

Nursing Process Documentation and Use of Standardized Nursing Terminology (NANDA-I, NOC, NIC) in Undergraduate Nursing Students: An Explanatory Sequential Mixed-Methods Study

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Abstract

Introduction: The nursing process (NP) is a framework for planning and documenting nursing care. Standardized nursing language (SNL), including NANDA-I, NOC, and NIC, supports consistent documentation and demonstrates nursing contributions to patient outcomes. Understanding students' use of NP and SNL is important for improving nursing education and care quality. **Objectives:** This study evaluated the quality of undergraduate nursing students' NP documentation, including the use of NANDA-I, NOC, and NIC, and explored perceived barriers to implementing NP and SNL in clinical practice. **Methods:** This explanatory sequential mixed-methods study was conducted in 2024 at a Faculty of Nursing and Midwifery. In the quantitative phase, NP documentation in Pediatric Nursing clinical logbooks, completed after a 17-hour case-based course on NANDA-I, NOC, and NIC, was evaluated using a researcher-developed checklist. Nursing diagnoses were classified according to NANDA-I Taxonomy II domains, and data were analyzed using descriptive statistics in SPSS version 29. In the qualitative phase, purposively selected students participated in semi-structured interviews to explain the quantitative findings. Data were analyzed using conventional content analysis based on Graneheim and Lundman's approach. **Results:** A total of 121 clinical logbooks were analyzed. The mean NP documentation score was 3.52 ± 1.05 (out of 5). Students performed best in documenting NIC interventions and lowest in documenting NANDA-I diagnoses and NOC outcomes. Among 633 documented diagnoses, Safety/Protection, Elimination and Exchange, and Nutrition were the most frequent domains, whereas Self-Perception was least represented; no diagnoses were recorded in the Sexuality, Life Principles, or Growth and Development domains. Eighteen students participated in interviews, yielding two themes: education-related and student-related barriers. **Conclusion:** Students demonstrated greater proficiency in documenting interventions than in formulating standardized diagnoses and outcomes. The predominance of physiological diagnoses suggests limitations in comprehensive assessment. Strengthening diagnostic and outcome reasoning and promoting holistic NP-based care should be emphasized in nursing education.

Keywords

nursing process, nursing education, documentation, standardized nursing terminology, nursing students

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Introduction

The nursing process (NP) is a systematic and evidence-based approach that guides the delivery of individualized nursing care through five interrelated steps: assessment, nursing diagnosis, planning, implementation, and evaluation (Abdelkader & Othman, 2017; Lea et al., 2001; Seçer & Karaca, 2021). Beyond serving as a structured framework for care delivery, the NP promotes holistic assessment of patients' physical, psychological, sociocultural, spiritual, and economic needs and supports critical thinking and professional judgment in nursing practice (Cruz et al., 2016).

The NP is considered a core clinical competency for nurses and an essential component of high-quality nursing care (Nabizadeh-Gharghozar et al., 2021). Its implementation has been associated with improved communication within healthcare teams, greater patient participation in self-care, and enhanced nursing care outcomes (Bahador et al., 2018; Zamani Babgohari et al., 2022). For nursing students, engagement with the NP contributes to the development of clinical competence, critical thinking, and clinical reasoning skills that are fundamental to safe and effective patient care (Fathi & Ibrahim, 2023).

Education plays a central role in preparing future nurses to use both the NP and standardized nursing terminology effectively. Nursing curricula increasingly incorporate standardized nursing language through theoretical instruction, case-based learning, and clinical training.

However, despite its recognized value, implementation of the NP remains inconsistent across healthcare settings worldwide, including Iran. Variations in implementation have been linked to differences in educational preparation, organizational support, documentation systems, available resources, and clinical culture (Afoi et al., 2012; Azevedo et al., 2019; Julie et al., 2017; Kamau et al., 2016; Shiferaw et al., 2020).

Review of Literature

Effective implementation of the NP requires the accurate identification of patient problems, selection of appropriate nursing interventions, and evaluation of patient outcomes. Standardized nursing language (SNL) has been developed to support these processes and improve the consistency and visibility of nursing documentation. The growing adoption of electronic health records has further increased the importance of standardized terminologies. Among the terminologies recognized by the American Nurses Association, NANDA International (NANDA-I), Nursing Outcomes Classification (NOC), and Nursing Interventions Classification (NIC) are widely used to document relationships among nursing diagnoses, interventions, and outcomes. Collectively referred to as the NNN system, these taxonomies support clinical reasoning, evidence-based practice, communication, and documentation quality (Jones et al., 2010; Noh & Lee, 2015).

Although nursing curricula increasingly emphasize standardized nursing language, evidence suggests that educational exposure alone does not ensure successful clinical application. Nurses and students continue to encounter challenges related to insufficient knowledge, limited educational support, time constraints, workload pressures, inadequate resources, and documentation difficulties, all of which may hinder effective NP implementation and SNL use (Moghadas & Sedaghati, 2020; Mwangi et al., 2019; Zamanzadeh et al., 2015).

Although nursing students generally report positive attitudes toward NANDA-I and standardized nursing diagnoses, studies have identified persistent difficulties in distinguishing nursing from medical diagnoses, prioritizing patient problems, and establishing accurate links between diagnoses, interventions, and outcomes (Abed El-Rahman et al., 2017; Yalcinkaya et al., 2025). This indicates that positive attitudes do not necessarily translate into competent application in clinical settings.

Clinical logbooks provide a valuable source for evaluating this application because they document students' care planning activities and clinical learning experiences (Heidari & Akbari, 2017; Iqbal et al., 2015). Recent systematic reviews have highlighted the benefits of NANDA-I, NOC, and NIC in supporting clinical reasoning, individualized care planning, documentation quality, and interprofessional communication, while also emphasizing ongoing implementation challenges and contextual variations in their use (Fernane et al., 2025; Rodriguez-Suarez et al., 2023).

However, most student-focused research has examined knowledge, attitudes, or perceptions rather than the actual quality of nursing process documentation or accuracy of standardized terminology use in clinical records. Furthermore, limited evidence exists regarding barriers influencing NP implementation and standardized nursing language use among undergraduate nursing students in Iran.

This gap highlights the necessity of the present study, which aims to evaluate students' documentation practices and explore perceived barriers to NP implementation and standardized nursing language use.

Accordingly, this study was guided by the following research questions:

- 1-How do undergraduate nursing students document the nursing process in their Pediatric Nursing clinical logbooks, including their use of standardized nursing language (NANDA-I, NOC, and NIC)?

2-What barriers do undergraduate nursing students perceive to implementing and documenting the nursing process and using standardized nursing language in clinical practice?

Therefore, this mixed-methods study aimed to (1) evaluate the quality of undergraduate nursing students' nursing process documentation, including their use of standardized nursing language, and (2) explore students' perceived barriers to implementing the nursing process and standardized nursing language in clinical practice.

Methods

Design

This study used an explanatory sequential mixed-methods design with an initial quantitative phase followed by a qualitative phase. The quantitative phase aimed to assess the quality of nursing process (NP) documentation in undergraduate students' clinical logbooks with a focus on standardized nursing language (NANDA-I, NOC, NIC). The qualitative phase was conducted to explore students' perceived barriers to applying the NP and SNL in clinical practice.

Integration of the two phases occurred at the interpretation stage, where qualitative findings were used to explain and contextualize the quantitative results.

Reporting of the study followed the Good Reporting of a Mixed Methods Study (GRAMMS) guidelines ([O'cathain et al., 2008](#)).

Quantitative Phase

Setting and Participants

The quantitative phase was conducted during the 2023–2024 academic year at the Faculty of Nursing and Midwifery of Shahid Beheshti University of Medical Sciences, Tehran, Iran. In this program, undergraduate nursing students complete a structured educational sequence related to nursing documentation and standardized nursing language.

During the fifth semester, 140 students attended a 17-hour nursing documentation course focused on the application of NANDA-I, NOC, and NIC. The course was delivered using active case-based learning methods. During the sixth semester, students completed the Pediatric Nursing clinical course, during which they were required to document nursing care plans for assigned patients using the nursing process framework and standardized nursing language.

All 140 sixth-semester nursing students enrolled in the Pediatric Nursing clinical course were considered eligible. Nineteen students declined participation, and the remaining 121 students were included through census sampling.

Inclusion and Exclusion Criteria

Students were eligible if they had completed both the nursing documentation course and the Pediatric Nursing clinical course and provided informed consent to participate. To minimize the influence of prior professional experience on documentation practices, only students without nursing employment experience beyond routine student clinical placements were included.

Students with incomplete or illegible clinical logbooks were excluded from the study.

Variables

The primary quantitative variables were:

- Overall nursing process documentation quality score (primary outcome variable);
- Scores for individual nursing process components (assessment, diagnosis, planning, implementation, and evaluation);
- Frequency of documented NANDA-I diagnostic domains;
- Use of NANDA-I, NOC, and NIC terminology within clinical documentation.

Data Sources and Instrument

Quantitative data were collected from students' Pediatric Nursing clinical logbooks, which contained structured sections for patient assessment, nursing diagnoses, expected outcomes, nursing interventions, and evaluation.

The quality of documentation was assessed using a researcher-developed checklist designed following a review of the literature and nursing process documentation standards.

The checklist consisted of two sections:

- Section 1 included 12 items assessing the quality of documentation across the nursing process steps. Each item was rated on a five-point Likert scale ranging from 1 (very poor) to 5 (excellent). Total scores ranged from 12 to 60, with higher scores indicating better-quality documentation.
- Section 2 included 13 items assessing the frequency with which nursing diagnoses from the 13 domains of NANDA-I Taxonomy II were documented.

Accurate documentation was defined as the correct completion of nursing process components according to course requirements and standardized nursing language principles, including appropriate patient assessment, accurate formulation of NANDA-I diagnoses, logical alignment between nursing diagnoses, NOC outcomes and NIC interventions, and appropriate documentation of evaluation findings.

Face validity was confirmed by five nursing faculty members. Content validity was assessed by a panel of nursing educators with expertise in the nursing process and standardized nursing language. Their feedback was used to refine item wording and ensure comprehensive coverage of all nursing process components.

In a pilot evaluation of 20 clinical logbooks, the checklist demonstrated acceptable internal consistency (Cronbach's $\alpha = 0.88$) and inter-rater reliability (intraclass correlation coefficient = 0.75).

Data Collection Procedure

At the beginning of the Pediatric Nursing clinical course, students were informed that their clinical logbooks could be used for research purposes in addition to educational evaluation. Written informed consent was obtained from all participants.

Students were required to document nursing care plans using the nursing process framework and standardized nursing language. Each student completed at least three nursing process cycles during the clinical course. At the end of the course, completed logbooks were submitted to the research team for analysis.

All nursing process entries were independently reviewed by two trained nursing faculty members experienced in the use of NANDA-I, NOC, and NIC. If ratings differed by more than one point on any checklist item, the discrepancy was resolved through discussion until consensus was reached.

All NANDA-I diagnostic labels documented in the logbooks were extracted and categorized according to NANDA-I Taxonomy II domains by two researchers experienced in standardized nursing language. Disagreements were resolved through discussion and consensus.

Statistical Analysis

Quantitative data were analyzed using SPSS version 29 (IBM Corp., Armonk, NY, USA). Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarize documentation quality scores and the distribution of NANDA-I diagnostic domains.

Qualitative Phase

Participant Selection and Sampling

Following preliminary analysis of the quantitative findings, a qualitative phase was undertaken to explain and elaborate on the results, particularly the lower performance observed in documenting nursing diagnoses and outcomes compared with nursing interventions. Eighteen students were selected from the quantitative cohort using purposive sampling with maximum variation in gender, age, academic performance.

Inclusion and Exclusion Criteria

Students were eligible for participation if they had completed the quantitative phase, completed the Pediatric Nursing clinical course, and were willing to discuss their experiences regarding nursing process documentation and standardized nursing language use.

Students who declined participation or were unable to complete the interview process were excluded.

Access to Participants

Eligible students were contacted after completion of the quantitative phase and invited to participate voluntarily. Those who agreed were provided with detailed information regarding the study and interview procedures.

Data Collection

Semi-structured face-to-face interviews were conducted in Persian by the first author, who had previous experience in qualitative interviewing and had no direct evaluative role in relation to participants. An interview guide was developed based

on the quantitative findings and relevant literature. Interviews began with broad questions such as: “What challenges do you experience when documenting the nursing process?” Additional probing questions such as “Can you provide an example?”, “Could you explain this further?”, and “What do you mean by that?” were used to obtain more detailed responses.

Interviews were conducted in a private room at the faculty according to participants’ preferences. Each interview lasted approximately 40 minutes and was audio-recorded with permission. Recordings were transcribed verbatim and anonymized. Selected quotations were translated into English and reviewed by bilingual researchers to ensure accuracy of meaning. Data collection continued until data saturation was achieved, defined as the point at which no new concepts or categories emerged from subsequent interviews (Chun Tie et al., 2019).

Data Analysis

Qualitative data were analyzed using conventional content analysis following the approach of Graneheim & Lundman (2004). Interview transcripts were read repeatedly to obtain an overall understanding of the data. Meaning units relevant to students’ experiences of nursing process documentation and standardized nursing language use were identified, condensed, coded, and grouped according to similarities and differences. Codes were subsequently organized into subcategories, categories, and overarching themes through an iterative analytical process.

Trustworthiness and Triangulation

Trustworthiness was established according to Lincoln and Guba’s criteria of credibility, dependability, confirmability, and transferability (Guba & Lincoln, 1989). Credibility was enhanced through prolonged engagement, purposive maximum-variation sampling, constant comparison, and member checking. Dependability was strengthened via peer review of coding and themes by two qualitative experts. Confirmability was ensured through an audit trail of analytical decisions, and transferability through detailed descriptions of participants and context. Methodological triangulation was achieved by integrating quantitative logbook data with qualitative interview findings, while investigator triangulation involved multiple researchers in coding, analysis, and interpretation.

Integration of Quantitative and Qualitative Findings

Integration occurred during interpretation of the results. Quantitative findings identified strengths and weaknesses in students’ nursing process documentation, while qualitative findings provided explanatory insights into the barriers underlying these patterns. The qualitative results were therefore used to contextualize and deepen understanding of the quantitative findings.

Ethical Considerations

The study was approved by the Research Ethics Committee of Shahid Beheshti University of Medical Sciences, Tehran, Iran (Approval No: IR. SBMU.PHARMACY.REC.1403.171). Participation was voluntary in both phases of the study. Written informed consent was obtained from all participants. Students were assured that participation or non-participation would not influence their academic evaluation. Confidentiality and anonymity were maintained throughout the study by removing identifying information and reporting findings in aggregate form.

Results

Sample Characteristics

A total of 121 undergraduate nursing students’ Pediatric Nursing logbooks were analyzed in the quantitative phase. Most students were female (60.3%), with a mean age of 21.6 years (SD= 1.3). In the qualitative phase, 18 students (10 females, 8 males) participated in the interviews (Table 1).

Research Question Results

Quantitative Results (Research Question 1)

The mean total score for documentation of the nursing process was 3.52 ± 1.05 on a 1–5 scale.

Based on the predefined scoring categories (0–1 = very poor, 1.1–2 = poor, 2.1–3 = average, 3.1–4 = good, and 4.1–5 = excellent), this score indicates a good overall level of performance among students (Table 2).

Table 1. Participants' Characteristics

Participant	Gender	Age	Academic performance
P1	Female	21	High
P2	Male	23	High
P3	Female	21	Low
P4	Male	21	Low
P5	Female	22	High
P6	Male	22	Low
P7	Female	24	Moderate
P8	Male	21	Moderate
P9	Female	22	High
P10	Male	23	Moderate
P11	Female	24	High
P12	Male	21	Low
P13	Male	21	High
P14	Female	23	Moderate
P15	Female	22	Low
P16	Male	24	Low
P17	Female	22	Moderate
P18	Female	21	Low

Table 2. Mean Scores and Frequencies of Nursing Process Documentation Items

No.	Items	Mean $\pm$ SD	Always	Sometimes	Moderately	Less often	Never
			N (%)	N (%)	N (%)	N (%)	N (%)
1	Distinguishing the steps of the nursing process	3.55 $\pm$ 1.02	42 (20.5)	59 (28.8)	82 (40)	14 (6.8)	8 (3.9)
2	Assessments related to the current problem	3.60 $\pm$ 0.86	25 (12.2)	93 (45.4)	72 (35.1)	10 (4.9)	5 (2.4)
3	Connection of assessment with diagnosis	3.46 $\pm$ 0.99	27 (13.2)	79 (38.5)	71 (34.6)	18 (8.8)	10 (4.9)
4	Accurate documentation of the labels of nursing diagnoses based on the NANDA's Taxonomy	3.30 $\pm$ 0.95	19 (9.3)	65 (31.7)	91 (44.4)	19 (9.3)	11 (5.4)
5	Prioritization of diagnoses	3.50 $\pm$ 0.94	31 (15.1)	67 (32.7)	88 (42.9)	12 (5.8)	7 (3.5)
6	Selection of multidimensional diagnoses	2.89 $\pm$ 0.14	16 (7.8)	43 (21)	80 (39)	35 (17.1)	31 (15.1)
7	Selection of the appropriate intervention	4.13 $\pm$ 0.91	81 (39.5)	86 (41.9)	25 (12.2)	10 (4.9)	3 (1.5)
8	Connection of intervention with assessment	3.83 $\pm$ 0.93	65 (31.7)	49 (23.9)	84 (41)	6 (2.9)	1 (0.5)
9	Connection of intervention with diagnosis	3.93 $\pm$ 1.03	77 (37.6)	57 (27.8)	56 (27.3)	10 (4.9)	5 (2.4)
10	Accurate documentation of the labels of nursing interventions based on the Nursing Intervention Classification	4.17 $\pm$ 0.73	68 (33.2)	109 (53.2)	25 (12.2)	1 (0.4)	2 (1)
11	Accurate evaluation	3.06 $\pm$ 1.06	22 (10.7)	35 (17.1)	101 (49.3)	27 (13.2)	20 (9.7)
12	Accurate documentation of the labels of nursing outcomes based on the Nursing Outcome Classification	2.79 $\pm$ 0.94	3 (1.5)	39 (19)	99 (48.3)	39 (19)	25 (12.2)
	Total score	3.52 $\pm$ 1.05					

Note. The scoring scale was categorized as follows: 0–1 (very poor), 1.1–2 (poor), 2.1–3 (average), 3.1–4 (good), and 4.1–5 (excellent). This categorization was defined by the authors based on a 5-point Likert-type measurement scale.

Students demonstrated their strongest performance in documenting nursing interventions. The highest mean scores were observed for accurate recording of intervention labels according to the Nursing Interventions Classification (NIC) (4.17 ± 0.73) and selection of appropriate interventions (4.13 ± 0.91). Both items were classified within the excellent performance category.

In contrast, students performed less well in documenting NANDA-I diagnoses and Nursing Outcomes Classification (NOC) outcomes. The lowest mean scores were observed for accurate documentation of NOC outcome labels (2.79 ± 0.94) and selection of multidimensional diagnoses (2.89 ± 0.14), both of which fell within the average performance category. These findings indicate that students were more proficient in documenting nursing interventions than in formulating standardized nursing diagnoses and outcome statements.

Across all logbooks, a total of 633 nursing diagnoses were recorded using NANDA-I domains (Table 3). The most frequently documented domains were Safety/Protection (127 diagnoses; 20.1%), Elimination and Exchange (109; 17.2%), and Nutrition (105; 16.6%), together accounting for more than half of all diagnoses. Moderate use was noted for Activity/Rest (15.6%), Perception/Cognition (13.7%), and Coping/Stress Tolerance (9.6%). Conversely, some domains were rarely represented: Self-Perception (0.1%), Role Relationship (0.9%), and Comfort (5.1%), while Sexuality, Life Principles, and Growth/Development domains were not documented in any logbook.

Qualitative Results (Research Question 2)

The analysis generated 420 initial codes, which were grouped into 12 subcategories, 4 categories, and 2 overarching themes. In this study, subcategories represent groups of conceptually similar codes (Table 4).

Theme 1. Educational Barriers

Education-related barriers to NP implementation and use of SNLs (NANDA-I, NOC and NIC) were grouped into two main categories: inefficiency of theoretical nursing education and inefficiency of clinical nursing education.

Inefficiency of Theoretical Nursing Education. Students perceived that university education did not provide a coherent, progressive approach to the nursing process and standardized nursing language. This category included three subcategories: inefficiency of teaching methods, lack of coordination between theoretical and clinical education, and faulty evaluation.

Inefficiency of Teaching Methods. Teaching NP starts in the first semester and continues throughout the bachelor's nursing program. Different instructors teach the nursing process using their own approaches. Some focus mainly on the steps of the process rather than on standardized nursing language, while others place strong emphasis on using NANDA-I, NOC and NIC. This lack of a coherent, unified approach to teaching the nursing process and SNLs acts as a barrier to effective implementation in clinical practice.

Table 3. Frequency and Percentage of NANDA-I Nursing Diagnoses Domains

No.	NANDA's taxonomy	N	%
1	Health promotion	7	1.1
2	Nutrition	105	16.6
3	Elimination and exchange	109	17.2
4	Activity/rest	99	15.6
5	Perception/cognition	87	13.7
6	Self-perception	1	0.1
7	Role relationship	6	0.9
8	Sexuality	0	0
9	Coping/stress tolerance	60	9.6
10	Life principles	0	0
11	Safety/protection	127	20.1
12	Comfort	32	5.1
13	Growth/development	0	0
	Total	633	100

Note. The categorizing of above table is based on NANDA nursing diagnostic domains.

Table 4. The Barriers to Nursing Process Implementation by Nursing Students

Subcategories	Categories	Themes
Inefficiency of teaching methods Lack of coordination between theoretical and clinical education Faulty evaluation	Inefficiency of theoretical nursing education	Education-related barriers
Lack of supervision and control Routine-based practice Physician-oriented practice	Inefficiency of clinical nursing education	
Choosing nursing with inadequate knowledge Disinterest in care provision Poor social status of nursing	Poor job motivation	Student-related barriers
Difficulties with NANDA-I diagnostic terminology Inability to distinguish between medical and nursing interventions Difficulties in NOC outcome selection and evaluation	Lack of NP-related knowledge	

Note. Initial codes were grouped into subcategories representing conceptually similar meaning units; subcategories were then abstracted into categories and overarching themes.

We haven't learned from the first semester how to write NP. Each instructor taught NP through his/her personal method and some of them didn't teach it at all. Some instructors taught us with a specific method; but, the instructor in the next semester had another method. In summary, we haven't yet understood whether it is enough to reach nursing diagnosis or need to follow all NP steps (P. 9).

Lack of Coordination Between Theoretical and Clinical Education. Students described a wide gap between theoretical classes and clinical practice. They felt that, although quality nursing care depends on applying theoretical knowledge in clinical settings, limited coordination between theoretical and clinical education was a barrier to NP implementation.

In theoretical education classes, instructors provide examples of NP which are not clinical at all. Then, we come to clinical settings while we don't know how to write an NP. Clinical instructors don't also teach us about how to write an NP. We had only one clinical instructor who taught us about NP use; others just required us to write NP without teaching it (P. 5).

Faulty Evaluation. Students perceived that score-based evaluation, incoherent evaluation criteria and limited attention to their clinical reasoning led to superficial learning and discouraged genuine use of the NP.

Instead of implementing NP, we provided NP to our instructor just as an assignment and the instructor just marked it without giving us any feedback (P. 13).

Inefficiency of Clinical Nursing Education. This category referred to characteristics of the clinical learning environment that limited opportunities to apply the NP and SNL in authentic situations. It included three subcategories: lack of supervision and control, routine-based practice, and physician-oriented practice.

Lack of Supervision and Control. Students emphasized that appropriate supervision and timely feedback from clinical instructors are crucial for accurate documentation and use of NANDA-I, NOC, and NIC. However, they often experienced minimal oversight, with instructors focusing on routine tasks or summative evaluation instead of guiding students step-by-step through assessment, diagnosis, outcome selection, and intervention planning.

Control is an important factor in improving performance. Instructors' control and supervision ensure the accurate implementation of NP (P. 11).

Routine-Based Practice. Adherence to ward routines has always been an important concern in nursing. Students need to adhere to ward routines so that they may even ignore their professional knowledge and provide routine-based care, instead of knowledge-based care, through obeying their senior colleagues and imitating their practice. This may lead to the replacement of process-based practice with routine-based practice.

Currently, all nurses in the pediatric ward do routine work consisting of medication administration, documentation, and a series of procedures. I haven't seen them implement NP or at least make nursing diagnoses and provide care based on the diagnoses (P.12)

Physician-Oriented Practice. Although participants acknowledged that the nursing process is the best method for organizing care and problem-solving and considered it the core of nursing, they highlighted a strong culture of dependence on medical orders, in which nurses predominantly follow physicians' prescriptions and rarely engage in independent clinical reasoning. This physician-oriented climate reduced opportunities for students to practice making NANDA-I diagnoses, choosing NOC outcomes, and planning NIC interventions based on their own assessments.

Our nurses are too physician-obedient and look for medical orders. They don't have independent thinking and don't think about patients' conditions. Nurses should analyze patients' conditions and avoid dependence on physicians' orders (P. 2).

Theme 2. Student-Related Barriers

The second main theme of the barriers to NP implementation was student-related barriers. This theme had two main categories, namely poor job motivation and lack of NP-related knowledge.

Poor Job Motivation. Students described how their initial reasons for choosing nursing, their interest in care provision and their perceptions of the social status of nursing affected their motivation to engage with NP and SNL. This category included three subcategories: choosing nursing with inadequate knowledge, disinterest in care provision and poor social status of nursing.

Choosing Nursing With Inadequate Knowledge. Participants felt that many students chose nursing without a clear understanding of nursing roles and working conditions. They believed that this limited initial knowledge about nursing reduced academic motivation and made it more difficult to invest the effort needed to develop competence in nursing process implementation and documentation, as well as in using standardized terminologies such as NANDA-I, NOC and NIC.

You need to know the vision and the philosophy of nursing, the services you have to provide to patients, and your salary. Students who have entered nursing without adequate knowledge don't have strong academic motivation (P. 3).

Disinterest in Care Provision. Participants emphasized that an intrinsic interest in caring for people facilitates NP-based care. They felt that without this inner interest it was difficult to engage deeply with holistic assessment, diagnosis and outcome-oriented planning.

The first step in care is interest, i.e., one should like to do something. It will bring motivation. Then, the individual should improve his/her knowledge (P. 16).

Poor Social Status of Nursing. Participants perceived the social image of nursing as weak, often portrayed in the media as subordinate to physicians. This negative image was experienced as demotivating and undermined their commitment to developing expert skills in NP-oriented care and standardized nursing language.

TV shows a faulty image of every aspect of nursing. For example, TV series show nurses as subordinate and obedient to physicians who perform medical orders. They'd better show scenes of night shifts when physicians are absent and nurses manage a patient with cardiac arrest (P. 11).

Lack of NP-Related Knowledge. Students reported that gaps in their knowledge of the NP and SNL hindered their ability to use them in practice. This category included three subcategories: multiplicity and frequent change of the labels of nursing diagnoses, inability to distinguish between medical and nursing interventions, and problems in learning and using the labels of nursing outcomes.

Difficulties With NANDA-I Diagnostic Terminology. The large number of nursing diagnoses, frequent changes of their labels, ambiguities about their development, and unfamiliarity with their prioritization are among the barriers to NP implementation. As a result, some students tended to rely on a limited set of familiar diagnoses and applied them across different patients.

Learning these standard labels is difficult. The instructor says that the labels of our diagnoses should exactly be the same as NANDA diagnoses. Well, we can't memorize them particularly because we don't frequently use them. Therefore, we have memorized some of the diagnoses and make them for all patients (P.15).

Inability to Distinguish Between Medical and Nursing Interventions. Unfamiliarity with the labels of nursing interventions, their scope, and their connection with nursing diagnoses and outcomes can act as barriers to NP implementation.

I haven't understood yet, during these years, which tasks are nursing and which are not and which of them should be written in NP and which of them should not. I have also seen in the ward that nurses perform some tasks but don't document them because they are not nursing tasks and their performance may cause problems for nurses. We do the same in our NP reports and don't exactly know which of the tasks should be documented (P. 3).

Difficulties in NOC Outcome Selection and Evaluation. Participants reported unfamiliarity with the labels of nursing outcomes, their measurement, and their connection with nursing diagnoses and interventions as barriers to NP implementation.

Outcome measurement and NP evaluation are the most difficult part. We usually write, "Outcome has improved"; but we don't really know how we should judge about outcome improvement or its symptoms (P. 11).

Discussion

Quantitative findings showed differences across standardized nursing language components. Students scored highest in documenting nursing interventions (NIC), while lower scores were observed for nursing diagnoses (NANDA-I) and outcomes (NOC). This pattern aligns with international evidence; for example, an Estonian longitudinal study reported consistently lower scores for diagnostic and evaluative documentation than for interventions, even after targeted training (Nool et al., 2023). A possible explanation is that intervention documentation relies more on observable actions and procedural knowledge, whereas diagnoses and outcomes require advanced clinical reasoning, patient assessment, and information synthesis.

Qualitative findings help explain these differences, suggesting that the gap reflects broader educational and clinical challenges rather than knowledge deficits alone. A key factor was the persistent theory–practice gap, marked by limited alignment between curricula and clinical practice. Although students reported positive attitudes toward NANDA-I, many felt inadequately prepared for independent bedside use (Abed El-Rahman et al., 2017; Yalcinkaya et al., 2025). This indicates a need for greater emphasis on repeated clinical application of standardized nursing language beyond classroom instruction.

Furthermore, participants identified traditional, passive teaching methods as barriers to nursing process implementation (Backzadeh et al., 2021; Rajabpoor et al., 2018). This was reinforced by dissatisfaction with evaluation methods perceived as subjective and poorly aligned with clinical competencies, with greater emphasis on summative than formative assessment (Alavi et al., 2022; Farzi et al., 2016). These findings suggest that difficulties in documenting nursing diagnoses and outcomes may stem not only from limited familiarity with terminology but also from shortcomings in teaching and assessing clinical reasoning.

When these educational barriers are combined with routine-based, physician-oriented clinical environments, students may have fewer opportunities to practice independent assessment and decision-making (Ghafari & Mohammadi, 2012; Vafadar et al., 2015). Consequently, they may focus more on task completion and intervention documentation than on the reasoning required for accurate diagnoses and outcome evaluation. Although supported by the mixed-methods findings, this interpretation remains non-causal.

Integration of the findings also helps explain the distribution of nursing diagnoses. Quantitatively, the "Safety/Protection" domain was most frequently documented, consistent with studies in acute-care settings where immediate physiological risks dominate care priorities (Babaei et al., 2020; D'Agostino et al., 2017; Lima et al., 2016). In contrast, the "Self-perception" and other psychosocial domains were least documented, supporting evidence that nursing students tend to prioritize physiological over psychosocial problems when developing care plans (Babaei et al., 2020; Noh & Lee, 2015; Türk et al., 2013).

Qualitative findings further clarified this pattern. Participants reported a curricular focus on physical health problems, potentially limiting preparedness for psychosocial assessment. Time constraints, lack of effective role models, and concerns about patient privacy were also identified as barriers to addressing psychosocial issues (Mersin et al., 2019). Together, these factors suggest that the underrepresentation of psychosocial diagnoses reflects both educational priorities and clinical context. Enhancing psychosocial assessment skills through simulation, reflective learning, and supervised practice may support more holistic nursing care.

Students also reported difficulty distinguishing nursing from medical diagnoses, consistent with previous studies (Abed El-Rahman et al., 2017; Yalcinkaya et al., 2025). These difficulties appeared to coexist with broader student-related barriers, including low job motivation and perceptions of the poor social status of nursing. According to Vroom's Expectancy Theory, motivation can influence professional engagement and development (Latham, 2011). Previous studies have also shown that negative public perceptions of nursing, professional subordination, and inadequate social recognition may affect nurses' professional identity and job satisfaction (Farsi et al., 2010; Shamsi & Peyravi, 2020; Yun et al., 2010). Although causality cannot be established, such factors may reduce engagement with nursing frameworks requiring independent clinical judgment.

These findings may partly explain students' difficulties with diagnostic reasoning and outcome evaluation. While causal inferences are not possible, integrating quantitative and qualitative data offers important implications for nursing education. Improving competence in standardized nursing language may require more than additional theoretical instruction. Active learning approaches, including concept mapping, case-based learning, structured care planning, and guided use of NNN terminology, may strengthen diagnostic and evaluative skills (Kargar Jahromi, 2017; Smith & Craft-Rosenberg, 2010). Clearer evaluation criteria, formative feedback, and stronger integration of classroom and clinical learning may further promote reflective, patient-centered practice.

Strengths and Limitations

This explanatory sequential mixed-methods study combined quantitative analysis of 121 pediatric nursing clinical logbooks with qualitative interviews, providing a comprehensive understanding of nursing process documentation and barriers to using standardized nursing language. Integrating quantitative and qualitative findings enabled deeper interpretation of students' documentation practices and contextual influences. Additional strengths include the systematic classification of NANDA-I diagnoses according to Taxonomy II domains and the use of documentation from real clinical practice rather than simulated settings.

Several limitations should be considered. The study was conducted in a single nursing faculty and one clinical course, which may limit transferability. Although the documentation checklist showed acceptable validity and reliability, its psychometric properties require further evaluation. The sample consisted of sixth-semester nursing students with similar educational backgrounds and no prior clinical experience; therefore, only limited demographic data were available, restricting assessment of the influence of student characteristics on documentation performance. Moreover, logbooks may not fully reflect actual clinical performance because documentation can be influenced by educational and assessment requirements. Finally, the use of mainly descriptive analyses limited exploration of factors associated with documentation quality.

Implications for Practice

The findings indicate that nursing students need stronger support in developing diagnostic reasoning and outcome evaluation skills, particularly in using NANDA-I and NOC terminology. Competence in standardized nursing language should be strengthened through both theoretical instruction and active learning strategies such as case-based learning, simulation, and structured care-plan development.

Bridging the theory–practice gap through closer collaboration between academic and clinical educators, consistent supervision, and formative feedback may improve students' application of the nursing process in clinical practice. Increased attention to psychosocial assessment and underrepresented diagnostic domains may further support more holistic, patient-centered nursing care.

Conclusion

The findings indicate that undergraduate nursing students showed greater competence in documenting nursing interventions than in formulating nursing diagnoses and evaluating outcomes using standardized nursing language. Difficulties with NANDA-I diagnoses and NOC outcomes reflect challenges in diagnostic reasoning, outcome evaluation, and comprehensive patient assessment.

Integrated quantitative and qualitative results suggest that educational and clinical factors such as the theory–practice gap, limited opportunities for independent clinical reasoning, and routine-driven clinical environments may impede effective use of the nursing process and standardized language.

These findings highlight the need for greater emphasis on diagnostic and outcome-oriented reasoning through active learning strategies, structured clinical supervision, and stronger integration of theory and clinical practice. Future research

should examine the effectiveness of such approaches in improving students' competence in nursing process implementation and standardized documentation.

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Ethical Considerations

This study was performed in accordance with the Helsinki Declaration. Ethical approval for this study was secured from the Ethics Committee of Shahid Beheshti University of Medical Sciences, Tehran, Iran (code: IR. SBMU.PHARMACY.REC.1403.171).

Consent to Participate

Information about the study aim, participation voluntariness, and data confidentiality was provided to participants and then, their informed consent was obtained.

Consent for Publication

Not applicable: The manuscript does not contain any identifiable personal data; all interview excerpts are fully anonymized.

Author Contributions

(I) Conception and design: Dr Maryam Varzeshnejad, Dr Zohreh Nabizadeh Gharghozar (II) Collection and assembly of data: Dr Maryam Varzeshnejad, Dr Zohreh Nabizadeh Gharghozar; (III) Data analysis, interpretation and integration: Dr Zohreh Nabizadeh Gharghozar, Dr Maryam Varzeshnejad; (IV) Manuscript writing: All authors; (V) Graphical Abstract design: Mr. Aydin Feyzi; (VI) Final approval of manuscript: All authors.

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Data Availability Statement

The interview dataset generated and analyzed during the current study are not publicly available due to promises of participant anonymity and confidentiality. However, on reasonable request the data could be available from the corresponding author. All applications should be sent to nabizadehfaezeh85@yahoo.com. All requests will be answered within a maximum of 1 month by email. The data is available with the corresponding author and can be shared on genuine request.

Use of Artificial Intelligence Tools

The authors used ChatGPT (OpenAI) only to improve the language of the manuscript. All scientific content, data, and interpretations are the authors' own work, and AI suggestions were reviewed and verified by the authors.

References

- Abdelkader, F. A., & Othman, W. N. (2017). Factors affecting implementation of nursing process: Nurses' perspective. *IOSR Journal of Nursing and Health Science*, 6(3), 76–82. <https://doi.org/10.9790/1959-0603017682>
- Abed El-Rahman, M., Al Kalaldehy, M. T., & Malak, M. Z. (2017). Perceptions and attitudes toward NANDA-I nursing diagnoses: A cross-sectional study of Jordanian nursing students. *International Journal of Nursing Knowledge*, 28(1), 13–18. <https://doi.org/10.1111/2047-3095.12100>
- Afoi, B., Emmanueul, A., Garba, S., Gimba, S., & Afuwai, V. (2012). *Evaluation of the implementation of nursing process among nurse clinicians*. Master's thesis, Ahmadu Bello University.

- Alavi, N. M., Nabizadeh-Gharghozar, Z., & Ajorpaz, N. M. (2022). The barriers and facilitators of developing clinical competence among master's graduates of gerontological nursing: a qualitative descriptive study. *BMC Medical Education*, 22(1), Article 500. <https://doi.org/10.1186/s12909-022-03553-x>
- Azevedo, O. A., Guedes, É. D., Araújo, S. A., Maia, M. M., & Cruz, D. D. (2019). Documentação do processo de enfermagem em instituições públicas de saúde. *Revista da Escola de Enfermagem da USP*, 19;53:e03471. <https://doi.org/10.1590/S1980-220X2018003703471>
- Babaei, N., Rassouli, M., Farahani, A. S., Manoochehri, H., Beykmirza, R., & Varzeshnejad, M. (2020). Compliance and frequency of nursing diagnoses registered in pediatric oncology wards with Nanda nursing diagnosis. *Hayat*, 1;26(2): 61.
- Backzadeh, A., Aghamohammadi, V., Saeedi, S., & Nasiri, K. (2021). Barriers to The implementation of the nursing process from the perspective of nurses working in ardabil and khalkhal university hospitals in 2020. *Journal of Nursing Education*, 10(4), 1–8.
- Bahador, R. S., Nouhi, E., & Sabzevari, S. (2018). The effect of nursing process training on critical thinking and quality of nursing care. *Journal of Clinical Nursing and Midwifery*, 7(3), 202–209.
- Chun Tie, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. *SAGE open medicine*, 7, Article 2050312118822927. <https://doi.org/10.1177/2050312118822927>
- Cruz, D. d. A. L. M. d., Guedes, E. d. S., Santos, M. A. d., Sousa, R. M. C. d., Turrini, R. N. T., Maia, M. M., & Araújo, S. A. N. (2016). Nursing process documentation: rationale and methods of analytical study. *Revista Brasileira de Enfermagem*, 69(9), 197–204.
- D'Agostino, F., Sanson, G., Cocchieri, A., Vellone, E., Welton, J., Maurici, M., Alvaro, R., & Zega, M. (2017). Prevalence of nursing diagnoses as a measure of nursing complexity in a hospital setting. *Journal of advanced nursing*, 73(9), 2129–2142. <https://doi.org/10.1111/jan.13285>
- Farsi, Z., Dehghan-Nayeri, N., Negarandeh, R., & Broomand, S. (2010). Nursing profession in Iran: an overview of opportunities and challenges. *Japan journal of nursing science*, 7(1), 9–18. <https://doi.org/10.1111/j.1742-7924.2010.00137.x>
- Farzi, S., Haghani, F., & Farzi, S. (2016). The challenges of clinical evaluation and the approaches to improve it from the nursing students' perspective: A qualitative study. *Journal of Education and Ethics in Nursing*, 5(1), 27–33.
- Fathi, K. Y., & Ibrahim, R. H. (2023). Factors influencing integration of theory into practice in clinical skills acquisition among nursing students. *Informatics in Medicine Unlocked*, 37, Article 101181. <https://doi.org/10.1016/j.imu.2023.101181>
- Fernane, F. E., Boutib, A., Refki, I., Chergaoui, S., Azizi, A., Marfak, A., & Youlyouz-Marfak, I. (2025). The impact of NANDA-I, Nursing Interventions Classification (NIC), and Nursing Outcomes Classification (NOC) on the improvement of nursing practice worldwide: Systematic review. *International Journal of Nursing Knowledge*, 30. <https://doi.org/10.1111/2047-3095.70024>
- Ghafari, S., & Mohammadi, F. (2012). Concept analysis of nursing care: A hybrid model. *J Mazandaran Univ Med Sci*, 21(1), 153–164.
- Graneheim, U. H., & Lundman, B. (2004). Qualitative content analysis in nursing research: concepts, procedures and measures to achieve trustworthiness. *Nurse Education Today*, 24(2), 105–112. <https://doi.org/10.1016/j.nedt.2003.10.001>
- Guba, E. G., & Lincoln, Y. S. (1989). *Fourth generation evaluation*. Sage.
- Heidari, H., & Akbari, N. (2017). Developing and Implementing Log Book in Teaching Principles and Techniques to Nursing and Midwifery Students: Mixed Method Study. *Future of Medical Education Journal*, 7(1), 14–22.
- Iqbal, U., Gondal, K. M., Qureshi, A. U., & Khan, U. A. (2015). E-Log system in monitoring of residency program: trainees' perspective. *J Coll Physicians Surg Pak*, 25(7), 501–504.
- Jones, D., Lunney, M., Keenan, G., & Moorhead, S. (2010). Standardized nursing languages: essential for the nursing workforce. *Annual review of nursing research*, 28(1), 253–294. <https://doi.org/10.1891/0739-6686.28.253>
- Julie, N. K., Simon, I. K., Irène, K. U., Charles, M. M., Mahuridi, A., Narcisse, M. K., & Françoise, M. K. (2017). Barriers to the implementation of the nursing approach in public hospitals in Lubumbashi in the Democratic Republic of Congo: A cross-sectional descriptive study. *Open Access Library Journal*, 4(07), 1–14. <https://doi.org/10.4236/oalib.1103721>
- Kamau, M., Maingi, N., Ndungu, E., & Karonjo, J. (2016). Implementation of Nursing Process among Nurses Working in in-Patients Wards in Rift Valley Provincial General Hospital, *Baraton Interdisciplinary Journal of Research*, 6, 63–70.
- Kargar Jahromi, M. (2017). The effect of education nursing process according to conceot map on learning of nursing process. *Journal of Nursing Education*, 6(4), 65–71.
- Latham, G. P. (2011). *Work motivation: History, theory, research, and practice*. Sage Publications.
- Lea, S. F., Anema, M. G., Briscoe, V. J., & Allie, H. (2001). The nursing process: What do students know? *ABNF Journal*, 12(1), 3–8.
- Lima, A. C. M. A. C. C., Silva, A. L. d., Guerra, D. R., Barbosa, I. V., Bezerra, K. d. C., & Oriá, M. O. B. (2016). Nursing diagnoses in patients with cerebral vascular accident: an integrative review. *Revista Brasileira de Enfermagem*, 69(4), 785–792. <https://doi.org/10.1590/0034-7167.2016690423i>
- Mersin, S., Demiralp, M., & Öksüz, E. (2019). Addressing the psychosocial needs of patients: Challenges for nursing students. *Perspectives in Psychiatric Care*, 55(2), 269–276. <https://doi.org/10.1111/ppc.12365>
- Moghadas, T., & Sedaghati, K. M. (2020). Factors influencing implementation of nursing process by nursing students: a qualitative study. *Journal of Medical Education*, 19(4), Article e110810. <https://doi.org/10.5812/jme.110810>

- Mwangi, C., Meng'anyi, L. W., & Mbugua, R. G. (2019). Utilization of the nursing process among nurses working at a level 5 hospital, Kenya. *International Journal of Nursing Science*, 9(1), 1–11. <https://doi.org/10.5923/j.nursing.20190901.01>
- Nabizadeh-Gharghozar, Z., Alavi, N. M., & Ajorpaz, N. M. (2021). Clinical competence in nursing: A hybrid concept analysis. *Nurse Education Today*, 97, Article 104728. <https://doi.org/10.1016/j.nedt.2020.104728>
- Noh, H. K., & Lee, E. (2015). Relationships Among NANDA-I Diagnoses, Nursing Outcomes Classification, and Nursing Interventions Classification by Nursing Students for Patients in Medical-Surgical Units in Korea. *International Journal of Nursing Knowledge*, 26(1), 43–51. <https://doi.org/10.1111/2047-3095.12044>
- Nool, I., Tupits, M., Parm, L., Hörrak, E., & Ojasoo, M. (2023). The quality of nursing documentation and standardized nursing diagnoses in the children's hospital electronic nursing records. *International Journal of Nursing Knowledge*, 34(1), 4–12. <https://doi.org/10.1111/2047-3095.12363>
- O'cathain, A., Murphy, E., & Nicholl, J. (2008). The quality of mixed methods studies in health services research. *Journal of health services research & policy*, 13(2), 92–98. <https://doi.org/10.1258/jhsrp.2007.007074>
- Rajabpoor, M., Zarifnejad, G., Mohseni, Z. S. M., Mazloun, S. R., Pourghaznein, T., & Mashmoul, A. M. A. (2018). Barriers to the implementation of nursing process from the viewpoint of faculty members, nursing managers, nurses, and nursing students. *Journal of Comprehensive Nursing and Midwifery*, 28(88), 22–32.
- Rodriguez-Suarez, C.-A., Gonzalez-de la Torre, H., Hernandez-De Luis, M.-N., Fernandez-Gutierrez, D.-A., Martinez-Alberto, C.-E., & Brito-Brito, P.-R. (2023). Effectiveness of a standardized nursing process using NANDA international, nursing interventions classification and nursing outcome classification terminologies: a systematic review. *Healthcare*, 11(17), Article 2449. <https://doi.org/10.3390/healthcare11172449>
- Seçer, S., & Karaca, A. (2021). Evaluation of nurses' perceptions of nursing diagnoses and their opinions regarding the application of nursing process. *Florence Nightingale Journal of Nursing*, 29(2), 229–238. <https://doi.org/10.5152/FNJN.2021.20034>
- Shamsi, A., & Peyravi, H. (2020). Nursing shortage, a different challenge in Iran: A systematic review. *Medical journal of the Islamic Republic of Iran*, 34, Article 8. <https://doi.org/10.34171/mjiri.34.8>
- Shiferaw, W. S., Akalu, T. Y., Wubetu, A. D., & Aynalem, Y. A. (2020). Implementation of Nursing Process and Its Association with Working Environment and Knowledge in Ethiopia: A Systematic Review and Meta-Analysis. *Nursing research and practice*, 2020(1), Article 6504893. <https://doi.org/10.1155/2020/6504893>
- Smith, K. J., & Craft-Rosenberg, M. (2010). Using NANDA, NIC, and NOC in an undergraduate nursing practicum. *Nurse educator*, 35(4), 162–166. <https://doi.org/10.1097/NNE.0b013e3181e33953>
- Türk, G., Tuğrul, E., & Şahbaz, M. (2013). Determination of nursing diagnoses used by students in the first clinical practice. *International Journal of Nursing Knowledge*, 24(3), 129–133. <https://doi.org/10.1111/j.2047-3095.2013.01243.x>
- Vafadar, Z., Vanaki, Z., & Ebadi, A. (2015). Barriers to implementation of team care and interprofessional education: the viewpoints of educational managers of Iranian health system. *Iranian Journal of Medical Education*, 14(11), 943–956.
- Yalcinkaya, T., Ünsal, E., Dönmez, A., & Yucel, S. C. (2025). "I would like to use it more effectively..." nursing student's experiences with NANDA-I nursing terminology: a qualitative descriptive study. *BMC nursing*, 24(1), Article 55. <https://doi.org/10.1186/s12912-025-02724-7>
- Yun, H., Jie, S., & Anli, J. (2010). Nursing shortage in China: State, causes, and strategy. *Nursing outlook*, 58(3), 122–128. <https://doi.org/10.1016/j.outlook.2009.12.002>
- Zamani Babgohari, K., Mokhtari Nouri, J., Kadhem Al-Hosseini, S., & Ebadi, A. (2022). The effect of implementation of evidence-based nursing guidelines on the quality of standards of nursing care in patients admitted to the coronary care unit. *Education and Ethics In Nursing*, 3(1), 35–42.
- Zamanzadeh, V., Valizadeh, L., Tabrizi, F. J., Behshid, M., & Lotfi, M. (2015). Challenges associated with the implementation of the nursing process: A systematic review. *Iranian journal of nursing and midwifery research*, 20(4), 411–419. <https://doi.org/10.4103/1735-9066.161002>