

A TOOL TO MEASURE NURSE STUDENTS' CRITICAL THINKING COMPETENCE AT EXIT OF THEIR INITIAL EDUCATION IN CAMEROON

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ABSTRACT: *The American Nurses Association (ANA, 2010) and other nurse associations (South African Nursing Council nd; College of Nursing of Ontario, 2009), established scopes and standards of nursing practice to portray competences nurse students are expected to leave the training with. These standards are all about the nursing process, meaning the nurse ability to think critically. Regrettably, majority of current nursing curricula in Cameroon don't include specifications regarding expected competences. They are limited just to a list of courses to teach. Such a situation probably explains why nurses in Cameroon don't meet international standards and lack performance. Again, Cameroon nursing programs essentially assess knowledge and neglect competence assessment. This is because there is no appropriate instrument for that. That is why the goal of this work was to propose a tool to measure nurse students' critical thinking competence at exit of their initial education. To achieve this goal, 40 nursing experts were purposively and conveniently selected from hospitals and schools. The quantitative design and the survey method were thought suitable. Ethical principles were rigorously observed. The Statistical Package for the Social Sciences (SPSS) version 19 was used for data analysis. Results showed that, majority of participants had between 36 and 45 years old, with 6-15 years of clinical experience. Many of them teach Medical and Surgical Nursing, Nursing Concepts and Theories or Nursing Foundations for registered or bachelor nurse students. The proposed tool consists of three domains and nine competencies measured with six critical thinking questions. Experts agreed at least at 80% for all domains and competencies, except for documentation (77.5%) and for justification of each formulated nursing diagnosis using its characteristics (75%). The cronbach's alpha coefficient for domains and competencies was 0.70. Experts agreed at 90% on critical questions 2 and 4. They agreed at 85% and at 87.5 on critical questions 5 and 6. The cronbach's alpha coefficient for the critical thinking questions was very good (0.84).*

KEYWORDS: critical thinking competence, nurse student, initial nursing education.

INTRODUCTION

Nowadays curriculum has shifted towards competences with educational standards at different levels. As a consequence, internationally, there is some consistency and standardization in the way curricula are organized. For instance, the American Nurses Association (ANA, 2010) established Scope and standards of practice in nursing, meaning competences nurse students are expected to demonstrate at exit of their training. ANA refers to the Scope of Nursing Practice as the range of nursing practice activities common to all nurses. The Standards of Professional Nursing Practice are authoritative statements of the duties that all nurses are expected to perform competently (ANA, 2010). Nursing standards portray what each nurse is accountable for in practice, they stand for performance criteria for nurses. In this perspective, the College of Nursing of Ontario (2009) maintained that nursing standards are expectations that contribute to public protection; they inform nurses of their accountabilities and the public

of what to expect from nurses. In the same sense, to ANA (2010), Standards are the competent levels of nursing care demonstrated through the nursing process. Following are the six standards of practice described by ANA (2010):

- **Standard 1:** The nurse collects comprehensive data relevant to the healthcare consumer's health and/or situation.
- **Standard 2:** The nurse analyzes the assessment data to determine the diagnoses or the issues.
- **Standard 3:** The nurse identifies expected outcomes for a plan individualized to the healthcare consumer or the situation.
- **Standard 4:** The nurse develops a plan that prescribes strategies and alternatives to attain expected outcomes.
- **Standard 5:** The nurse implements the identified plan.
- **Standard 5a (Coordination of care):** The nurse coordinates care delivery.
- **Standard 5b (health teaching and promotion):** The nurse employs strategies to promote health and a safe environment.
- **Standard 5c (consultation):** The graduate-level prepared specialty nurse or advanced practice registered nurse provides consultation to influence the identified plan, enhance the abilities of others, and effect change.
- **Standard 5d (prescriptive authority and treatment):** The advanced practice nurse uses prescriptive authority, procedures, referrals, treatments, and therapies in accordance with state laws and regulations.
- **Standard 6 (evaluation):** The nurse evaluates progress toward attainment of outcomes.

It is important to highlight that the above described standards are all about the nursing process. This implies that the heart of nurse competence is the nursing process. Again, not only the United State of America established standards for nursing profession and practice. France did same. French standards of nursing practice are ten. They are described as expected competences of nurses (Arrêté du 31 juillet 2009). They also describe the nursing process, the nurse critical thinking competence. They are:

- To evaluate clinical situations and to establish nursing diagnoses,
- To design and to conduct a nursing project,
- To guide the patient in the realization of his daily care,
- To implement diagnostic and therapeutic actions,
- To initiate and to implement educative and preventive care actions,
- To communicate and to conduct relationship within a caring context,
- To analyze care quality and to improve professional practice,

- To seek for and to handle professional and scientific data,
- To organize and to coordinate nursing interventions,
- To inform and to train staff and students.

In the same line, the South African Nursing Council established standards of nursing education and training programs. Among these standards critical, analytical and reflective thinking occupy a central place. This means that, without effective critical thinking, nurses cannot meet their expectations. Obviously, critical thinking is a fundamental dimension of nursing. So, an effective nurse is the one who shows mastery in critical thinking, which is to effectively carry out of the nursing process. But, in Cameroon, nurses seem not to meet those standards as yet. In fact, it can be said that, internationally, nursing education has evolved speedily since introduction of bachelor nursing training in universities. For example in Kenya so many changes have happened in nursing education all through the last fifteen years or so as Chege, Mwaniki, and Abuya (2013) reported. Conversely, though Cameroon has also witnessed the introduction of nursing curricula at undergraduate level in several government and private universities since 1999, with the first ever post-graduate nursing program being launched at the University of Buea, the situation appears to have remained the same. Rather, these changes should, normally, have resulted at ensuring high level of competence in nursing practice and education.

In addition, according to my observations as clinical nurse and nurse educator, there is a discrepancy between what nurses are expected to be able to do (their competence/the standards) and what they are doing in reality (their performance). In fact, it can be said that nurses in the field really lack critical thinking skills, they seem not to fit any of the standards in relation to carrying out the nursing process. Yet this is of great concern to the profession, the employers, the healthcare receivers, and to the society as a whole. So many nurses in Cameroon hospitals cannot collect relevant data from the patient (on the basis of a nursing model), they hardly analyze collected data in order to derive nursing diagnoses or issues, they face many difficulties to identify appropriate outcomes for the patient, or to draw a comprehensive care plan. Whereas these constitute aspects of critical thinking in nursing, as recognized internationally, and described by ANA (2010). However, Cameroon program content includes subjects that can help develop above competences (such as nursing models and nursing process). Although much energy and time are consumed in teaching those subjects in nursing schools, nurses in health care facilities seem not to show tangible indicators of such competences. Eyinga (2010) maintained that, when asked to list some nursing diagnoses from their day-to-day practice, clinical nurses mainly indicate medical diagnoses rather than nursing ones. They even talk of terms such as paleness, œdema, naso-gastric catheter, abdominal pressure that are neither medical diagnoses nor nursing diagnoses. Such a situation leads nurses to hardly ever identify appropriate nursing interventions. That is why one easily observes that nurses in Cameroon limit their interventions and actions to the application of medical prescriptions. This is shown in their nursing files, where it exists, by the fact that the few elements that usually appear in are the biologic parameters, wound dressings and medicinal treatments. From this situation it is evident that, their interventions are not always adapted to the clinical situation of the patient.

On the other hand, nurses in Cameroon rarely document their interventions for traceability insurance. In majority of hospitals, there is no nursing file to document nursing interventions, no nursing care plan, and they just make use of a monitoring slip. All of these observations put light on the issues of developing and assessing nurses' competences at exit of their training.

Unfortunately in Cameroon, programs do not include assessment of competence. The evaluation practice mainly stresses assessment of knowledge. The programs should then be revised in such a way that individual to be assessed and assessors be adequately prepared for. If this is done, programs will be more likely to determine the ability, readiness and quality of nurses at exit of their training. This may be a good predictor of the quality of health services to be offered.

In short, until today, in Cameroon, it may be difficult to find patient files where a complete nursing process is displayed, with a nurse having assessed patient health situation using a nursing model, elaborated nursing diagnoses, identified appropriate nursing interventions, properly planed nursing interventions, properly implemented nursing interventions, insured traceability, and evaluated nursing interventions. All which should indicate nurses' critical thinking competence. Consequently it can be said that nurses in Cameroon are not leaving to expectations and so lack critical thinking competence. That is why this study is undertaken to construct a tool to measure nurse students' critical thinking competence at exit of their program. That is why the objectives of this study are the following:

1. To determine the domains and competencies that should be included in the tool for the assessment of critical thinking competence of nursing students at exit from their initial training;
2. To identify nursing models that are the more commonly taught in Cameroon institutions offering initial nursing education;
3. To identify the nursing diagnoses that are the most recurring in the medical and surgical wards in Cameroon context and for that reason they should be taught and included in the tool for the assessment of critical thinking competence of nurse students at exit from their initial training;
4. To determine the questions that better assess the nurse student integrated mastery to 1) evaluate clinical situations using a nursing model, 2) establish nursing diagnoses and 3) draw a comprehensive nursing care plan, given a test on any of the most recurring nursing diagnoses.

To evaluate nurse students' competence is contributing to quality insurance in nursing education, particularly when we consider the transition between training institutions and workplaces. So, this study ensures more safe and holistic nursing for the nursing profession, the healthcare providing institutions, individual nurses and the Cameroon society as a whole.

In the context of this study the term initial nursing education is used to refer exclusively to Registered Nurse program, High National Diploma (HND) program, "Diplôme Supérieur d'Etude Professionnelle" (DSEP) program, and Bachelor program. The concept critical thinking competence is used to mean the ability of a last year nurse student to show an integrated mastery of the following three competencies: to evaluate clinical situations using a nursing conceptual model, to establish nursing diagnoses and to draw a comprehensive nursing care plan.

METHODOLOGY

Design of the study

Some of the factors that determine the choice of one or another design in a research work is the nature of the research objectives and the nature of the research problem. Descriptive questions like it is the case in the present work can benefit from either a quantitative or a qualitative design. That is why a quantitative design was used in the study. The personal and the electronic survey method were used in this work.

Area of study

This study was carried out here in Cameroon, in Yaounde. Yaoundé is the regional capital for Center as well as the administrative and political headquarters of the country. It is the second largest city of the country. The country is composed of ten regions, 58 departments, 360 districts, 14 urban councils, and 360 counties, with 189 health districts, 14.24% HIV/Aids mortality rate, 31.70% chronic malnutrition rate, 782 maternal mortality rate (deaths per 100,000 live births), 103% under 5 years mortality rate (MPH, WHO, 2016).

As concerns Nursing Education, four state universities offer bachelor program in nursing education. Five private institutions also offer nursing education at the bachelor level or more; other private institutions of higher education offer Higher National Diploma or equivalent program in nursing (Ministry of Higher Education, 2014).

Population of study

The current study was interested in nursing experts. But since it was not possible to get to all of the nursing experts in the Center region of Cameroon, the accessible population was constituted of those who work in some particular schools and hospitals in the region. From them the sample was derived.

Sample and sampling technique

The sample techniques that were used in this research are the convenient and purposive sampling techniques. The choice of the Center Region was purposive. The reason is that the unique university training nursing experts (Master in nursing) is located there. This choice was also convenient because the researcher has easy access to schools and hospitals in that region. The other university that trains nursing expert is located in Buea. But due to the social climate in the country during the period of the study, this university was not selected.

On the other hand, we used the census approach to select participant in the study. This choice was because they are not too many nursing experts in the country. So, all those who were available and accepted to participate in the study were included. They were from the University Teaching Hospital of Yaoundé, Central Hospital of Yaoundé, and from the School of Nursing, Catholic University of Central Africa, the Specialized Nursing School of Yaoundé, and the Higher Institute of Health Sciences, Adventist University Cosendai.

Instrumentation

A questionnaire was used. It was a fixed set of questions that were administered by paper and pencil and through internet by mailing. We thought this method was appropriate because we were interested in determining how strongly nursing experts hold opinion on:

1. the domains and competencies that should be included in the tool for the assessment of critical thinking competence of nurse students at exit from their initial training;
2. nursing models that are the more commonly taught in Cameroon institutions offering initial nursing education;
3. the nursing diagnoses that are the most recurring in the medical and surgical wards in Cameroon context and for that reason they should be taught and included in the tool for the assessment of critical thinking competence of nurse students at exit from their initial training;
4. the questions that better assess the nurse student integrated mastery to 1) evaluate clinical situations using a nursing conceptual model, 2) establish nursing diagnoses and 3) draw a comprehensive nursing care plan, given a test on any of the most recurring nursing diagnoses.

Other reasons why we chose the survey include its fairly easy administration. Again, questionnaires are more reliable thanks to the use of fixed-response questions that reduce variability in the results that may be caused by differences in interviewers and therefore enhance reliability of the responses. They also simplify coding, analysis, and interpretation of data. Again, data are more probable to be generalized.

To enhance survey response rates we priority notify participants by sending them a letter, thereby informing them of the imminent personal survey. We also re-contacted the non-respondents periodically after the initial contact.

Instrument validation and reliability

In this research study, face validity of instruments was guaranteed by having the items reviewed by lecturers of Faculty of Management and Computer Science of Cosendai Adventist University, Douala Campus. This choice was due to our easy access to lecturers of that institution. In fact, lecturers were presented with the questionnaire and were required to indicate how good they feel that items of each question look.

As concerns content validity, five nursing experts, holders of Master Degree in nursing, drawn from Medical-surgical wards, two from Gynecologic and Obstetrics Hospitals of Douala, and three from Regional Hospital of Garoua were required to examine the items on the questionnaire to ensure that it contains all that it should and nothing that it should not.

Additionally, the reliability of the questionnaire was tested. The cronbach's alpha, which is a function of average inter-correlations of items and the number of items in the instruments, was 0.96 which is superior to the 0.70 recommended.

Administration of instruments

Participants were asked to voluntarily participate in the study. Their anonymity was assured because no names or other identifying information was used. The confidentiality of information obtained from them was also guaranteed. They were informed that, those data will only be used for research purposes. Again, participants were informed that they were free to withdraw from the study at any time without incurring penalties or any other form of negative treatment. In fact, no foreseeable risks to the participants were identified.

Questionnaires were administered after an arranged appointment made with participants. The questionnaires were given back two hours, after its administration for the personal survey method; and one week was given to participants to complete the electronic questionnaire. This prevented participants from exchanging ideas or responses.

Nursing experts were required to examine the items on the proposed tool and to determine if the domains and items presented are representative of nurse critical thinking. Experts implicated in the validity of the instrument were excluded from the sample.

Procedure for data analysis

When data were collected, a descriptive statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 19. A description of sample characteristics was provided. Frequencies and percentages were computed for all socio-demographic data (gender, years of teaching experience, years of clinical experience, program of intervention, and courses taught). Tables were used to portray them.

The internal consistency reliability technique has been used in this study. This is because the technique fits the case where the researcher deals with groups of items that are thought to measure different aspects of the same concept: nursing models, nursing diagnoses, competence domains, and critical thinking questions. Each of these concepts is composed of so many items to be measured. The Cronbach's alpha coefficient was used to quantify the reliability of the instruments. The instrument was said to be reliable, because the coefficient was 0.96 which is superior to 0.70. The use of this technique helped to see how well the different items of the questionnaire complement each other in the measurement of the variables concerned.

Additionally, though Waltz, Strickland and Lenz (2005) recommended 90% rater agreement, in this study 80% was considered relevant.

RESULTS

This study involved 40 nursing experts, mixing up male (19) and female (21). They were either nurse educator or nurse clinician. They worked in public as well as private universities and hospitals. They taught so different courses in different nursing programs. Their age, their experiences in teaching and clinical practice were also so varied. Tables 1 to 5 give more details.

Table 1 : Participants' age

Age in years	Frequencies	Percentage
20-25	1	2.5
26-30	6	15
31-35	6	15
36-40	13	32.5
41-45	7	17.5
46-50	3	7.5
51-55	3	7.5
56-60	1	2.5
Total	40	100

Table 1 reveals that majority of participants were aged between 36 and 45 years.

Table 2 : Participants' years of clinical experience

Years	Frequencies	Percentage
No response	1	2.5
< 1	3	7.5
1-5	7	17.5
6-10	12	30
11-15	11	27.5
16-20	3	7.5
>20	3	7.5
Total	40	100

From table 2, clinical experience of participants is concentrated between 6 and 15 years.

Table 3 : Participants' years of teaching experience

Years	Frequencies	Percentage
No response	6	15
< 1	5	12.5
1-5	14	35
6-10	14	35
11-15	0	0
16-20	1	2.5
>20	0	0
Total	40	100

Table 3 indicates that, participants' years of teaching experience mostly fall between 1 and 10 years.

Table 4 : Participants' teaching program

Program	Frequencies	Percentage
Registered nurse	21	40.39
High National Diploma/Diplôme Supérieur d'Etude Professionnelle	8	15.38
Bachelor	15	28.85
Other	8	15.85
Total	52	100

Table 4 shows that, majority of participants teaches either in registered nurse program (21) or in the bachelor program (15).

Table 5 : Subjects taught by participants

Course titles	Frequencies	Percentage
Anatomy	9	8.26
Cardiovascular diseases	1	0.91
Concepts and theories in nursing	18	16.51
Ethics	5	4.58
Geriatrics	4	3.7
Health Mutual benefit societies	1	0.91
Medical and surgical nursing	22	20.18
Medicine at work	5	4.58
Nursing domains of practice	16	14.7
Nursing foundations	15	13.76
Nursing process	3	2.75
Obstetrics	1	0.91
Ophthalmology nursing	1	0.91
Otorhinolaryngology nursing	6	5.5
Pharmacology	2	1.84
Total	109	100

Table 5 indicates that majority of participants in this research teaches either Medical and Surgical Nursing (22), Concepts and Theories in Nursing (18), Nursing Domains of practice (16) or Nursing Foundations (15).

The tool was designed to be used for medical and surgical nursing courses. It consists of three domains namely: Health assessment of the patient using a recognized nursing framework, Documentation, and Comprehensive care plan. Tables 6 to portray participants' agreement rate on each domain and related competencies.

Tableau 6 : Domains and competencies of the proposed tool

S/N	Domains and competencies	Percentage				
		No responses	SD	D	A	SA
1	Domain 1: Health assessment of the patient using a recognized nursing framework	7.5	0	0	30	62.5
2	Competency 1: History taking	5	0	0	20	75
3	Competency 2: Physical examination	7.5	0	0	40	52.5
4	Domain 2: Documentation	15	7.5	0	42.5	35
5	Competency 1: Registration of data under a recognized nursing framework	7.5	0	5	20	67.5
6	Competency 2: Reporting and transmission	12.5	0	5	15	67.5
7	Domain 3: Comprehensive care plan	15	2.5	0	25	57.5
8	Competency 1: Relevant nursing diagnoses according to NANDA-I taxonomy	10	0	2.5	32.5	55
9	Competency 2: Relevant nursing goals	2.5	0	2.5	20	75
10	Competency 3: Justification of each formulated nursing diagnosis using its characteristics	2.5	7.5	15	32.5	42.5
11	Competency 4: Relevant nursing interventions according to NANDA-I taxonomy	7.5	0	7.5	45	40
12	Competency 5: Drawing of the care plan	12.5	0	0	27.5	60

Participants agreed (A+SA) at least at 80% for all domains and competencies except for documentation (77.5%) and for justification of each formulated nursing diagnosis using its characteristics (75%). Participants suggested two other competencies to be included in the tool: Evaluation (08 participants or 20%) and the use of nursing folder (08 or 20% participants as well).

In addition, the reliability of these domains and competencies was tested. The cronbach's alpha was 0.70, which is in accordance with the recommendation. Consequently, though some items had a rate agreement lower than the 80% accepted, the 0.70 coefficient indicates that the domains and competencies proposed complement each other in the measurement of nurse students' critical thinking competence.

From a list of 24 nursing models, experts agreed on four as the more commonly taught in Cameroon institutions offering initial nursing education.

Tableau 7 : common taught nursing models in Cameroon

S/ N	Models	Percentages				
		No response	SD	D	A	SA
3	Virginia Henderson's Complementary-Supplementary	0	2.5	0	10	87.5
2	Roy's Adaptation model	0	7.5	2.5	35	55
1	Orem's Self-Care Theory	2.5	2.5	2.5	42.5	50
4	Watson's Philosophy and Science of Caring	0	7.5	7.5	40	45

Table 7 indicates that Henderson's Complementary-Supplementary model is the most usual model in nursing schools in Cameroon with a rate agreement of 97.5% (A+SA); followed by Orem's self-care model (92.5%). Not taught models include those in table 8.

Tableau 8 : No taught nursing models

S/ N	Models	Percentages				
		No response	SD	D	A	SA
1	Abdellah's Twenty-One Nursing Problems	7.5	72.5	12.5	5	2.5
2	Bernard's Parent-Child Interaction Model	7.5	57.5	22.5	12.5	0
3	Fitzpatrick's Life Perspective Model	7.5	52.5	32.5	7.5	0
4	King's Open Systems Model	7.5	45	35	10	2.5
5	Levine's Conservation Model	7.5	57.5	25	2.5	7.5
6	Mercer's Maternal Role Attainment	7.5	50	30	10	2.5
7	Wiedenbach's Helping Art Model	10	52.5	27.5	7.5	2.5

From this table it can be said that nursing experts agreed that Abdellah's, Bernard's, King's, Levine, Mercer's and Wiedenbach's models are not at all taught in nursing schools in Cameroon.

The current investigation also brought in light that some particular nursing diagnoses are more frequent in medical and surgical wards in Cameroon. Table 9 gives important details.

Tableau 9 : Most Common medical and surgical nursing diagnoses in Cameroon

S/N	Nursing diagnoses	Percentages				
		No response	SD	D	A	SA
1	Acute pain	2.5	0	10	25	62.5
2	Anxiety	2.5	0	5	30	62.5
3	Bathing self-care deficit	2.5	7.5	10	30	50
4	Chronic pain	2.5	0	7.5	27.5	62.5
5	Deficient knowledge	2.5	5	12.5	32.5	47.5
6	Disturbed body image	2.5	5	7.5	45	40
7	Disturbed sleep pattern	2.5	7.5	5	35	55
8	Fatigue	5	0	7.5	27.5	60
9	Feeding self-care deficit	0	5	10	20	65
10	Hyperthermia	2.5	2.5	5	35	55
11	Impaired physical mobility	2.5	0	15	32.5	50
12	Impaired skin integrity	2.5	2.5	5	17.5	72.5
13	Impaired tissue integrity	2.5	5	7.5	30	55
14	Insomnia	5	0	15	37.5	42.5
15	Risk for contamination	2.5	2.5	10	45	40
16	Risk for deficient fluid volume	5	5	7.5	40	42.5
17	Risk for electrolyte imbalance	5	7.5	7.5	42.5	37.5

Experts agreed at least at 80% that these 17 nursing diagnoses should be taught and consequently, they should be assessed critically where relevant in any medical or surgical nursing course.

Other 45 nursing diagnoses had a rate agreement less than 80%. They were: Bowel incontinence (70%), Chronic functional constipation (60%), Chronic low self-esteem (67,5%), Constipation (67,5%), Contamination (50%), Decisional conflict (50%), Deficient fluid volume (72,5%), Diarrhoea (77,5%), Dysfunctional gastro-intestinal mobility (60%), Excess fluid volume (67,5%), Fear (77,5%), Functional urinary incontinence (70%), Grieving (62,5%), Hopelessness (70%), Hypothermia (72,5%), Impaired gas exchange (57,5%), Impaired religiosity (57,5%), Impaired social interaction (77,5%), Impaired spontaneous ventilation (60%), Impaired verbal communication (72,5%), Impaired walking (77,5%), Ineffective breathing pattern (70%), Ineffective denial (55%), Ineffective peripheral tissue perfusion (60%), Ineffective role performance (65%), Nausea (67,5%), Noncompliance (77,5%), Obesity (70%), Overweight (60%), Post trauma syndrome (77,5%), Powerlessness (62,5%), Reflex urinary incontinence (62,5%), Risk for constipation (77,5%), Risk for decreased cardiac tissue perfusion (60%), Risk for ineffective cerebral tissue perfusion (50%), Risk for ineffective peripheral tissue perfusion (55%), Risk for unstable blood glucose level (67,5%), Risk for vascular trauma (57,5%), Self-neglect (60%), Sexual dysfunction (70%), Situational low self-esteem (77,5%), Social isolation (67,5%), Spiritual distress (52,5%), Toileting self-care deficit (72,5%), Urinary incontinence (60%). According to the scores these diagnoses had, they are also recurrent in medical and surgical wards; and for that reason, they should also be taught in nursing education programs and assessed critically with appropriate method in any course relevant for.

Tableau 10: participants' opinion on the proposed critical thinking questions

S/N	Proposed questions	Percentages				
		No response	SD	D	A	SA
1	Associate each datum of the text to one category of a nursing model of your choice	10	2.5	20	25	42.5
2	From a critical analysis of data on the text above, formulate at least three nursing diagnoses according to NANDA-I taxonomy, using the Problem-Etiology based approach.	7.5	0	2.5	47.5	42.5
3	Justify each formulated nursing diagnosis using its manifestations.	7.5	5	12.5	30	45
4	For each formulated diagnosis, propose an objective that is Specific, Measureable, Acceptable, Realistic and Temporal (SMART)	5	0	5	20	70
5	For each formulated diagnosis, list at least three major interventions, in accordance with NANDA-I classification.	7.5	0	7.5	35	50
6	Propose a comprehensive care plan	10	0	2.5	17.5	70

Table 10 indicates that, experts agreed at 90% (A+SA) on question 2 and on question 4. They agreed at 85% on question 5 and at 87.5 on question 6. Their level of agreement was lower on question 1 (67.5) and on question 3 (75%). However, the reliability test for the critical thinking questions was very good (cronbach's alpha = 0.84). This implies that all the proposed questions complement each other to measure nurse critical thinking competence at exit from their initial training.

From all that has been discussed above, a typical critical thinking test must present students with a patient profile (a vignette) in the format of a case to study followed by critical the questions 1 to 6. This is an instrument of great usefulness in assessing nurse students' critical thinking competence, at completion of their education. Despite the existence of Master of Science in nursing program for all but 7 years in Cameroon, no research had been conducted to validate any competence assessment tool. Today, this research has completed the gap in suggesting a tool that can help enhance nurse students' critical thinking competence at exit of their training.

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