., 2025)
31. GMCD	Developmental monitoring	Structured caregiver dialogue and observation	Global developmental (motor, language, cognition, social)	0–3 years	10–15 min	Designed for use in low- and middle-income countries; validated in multiple settings; facilitates developmental counseling	Humanitarian / community health settings; low-resource environments	Facilitates developmental counseling; designed for low-resource settings	Less formal than standardized psychometric tests; limited normative data	(Cortez-Vergara et al., 2025)
32. NPed-Desk	Digital developmental screening	Digital platform (electronic administration and scoring)	Developmental and developmental risk indicators	0–5 years	15 min	Designed for efficiency in electronic health record environments; limited published psychometric data	Clinics with electronic health record systems	Automated scoring; integrated with electronic records	Requires digital infrastructure; limited independent validation evidence	(Schonhaut et al., 2025)
33. Baby Developmental Scale	Developmental monitoring	Standardized direct observation	Sensory, motor, language, cognitive domains (monthly assessment, 1–12 months)	1–12 months	15 min	Standardized for the Brazilian population; separate norms for boys and girls; based on criteria of emergence, normalization, and stabilization of behaviors	Primary health care and early intervention programs (Brazil; Portugal)	Brazilian standardization; monthly tracking of 64 behaviors; sex--specific norms	Limited validation literature outside Brazil; restricted to the first year of life	(Rodrigues, 2012)

interventions, thereby supporting clinical decisions and early intervention planning (Bedford et al., 2013; Rodrigues, 2012; Schonhaut et al., 2025). Studies consistently report that validated tools improve the accuracy of identifying developmental concerns compared with informal or unstructured evaluations (Radomski et al., 2025).

Standardized tools for evaluation and clinical practice

Across the 11 sources, 33 standardized tools used by nurses for child development assessment were identified (Table 3). The tools were grouped into three main categories based on methodology and clinical purpose: (1) parental-report surveillance tools; (2) direct observation and short-form screening tools; and (3) comprehensive diagnostic evaluation tools. Detailed administration times, age ranges, and psychometric properties for all instruments are presented in Table 3.

1. Parental-Report Surveillance Tools.

Parent-report tools such as the Ages & Stages Questionnaires (ASQ-3), the Parents' Evaluation of Developmental Status (PEDS), the Brief Infant–Toddler Social and Emotional Assessment (BITSEA), and the Survey of Wellbeing of Young Children (SWYC) are described as facilitating family involvement, having short completion times (typically 5–15 min), and being suitable for population-level surveillance (Bedford et al., 2013; Radomski et al., 2025; Rolim et al., 2019). ASQ-3 is frequently recommended as a multidimensional screening tool for its sensitivity and specificity, which are generally above 80% across the reviewed sources (Burgess et al., 2025). Earlier versions, such as ASQ-2, continue to be used in nursing practice, particularly in research involving specific populations, including preterm infants (Mughal et al., 2017).

2. Direct Observation Tools and Short-Form Screening.

Direct observation tools administered by professionals include the Denver II, the Schedule of Growing Skills II (SGS-II), the Evaluación del Desarrollo Infantil (EDI), and the Brigance Screens, among others (Abessa et al., 2016; Bedford et al., 2013; Cortez-Vergara et al., 2025; Schonhaut et al., 2025). These tools involve structured observation of a child's performance, often paired with caregiver questions, and typically require 10–30 min to administer, fitting within a standard consultation (Radomski et al., 2025; Schonhaut et al., 2025).

3. Comprehensive Diagnostic Evaluation Tools.

Comprehensive diagnostic tools, such as the Bayley Scales of Infant and Toddler Development (Bayley-III) and the Battelle Developmental Inventory (BDI-2), are considered reference standards for detailed developmental assessment across multiple domains (Bedford et al., 2013; Burgess et al., 2025). These tools are widely used as criterion measures in validation studies and have strong evidence for construct and concurrent validity, as well as reliability. The included sources note that these instruments are most often administered by multidisciplinary teams, including psychologists and therapists, but that nurses may coordinate referrals, prepare families, and participate in interpretation and follow-up in neonatal and early intervention contexts (Bedford et al., 2013; Hanlon et al., 2016; Rodrigues, 2012).

The clinical use of these comprehensive tools in routine nursing consultations is reported to be limited by administration times of approximately 50–90 min and by the need for extensive training (Bedford et al., 2013; Hanlon et al., 2016). Nevertheless, their inclusion in this review reflects the broader scope of nursing involvement in developmental assessment across multidisciplinary services.

Discussion

This scoping review mapped standardized tools used by nurses to assess child development in children aged 0 to 5 years and identified substantial variation in their clinical purpose, psychometric support, administration time, and feasibility across care settings (Bedford et al., 2013; Schonhaut et al., 2025). The findings indicate that developmental assessment in early childhood is multidimensional and should be interpreted in relation to biological, psychological, social, and environmental factors that influence the child's developmental trajectory (Bedford et al., 2013; Mughal et al., 2017; Schonhaut et al., 2025).

The review also shows that no single standardized tool is suitable for all purposes or care settings (Bedford et al., 2013; Burgess et al., 2025; Ordem dos Enfermeiros, 2010). The identified tools differ in scope, psychometric support, administration time, feasibility, and degree of cultural adaptation. Tool selection should be guided by the purpose of the assessment, whether the objective is developmental surveillance, screening, or more comprehensive evaluation (Bedford et al., 2013; Cortez-Vergara et al., 2025; Radomski et al., 2025). By focusing specifically on tools that nurses administer or coordinate, this review complements broader scoping and umbrella reviews by clarifying which instruments are actually in use in nursing practice and under what conditions.

A recurring finding across the included sources is the tension between psychometric robustness and practical feasibility in routine care (Cortez-Vergara et al., 2025; Radomski et al., 2025). Brief instruments are feasible within the time available in routine consultations but yield less detailed information, whereas comprehensive tools such as Bayley-III and BDI-2 allow a broader developmental profile at a cost in administration time, training requirements, and resource demands (Bedford et al., 2013; Burgess et al., 2025Ordem dos Enfermeiros, 2010; Rolim et al., 2019). The instrument-level detail underlying this contrast is presented in Table 3.

The psychometric evidence reported across studies is heterogeneous (Bedford et al., 2013; Burgess et al., 2025; Radomski et al., 2025). Some tools have more consistent evidence of validity, reliability, sensitivity, and specificity, whereas others rely on local validation studies or are supported by more limited evidence, particularly in settings with different linguistic, cultural, and health system characteristics (Abessa et al., 2016; Hanlon et al., 2016; Schonhaut et al., 2025).

These findings are consistent with international guidance recommending that developmental surveillance at every health supervision visit be combined with the administration of a validated screening instrument at defined ages, rather than relying on clinical observation alone (Council on Children With Disabilities et al., 2006; Lipkin et al., 2020). The present review indicates, however, that this recommendation is only partially reflected in the instruments available to nurses. With few exceptions, such as the WSST, the tools mapped here were designed for physician-led or psychologist-led assessment and were subsequently incorporated into nursing practice, which may explain why training requirements and administration times are so frequently reported as barriers in nursing settings (Carvalho & Sarinho, 2016; Gaiva et al., 2018). The difficulty is therefore less the availability of instruments than their fit with the structure and duration of the nursing consultation.

The heterogeneity of the psychometric evidence identified in this review mirrors what has been reported in the wider literature on developmental assessment. Sensitivity and specificity are not fixed properties of an instrument but vary with the population assessed, the cut-off applied, and the reference standard used, which limits direct comparison of the values reported across the included sources (Burgess et al., 2025; Sabanathan et al., 2015). Comparable variation has been described when instruments developed in high-income settings are applied in different linguistic and cultural contexts, where performance tends to decline unless items and norms are re-examined locally (Abessa et al., 2016; Hanlon et al., 2016). The practical consequence is that psychometric values reported in one setting cannot be assumed to hold in another, and nurses selecting a tool need access to validation data from populations comparable to their own.

The emphasis on cultural adaptation found across the included sources is supported by broader evidence showing that the burden of developmental difficulties is greatest in settings where validated

instruments are least available (Almahmoud & Abushaikha, 2023; Grantham-McGregor et al., 2007; Sabanathan et al., 2015). Adaptation, however, is frequently reduced to translation. The evidence mapped in this review suggests that it should extend to the normative sample, to the developmental expectations embedded in item content, and to the caregiving practices assumed by parent-report items, since each of these can alter the meaning of a score (Abessa et al., 2016; Cortez-Vergara et al., 2025; Schonhaut et al., 2025).

Finally, the review points to a documentation and decision-making gap that the wider literature has addressed only indirectly. Standardized scores acquire clinical meaning when they are interpreted alongside the developmental history, the family context, and repeated observations over time, and when they are recorded in a form that other professionals can use (Radomski et al., 2025; Souza & Veríssimo, 2013). Where developmental findings are recorded as isolated scores, the continuity that characterizes nursing surveillance is lost and the potential of repeated contacts across the first five years is not realized (Bedford et al., 2013; Lipkin et al., 2020). Improving developmental surveillance in nursing therefore depends not only on which instrument is selected, but on how results are documented, communicated, and revisited at subsequent contacts.

Strengths and limitations

Strengths

This scoping review was conducted in accordance with Joanna Briggs Institute guidance and reported using the PRISMA-ScR checklist. It was preregistered, with explicit inclusion criteria and transparent reporting of the search and selection processes (Peters et al., 2024; Tricco et al., 2018). The search strategy covered multiple databases, grey literature sources, and official organization websites, without date restrictions and including studies in Portuguese, English, and Spanish, thereby increasing the likelihood of capturing diverse evidence relevant to nursing practice.

Another strength is the explicit focus on nurses as users of developmental assessment tools. This nursing-specific focus directly addresses the gap highlighted by recent reviews. By requiring nurse involvement as an inclusion criterion, this review addresses a gap in the literature, which has tended to focus on tools in multidisciplinary or physician-led services without distinguishing nursing roles (Bedford et al., 2013; Burgess et al., 2025; Radomski et al., 2025). The use of a piloted, customized data extraction form and independent extraction by two reviewers supports the reliability of the collected data and the consistency of the thematic synthesis.

Methodological considerations

The scoping review design is appropriate for mapping the breadth and nature of available evidence on standardized tools used by nurses for child development assessment, rather than estimating pooled effects or conducting statistical comparisons of tools (Peters et al., 2024; Tricco et al., 2018). Consistent with scoping review methodology, no formal risk-of-bias assessment was conducted, and psychometric findings were summarized descriptively. Values were reported as presented in the original studies and interpreted qualitatively to identify patterns and gaps (Burgess et al., 2025; Radomski et al., 2025).

The review integrates evidence from diverse sources, including scoping reviews, systematic and integrative reviews, umbrella reviews, adaptation and validation studies, cross-sectional research, and a technical report (Abessa et al., 2016; Hanlon et al., 2016; Ordem dos Enfermeiros, 2010; Radomski et al., 2025; Rolim et al., 2019; Schonhaut et al., 2025). This diversity aligns with the scoping purpose but introduces variability in methodological quality, reporting standards, and psychometric analyses. The synthesis therefore prioritizes convergence and divergence of findings across sources and focuses on tools that recur and are more clearly described in terms of psychometric properties and clinical application (Bedford et al., 2013; Burgess et al., 2025; Radomski et al., 2025).

In addition, the review distinguishes among developmental surveillance, screening, comprehensive assessment, and psychometric evaluation, and applies these concepts consistently throughout the sections. This distinction is important for interpreting the scope and intended use of each tool and for understanding where nurses are most involved in developmental assessment pathways (Bedford et al., 2013; Ordem dos Enfermeiros, 2010; Radomski et al., 2025).

Limitations

Several limitations should be considered when interpreting the findings. First, although the search was broad and included multiple databases and grey literature, only 11 sources met the inclusion criteria for nurse involvement, limiting the comprehensiveness of the nursing-specific evidence base (Radomski et al., 2025; Schonhaut et al., 2025). Important information may be present in studies where nurses contribute to developmental assessment without being explicitly identified, and those studies would have been excluded from this review.

Second, heterogeneity in study designs, populations, settings, and psychometric analyses precluded quantitative comparisons of tools and the estimation of pooled measures of sensitivity, specificity, or other psychometric indices (Bedford et al., 2013; Burgess et al., 2025; Radomski et al., 2025). The descriptive synthesis presented here does not allow firm conclusions about the superiority of one tool over another; rather, it highlights which instruments are more frequently used by nurses, under what conditions, and with what level of reported support.

Third, many tools were developed or validated in specific countries or regions, and their psychometric properties may not be directly transferable to other cultural and health system contexts without further adaptation and validation (Abessa et al., 2016; Hanlon et al., 2016; Schonhaut et al., 2025). The evidence base is stronger in high-income settings and in some middle-income regions, such as parts of Latin America, than in other low- and middle-income countries, where the burden of developmental concerns is substantial (Grantham-McGregor et al., 2007; Schonhaut et al., 2025).

Finally, despite efforts to include grey literature and official documents, publication and language biases cannot be ruled out. Studies published in languages other than Portuguese, English, or Spanish, as well as unpublished internal reports, may contain relevant information about tools used by nurses that was not captured in this review. In addition, the developmental-instrument concept was searched using the free-text phrases “development tools” and “development scales”, as no controlled-vocabulary descriptor exists for it; this narrow phrasing may have reduced retrieval sensitivity and excluded relevant records indexed under alternative terms, which should be considered when interpreting the comprehensiveness of the mapped evidence.

These limitations highlight the need for further primary studies that explicitly identify nurses as users of developmental tools and report psychometric and implementation outcomes from nursing perspectives.

Implications to practice

Developmental surveillance should be a standing component of routine child health and primary health care nursing practice, supported by standardized tools rather than isolated clinical observation, since these tools improve early detection, support referral decisions, and promote more consistent follow-up (Bedford et al., 2013; Burgess et al., 2025; Ordem dos Enfermeiros, 2010; Radomski et al., 2025). Tool selection should be guided by psychometric properties, administration time, training requirements, purpose of use, and cultural relevance (Cortez-Vergara et al., 2025; Schonhaut et al., 2025). In practice, this means

reserving brief instruments such as the ASQ-3 or the SWYC for time-limited primary care consultations, and more extensive batteries such as the Bayley Scales or IPO/Portage for referral, specialist, or early intervention settings (Bedford et al., 2013; Radomski et al., 2025).

Scores alone are not a sufficient basis for clinical decisions (Gaiva et al., 2018). Developmental findings need to be read together with caregiver responsiveness, parental stress, family resources, social vulnerability, and opportunities for stimulation, since these factors shape both the child's development and the appropriateness of the next clinical step (Gaiva et al., 2018; Mughal et al., 2017; Radomski et al., 2025). It follows that the same score should not lead automatically to the same response. Closer surveillance, parental guidance, referral, or multidisciplinary follow-up should be selected according to each family's capacity and available supports, which may also help reduce inequities rather than applying uniform pathways based on scores alone (Radomski et al., 2025).

Cultural adaptation and local validation are preconditions for safe clinical use, because instruments developed in one context may perform differently in another when developmental expectations, language, caregiving practices, and access to services differ (Abessa et al., 2016; Hanlon et al., 2016; Schonhaut et al., 2025). Nurses working in diverse settings need either tools validated for their populations or explicit guidance on interpreting and documenting the limitations of non-validated instruments, and they need to communicate results in language that families understand and that respects their values and caregiving practices (Abessa et al., 2016; Hanlon et al., 2016).

Nursing and interdisciplinary care

Nurses are regularly involved in developmental surveillance across primary care, community programs, home visiting, neonatal follow-up, and early intervention pathways, and their repeated contact with children and families places them in a strong position to monitor development longitudinally and to support referral and follow-up (Bedford et al., 2013; Dai et al., 2023; Gaiva et al., 2018; Radomski et al., 2025; Robinson et al., 1998). This role extends beyond anthropometric monitoring and milestone recording to interpreting findings, documenting them, and translating them into practical guidance for daily family life (Carvalho & Sarinho, 2016; Gaiva et al., 2018; Salvado, 2013).

Realizing this role requires that standardized tools be embedded in nursing protocols, clinical pathways, and electronic health records rather than used at the discretion of individual professionals, with local guidance specifying which instruments to use at which ages and clinical checkpoints (Bedford et al., 2013; Burgess et al., 2025; Centers for Disease Control and Prevention, 2026; Lipkin et al., 2020; Radomski et al., 2025; World Health Organization, United Nations Children's Fund, World Bank Group, 2018). It also requires that undergraduate and postgraduate curricula, and continuing professional development, address the administration, scoring, interpretation, and communication of these instruments, and the integration of psychometric information into clinical reasoning (Carvalho & Sarinho, 2016; Gaiva et al., 2018; Salvado, 2013).

Standardized tools are not the property of any single profession. Used systematically and documented clearly, they function as a shared language between nurses, physicians, psychologists, early intervention teams, and educators, supporting coordinated care plans and more consistent decisions across services (Bedford et al., 2013; Hanlon et al., 2016; Radomski et al., 2025).

Family-centered practice

Parent-report instruments such as the ASQ-3, PEDS, and SWYC do more than collect information. They involve caregivers in observing their child and may increase parental awareness of both concerns and developmental strengths (Bedford et al., 2013; Radomski et al., 2025; Rolim et al., 2019). This is particularly relevant in primary health care consultations, home visits, and community programs, where repeated contact allows nurses to clarify results, provide emotional support, and tailor guidance when concerns are identified (Carvalho & Sarinho, 2016; Gaiva et al., 2018).

Future research

Further psychometric evidence is needed for the instruments nurses actually use, including validity, reliability, sensitivity, specificity, and feasibility in the primary care and community settings where nurses lead developmental surveillance (Burgess et al., 2025; Radomski et al., 2025). Cross-cultural adaptation and local validation studies remain a priority in low- and middle-income countries and other underrepresented settings, where the burden of developmental concerns is high but locally appropriate evidence is uneven (Abessa et al., 2016; Grantham-McGregor et al., 2007; Hanlon et al., 2016; Schonhaut et al., 2025).

Research should also address implementation conditions, including time, training, workflow integration, digital documentation, nurse-reported feasibility, and effects on referral patterns and access to intervention, using implementation science frameworks to specify determinants, strategies, and outcomes (Cortez-Vergara et al., 2025; Radomski et al., 2025). Digital approaches such as telehealth screening and artificial intelligence-assisted monitoring warrant evaluation in underserved and remote settings, provided that accuracy, equity, and acceptability are assessed so that existing divides are not reinforced (Burgess et al., 2025). Finally, shared care pathways that integrate standardized tools across nursing, pediatrics, psychology, therapy disciplines, education, and social services should be tested for their effects on communication, continuity of care, and coordinated decision-making (Centers for Disease Control and Prevention, 2026; Council on Children With Disabilities et al., 2006; Lipkin et al., 2020).

Conclusion

This scoping review mapped the standardized tools nurses use to assess child development in children aged 0 to 5 years and synthesized how these instruments are applied across settings, populations, and care pathways. The findings show that nursing practice relies on a range of tools with different purposes, domains, psychometric properties, and feasibility, and that no single instrument can meet all clinical needs. Across the mapped sources, ASQ-3, Denver II, SGS-II, and related multidimensional tools emerge as particularly prominent in nursing and primary care contexts, while comprehensive diagnostic instruments such as Bayley-III and BDI-2 remain concentrated in specialist services. Therefore, tool selection requires alignment with the assessment's specific objective, the care context, available training, administration time, and cultural relevance.

The review underscores the relevant role of nurses in developmental surveillance, early identification of concerns, family communication, and coordination of referrals and follow-up. When standardized tools are feasible for routine use and interpreted alongside family and environmental information, they can support more consistent clinical judgment and help connect children and families with appropriate support and interventions. In this way, nurse-led developmental surveillance can contribute not only to clinical safety but also to equity, by identifying and responding to developmental concerns earlier in children living in socially and economically vulnerable contexts.

By focusing specifically on nurse-administered and nurse-coordinated tools, this review addresses a gap in the literature and provides a structured reference for clinical practice, education, and service planning in child health nursing. Future research should strengthen the psychometric evidence for nurse-administered tools, support cross-cultural adaptation in underrepresented settings, and examine the conditions for integrating these instruments into primary care and community services. At the practice level, services should prioritize

selecting brief, multidimensional tools with documented psychometric support, embed developmental surveillance in routine child health consultations, and ensure that nurses receive training in both the administration and the family-centered interpretation of findings.

Declaration of Generative AI and AI-Assisted Technologies in the Manuscript Preparation Process

English is not the authors' first language. While preparing this work, the authors used Papago and Grammarly to improve sentence structure and translation. After using these tools, the authors reviewed and edited the content as needed and take full responsibility for the published article.

CRediT authorship contribution statement

Carla Freitas: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Carmen Freitas:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Methodology, Investigation, Formal analysis, Data curation. **Raquel Silva:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Methodology, Investigation, Formal analysis, Data curation. **Sofia Loureiro:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Methodology, Investigation, Formal analysis, Data curation.

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Appendix 1

Search strategy conducted (December 2025)

All searches were conducted in December 2025, with no date restrictions, and were limited to records in Portuguese, English, or Spanish, using the truncation symbol (*) to capture word variants. The terms for the population and age concepts (child, infant, preschool, newborn) and for the nursing concept correspond to standard indexed subject headings (e.g., MeSH); the developmental-instrument concept was searched as the free-text phrases "development tools" and "development scales", as no exact controlled-vocabulary descriptor exists for it. The same core strategy was applied across all databases and information sources, and an equivalent search was additionally run in the native language of the Portuguese repository (RCAAP).

Search	Query	Records retrieved
Databases		
MEDLINE Complete & CINAHL Complete (via EBSCOhost)		
#1	(Child* OR Infant* OR Preschool OR Newborn*)	7,289,590
#2	("development tools" OR "development scales")	3751
#3	(Nurs* OR "Nursing care")	4,377,785
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	520
Cochrane Database of Systematic Reviews		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	293
JBI Evidence Synthesis		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	0
PROSPERO		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	10
Web of Science		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	104
PubMed		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	15
Scopus		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	1051
Grey literature		
RCAAP (Open Scientific Portuguese Repository)		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	18
#4 (#1 AND #2 AND #3) (native language of the repository)	("criança" AND "avaliação do desenvolvimento" AND "enfermeiro")	123
Google		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	21
New York Academy of Medicine		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	0
OMS		
#4 (#1 AND #2 AND #3)	(Child* OR Infant* OR Preschool OR Newborn*) AND ("development tools" OR "development scales") AND (Nurs* OR "Nursing care")	10

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