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## What should be measured? Nursing education institutions performance: a qualitative study

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What should be measured? Nursing education institutions performance: a qualitative study

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## What should be measured? Nursing education institutions performance: a qualitative study

### Abstract:

**Objectives:** In this qualitative study, we tried to specify important domains of a nursing education institution that need to be measured to represent its performance via 'students' perspectives, who are one of the most important stakeholders in higher education.

**Setting:** This study was conducted in a nursing and midwifery faculty.

**Participants:** Participants were bachelor, master, and Ph.D. students in nursing. Convenience sampling was used. The aim and methods of the study were explained to the students, and they were invited to participate in the focus groups. Four focus groups (n=27) were held.

**Results:** Thirteen categories emerged that each of the structure, process, and outcome components contained three (Learning fields, Equipment and Facilities, Human resources standards), five (Workshops for students and staff, Student familiarity with the institution's rules and plans, Teaching, Students evaluation, Evaluation of teaching staffs by students and peers), and five (Results of self-evaluation by students, Graduates' outcomes, Students' outcomes, Students surveys results, Related medical centers performance) categories, respectively.

**Conclusion(s):** Based on the needs and ideas of this important group of stakeholders, we can proceed further. When specified what is important to be measured, then it is appropriate to develop or choose suitable and measurable performance indicators for each of the recognized categories.

### Strengths and limitations of this study:

- The limitation in this study was that because our data collection method was focus group and students were invited to join the sessions voluntarily, so characteristics of those who accepted to participate may in some way be different from others. But in the whole view, because our topic is not personal, we supposed this couldn't influence the rigor of data collected.
- The strength of this study is that the codes, categories, and assignment of categories to components of the model were discussed in the study group involving four of the authors to improve the trustworthiness.

## Introduction:

Quality essential healthcare services are required to reach the sustainable development goal for health;(1) also increase in development and training of the health workforce in developing countries is targeted as part of the third goal (target 3c), in the 2030 Agenda for Sustainable Development, by United Nations Member States in 2015.(2)

Effective learning as an outcome of professional education will result in high-quality services and improved health.(3) Nurses, along with midwives, are the largest part and essential members of the health workforce.(4) They substantially contribute to health-delivery systems in primary care, acute care, and community care settings.(5) Improvements in nurses' and midwives' education are considered as an important way to increase workforce numbers and enhance the quality of health care and health systems.(6)

Nursing education is responsible for training nurses efficiently,(6) and objective evaluation of its processes and products is necessary.(7) Managers can use performance measurement as a powerful tool for evaluating and controlling their organizations.(8) Continual measuring may lead to continual improvements in organization performance.(9) So universities need a performance measurement mechanism to recognize and eliminate institutional weaknesses and make improvements.(10) The role of measurement in quality improvement is as important as lab and imaging studies in clinical medicine.(11)

Evaluation systems are much more likely to be accepted and successfully implemented if stakeholders are included in the design process.(12) Different groups of stakeholders have different goals, needs, and priorities and use different criteria. Students are the most important stakeholders, and failure in fulfilling their needs and expectations may dramatically affect the operation of higher education institutions.(13)

As a developing country, Iran faces different nursing challenges like significant nursing and nurse educator shortage and the aging of the nursing workforce.(14) In Kalateh Sadati et al.'s study, a weak educational system was recognized as the most important structural deficiency. Participants believed that the nursing educational system does not have a high quality.(15) In Zamanzadeh et al.'s study, one of the challenges was the scientific competency of nurses. The participants mentioned the ineffective preparation of newly recruited nurses and the inadequacy of in-service training among the issues affecting the scientific competency of nurses.(16) It seems that the future nursing of Iran will face many uncertainties.(17)

Knowing the defects that exist in nursing education in Iran, and considering the measurement as an effective way for improvement and also lack of well-designed systems and criteria for nursing education institutions performance measurement in our country, we tried to take the first step by gathering stakeholders' perspectives.

In this qualitative study, we tried to specify important domains of a nursing education institution that need to be measured to represent its performance via students' perspectives, who are one of the most important stakeholders in higher education.

## Methods:

**Design:**

A qualitative descriptive-exploratory study was conducted. The main purpose of descriptive-exploratory studies is to describe or explore a phenomenon, problem, or subject and includes a wide range of questions on individuals' experiences, knowledge, attitudes, emotions, and perceptions, or views points.(18)

**Setting and samples:**

This study was conducted in the nursing and midwifery faculty, Tabriz University of medical sciences. Tabriz University of medical sciences is located in Tabriz, East Azerbaijan Province, Iran. It is ranked as one of Iran's top universities based on the ranking web of universities published in 2021 (ranking=12).(19) Tabriz University of medical sciences operates over ten teaching hospitals that provide sorts of specialized and sub-specialized learning fields for students. Tabriz Nursing and Midwifery Faculty is the first nursing training institute in Iran. It was in 1996 that the faculty managed to admit nursing students in the Ph.D. program as the first one in Iran. There are 3 degrees for nursing in Iran, bachelor, master, and Ph.D. A bachelor's degree in nursing is four years, a master's degree is two years, and a doctorate degree is four years.

Participants were bachelor, master, and Ph.D. students in nursing. Convenience sampling was used. The aim and methods of the study were explained to the students, and they were invited to participate in the focus groups. The focus groups continued until data saturation was reached.

**Data collection:**

Four focus groups were held. Focus groups were designed to obtain the participants' perceptions of a focused topic in a permissive and nonthreatening setting.(20) Groups had between 5-9 participants. Sessions lasted between 35 to 60 minutes. Bachelor and master 'students' focus groups were separated from Ph.D.'s as we thought may be in the presence of Ph.D.s. Others may avoid speaking freely because they may feel inferior in knowledge related to the topic and fear sounding irrelevant. Selecting participants who are similar to one another in lifestyle or experiences, views, and characteristics is believed to facilitate open discussion and interaction.(20) One of the researcher herself was the facilitator. Semi structured interviews were used. We tried to keep a comfortable and friendly atmosphere during interviews as participants could speak freely. We had 1 main open ended question and some other exploring questions in case of necessity to explore more about the topic. The main question was:

“If we want to know about a nursing education institution’s performance, what must be measured?”

Sessions were recorded, and further investigation was conducted on data.

**Data analysis:**

Audio-recorded interviews were transcribed verbatim by the first author. Content analysis was used for data analysis. Content analysis is designed to classify the words in a text into categories. The researcher is looking for repeated ideas or patterns of thought. In exploratory descriptive qualitative studies, researchers may analyze the content of the text using concepts from a guiding

theory.(20) In this study, we used Donabedian's quality improvement model. Donabedian's three components approach for evaluating the quality of care underpins measurement for improvement. The three components are structure, process, and outcomes. Donabedian believed that structure measures have an effect on process measures, which in turn affect outcome measures. Together these form the basis of what is required for an effective suite of measures.(21) The organizing concepts of structure, process, and outcome remain central to measuring and improving quality.(22)

The data analysis process involved reading, re-reading, and immersing in data, coding, and extracting the categories. Later these emerged categories were compared and assigned to each of the related three components of Donabedian's model.

### **Trustworthiness:**

To improve the rigor of the study, all the processes of the data collection and analysis were reviewed and checked by two members of the study group. Also codes, categories, and assignment of categories to components of the model were discussed in the study group involving four of the authors. Findings also checked with one of the members, and her confirmation was obtained.

### **Ethical considerations:**

The study and the study method used were approved by the ethics committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1399.1128). Confidentiality and anonymity for the research study participants were provided. The aim of the study and the participants' role was explained, and written informed consent was taken from all the participants. Permission was obtained to record the sessions.

### **Patient and Public Involvement:**

Patients or the public were not involved in the design, or conduct, or reporting, or dissemination plans of our research.

### **Results:**

#### **Demographic characteristics**

Four focus groups (n=27) were held. Participants were 16 (59.3%) female and 11 (40.7%) male and 77.8 percent of the participants (n=21) were studying for a bachelor's degree in nursing, 3.7 % (n=1) for a master's degree and 18.5 % (n=5) for a PhD. None of them were transferred from other universities, and 33.3% lived in dormitories.

#### **Components**

Thirteen categories emerged that each of the structure, process, and outcome components contained three, five, and five, categories respectively (Figure 1).

Donabedian defined structure as the attributes in and with which care occurs, process factors as all the acts of caregiving, and outcome or results as all the effects of care.(23) We used Donabedian's model, its components, and the definition of components as a framework considering nursing



1  
2  
3 education. In the following, we brought each of three components, their definitions, related  
4 categories, and also some quotations from participants.  
5

### 6 **Structure component:**

7  
8 By defining structure as the attributes which in and with the nursing education can occur, three  
9 categories were assigned to the structure component (figure 1).  
10

### 11 **Learning fields:**

12  
13 Experiencing different learning fields and learning situations during a nursing course and closely  
14 observing or managing real patients with different kinds of diseases or conditions with, as a result,  
15 may need various types of care and treatments believed that could improve learning.  
16

17  
18 - “For example, most of us were in the same groups from the first semester, we did not go to the  
19 departments like endocrinology, gastroenterology, ENT (Other participants: we did not go either,  
20 always internal medicine and surgical wards).”  
21

### 22 **Equipment and Facilities**

23  
24 This category consists of five subcategories (figure 1). Students will need enough, suitable and as  
25 many as possible latest versions of equipment and also some other kind of facilities like recreation  
26 facilities to help them in achieving learning goals.  
27

28  
29 - “Those mouldages were also a limitation because they said that their price is too high.” (Educational  
30 equipment)

31  
32 - “A voice file had been uploaded, it couldn’t be played, ..., online education is really weak, I  
33 really did not learn anything from the fifth semester” (E-learning equipment)

34  
35 - “IT, most of the computers do not connect to the Internet.” (Information Technology Services)

36  
37 “... I wanted a book; the latest version is 2020. The version in the library I think is 2008, books  
38 aren’t up to date.” (Library)

39  
40 “For example, if the space doesn’t be too small, the space of the college itself, the rest  
41 environment be enough for students, it is important...” (Recreation facilities)  
42

### 43 **Human resources standards**

44  
45 It is important to comply with the standards for human resources, these standards are set to  
46 guarantee the students receive the proper training.  
47

48  
49 “... for example, in each clinical learning environment, there are seven or eight students with one  
50 instructor. The instructor can’t manage them.”  
51

### 52 **Process component:**

53  
54 By defining process as all the acts of nursing education institutions, five categories were assigned  
55 to the process component (figure 1).  
56

### 57 **Workshops for students and staff**

Besides learning goals and requirements specified in the curriculum, there is a need for extra training and education in the format of workshops with the topics related to the nursing practice or any other skills that can help the students during the academic path or later in the labor market as a nurse. Also, teaching staff may need specific continuing education and training to improve their skills in emerging teaching and nursing topics.

- “In addition to that academic and practical skills, I think that other workshops that are held, usually in colleges, which, for example, strengthen communication skills or self-confidence, are also very effective.”

- “They offer online medical education courses for faculty members. This actually teaches them to be good teachers as well.”

### **Student familiarity with the institution’s rules and plans**

Students’ confusion about steps they must take or process they have to continue solving a specific issue while pursuing their academic path may impose stress on students.

- “Another issue is the administrative procedures of the college. For example, there is a problem for example in the planning of the internship groups; we go to the department of education, he says it is not my job, we go to another person he would say no in such and such meeting this decision has made, no one is in his place...”

### **Teaching**

The teaching category consists of three subcategories (figure 1). Teaching is considered “one of the most important acts of nursing education institutions based on students’ perspectives, which can be taken to action by teachers and instructors properly if the required tools and characteristics exist.

- “...do they have the qualifications to teach a bachelor’s degree student who will work as a nurse? There must be some indicators that measure them in terms of professional competence in nursing, which is a practical and theoretical field together.” {Teaching staffs’ competency (clinical- ethical)}

- “Whatever the level of the teacher be good, in all aspects, both academically and ethically, everything ... I think it would be more useful“ {Teaching staffs’ competency (clinical- ethical)}

- “It is not only the scientific knowledge, but it is also important that if they can present appropriately in a class, we had many professors who, for example, had a good scientific knowledge, but their expression was weak.” (Teaching skills)

- “some of the lessons must be taught practically not just by lecture” (Teaching methods)

### **Students evaluation (OSCE-Final-Continuous evaluations)**

Continuous and proper evaluation of the students is an important aspect of the education process. It helps to understand what is working well and what needs improvement.

- “But if it is continuous, for example, make a general evaluation of the student every month, this can be effective.”

1  
2  
3 - "I myself agree with this OSCE or the Final, I think it is very good because the student does not  
4 enter the clinical settings without enough information, but first of all, some changes and  
5 improvements are needed."  
6

### 7 **Evaluation of teaching staffs' by students and peers**

8  
9 Evaluating is an important step for improving; teachers, as one of the participants mentioned, are  
10 the pillars for education, so knowing their strengths and weaknesses may help them move forward  
11 to better performance. Students as the direct recipients of their services are proper to do the  
12 evaluation. Also, because teachers are familiar with the nature and the requirements of the nurse  
13 education alongside their colleagues' performance, they can also help in evaluation. But these  
14 evaluations need to be done in a way that can overcome the biases.  
15

16  
17 - "Another important thing is teachers' evaluation, here the evaluation that we do for teachers  
18 have no influence, it means that we may not have given a good rating to our teacher, but it had no  
19 result, or they do not check the results at all"(Evaluation of teaching staffs' by students and peers)  
20

21  
22 - "For example, peer checking itself is very good. We never have peer checking for teachers"  
23 (Evaluation of teaching staffs by students and peers)  
24

### 25 **Outcomes component:**

26  
27 By defining outcome or results as all the effects of nursing education institution, five categories  
28 were assigned to the outcome component' categories (figure 1).  
29

### 30 **Results of self-evaluation by students**

31  
32 Each person, her/himself, can evaluate her/his progress better than anyone else. So providing a  
33 situation for a student to rate their learning may help us to understand if an institution has been  
34 successful or not.  
35

36  
37 - "There should also be a survey to see if, for example, you have seen an improvement in your  
38 skills after these semesters?" (Results of self-evaluation by students)  
39

40  
41 - "For example, we can ask the students themselves; finally the student is more aware of her own  
42 situation" (Results of self-evaluation by students)  
43

### 44 **Graduates' outcomes**

45  
46 Graduates' outcomes category consists of three subcategories (figure 1). This differs from self-  
47 evaluation because we here need to assess the objective outcomes achieved by graduates using  
48 proper manners. These outcomes can be related to knowledge, attitude, or performance and all  
49 aspects of the institution, whether the main role is nursing education or other Side activities like  
50 sport and art.

51  
52 - "...the graduate follow-up I think is a good metric, including how many of our graduates are  
53 continuing higher educations, hiring, and how many are attracted to the clinical settings and how  
54 much they give up their job" {Graduates' achievements (Higher education- Employment)}  
55

1  
2  
3 - "Well, you can assess that, for example, we were in a hospital, I had taken my friend, the new  
4 nurse did not know what to do, how to use iv catheter properly, well, this is another evaluation  
5 criterion" (Graduates' clinical competency)  
6

### 7 **Students' outcomes**

8  
9 This category is similar to graduates' outcomes, but the achievements and learning outcomes  
10 expected from students differ from graduates.  
11

12 - "Even the level of interest of students in the field study" (Interest in nursing amongst students)  
13

14 - "Students' other activities, how much they do other things besides studying (other participants:  
15 Yes, in other words, such as research and cultural activities)" {Students' achievements (Scientific-  
16 Cultural- artistic and Sports)}  
17

18 - "The ideal state of a college is that whatever it is, for example, you study nursing here, it should  
19 not be just nursing, it should be music, it should be art, they should teach to some extent" {Students'  
20 achievements (Scientific-Cultural- artistic and Sports)}.  
21

22 - "When we are in the seventh semester and this semester we just have learned how to give a  
23 medicine to a patient, we can infusion it with how much fluid in how many minutes, this is a big  
24 problem in my opinion" {Students' learning (Theory and Practice)}.  
25  
26

### 27 **Students surveys results (Facilities-Planning-Staffs)**

28  
29 As one of the most important stakeholders in higher education, students can rate institutions in  
30 different aspects because they have been in close contact with these components.  
31

32 "...For example, we really wanted to talk about problems; for example, if I were myself, I would  
33 talk, ... they never conducted a survey of students, we never saw."  
34

### 35 **Related medical centers performance**

36  
37 As a consequence of all the institution's and its outputs' and employments' functions, related  
38 medical centers' performance may improve.  
39

40 - What to do about education in clinical settings. What changes have been made in these few  
41 years, for example? Certainly, in short periods of time, one year, two years, it is not possible to do  
42 this like accreditation, but for example, we can say in five years in a clinical setting, how was its  
43 start, and what achievements it has made in five years"  
44  
45

### 46 **Discussion:**

47  
48 In this qualitative study, we tried to specify important domains of a nursing education institution  
49 that need to be measured to represent its performance via students' perspectives, who are one of  
50 the most important stakeholders in higher education. Thirteen categories emerged that were  
51 assigned to the structure, process, and outcome components.  
52

53  
54 In a study by Shah et al., the results show that the top five reasons influencing student selection  
55 of a particular university were quality of teaching staff, academic facilities, employment prospects,  
56  
57

1  
2  
3 links with industry and the professions, and university location.(24) In another study, some of the  
4 factors that significantly influence the quality of higher education were: Teachers' competence;  
5 Clear achievement assessment and feedback; Quality of the study materials; Teaching methods;  
6 Friendly administrative staff; Equipment and infrastructure relevant to the needs of the study  
7 process; Higher education future prospects; Graduates' competitiveness on the labor market; and  
8 Strict accreditation requirements.(13) The results of these studies are almost compatible with our  
9 study in important aspects of an education institution based on students' perspectives.  
10  
11

12  
13 It seems that outcomes are important for students who participated in this study, even though the  
14 structure and process components will affect outcomes, as suggested by Donabedian. The findings  
15 of a study conducted by Musa and Ahmad Baharum also showed that the quality of the facilities  
16 have an effect on the quality of the staff and students who need them to work for the achievement  
17 of effective teaching and learning, and as a consequence, will finally put the production of quality  
18 outcome in doubt, so they recommend the development of an institutional environment that is safe,  
19 clean and conducive.(25) Another study found that nursing students' academic motivation  
20 increased as the quality of their clinical learning environment improved.(26) In Dube &  
21 Mlotshwa's study results showed that good and supportive relationships between nurse educators  
22 and students, classroom computer technological gadgets, internet connection and adequate  
23 learning facilities were perceived as fostering better academic performance of students.(27)  
24 Moreover, in another study perceived high load of students in clinical learning area was positively  
25 associated with achievement of clinical learning outcomes,(28) which is opposite with our study  
26 findings. In another study also teaching behavior reported important for learning by the students.  
27 The teaching behaviors that had the highest impact on students' learning were "showing  
28 enthusiasm", "grasping what students ask", and "providing practice opportunities".(29)  
29  
30  
31  
32

33  
34 The findings of our study indicated some of the most important aspects of a nursing education  
35 institution from the perspective of the nursing students who participated in this study. These  
36 aspects may affect its performance and need to be measured. Even though this study was conducted  
37 in one of the top nursing schools in Iran, findings revealed that some basic and simple issues are  
38 still unsolved, like those related to the structures.  
39

40  
41 The limitation in this study was that because our data collection method was focus group and  
42 students were invited to join the sessions voluntarily, so characteristics of those who accepted to  
43 participate may in some way be different from others. But in the whole view, because our topic is  
44 not personal, we supposed this couldn't influence the rigor of data collected  
45

### 46 **Conclusion:**

47  
48 Important aspects of nursing education institution performance that need to be measured in the  
49 students' perspective were determined in this context. Stakeholders' consultation can be considered  
50 as one of the very first steps in developing a measurement system with the aim of improvement.  
51 Based on the needs and ideas of this important group of stakeholders, we can proceed further. Yet  
52 more investigation amongst other groups of stakeholders and understanding their point of view is  
53 also essential. When specified what is important to be measured, it is appropriate to develop or  
54 choose suitable and measurable performance indicators for each of the recognized categories so it  
55  
56  
57

1  
2  
3 will make a management dashboard for responsible parties to determine issues and weak points,  
4 plan, and take required actions.  
5

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12

### 13 14 **Contributorship:**

15 MG, LV, VZ, and AG designed the study. MG and LV contributed in the data collection process.  
16 Collected data were interpreted by contribution of MG, LV, VZ, and AG. Based on their  
17 experience and field of study, AJ and FT, contributed by their expert opinions in every step of  
18 study from designation to interpretation. Manuscript was written by MG and revised by AG and  
19 LV.  
20  
21

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26  
27

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34 No additional data available  
35  
36  
37

### 38 39 **References:**

- 40 1. Rowe AK, Labadie G, Jackson D et al. Improving health worker performance: an ongoing challenge  
41 for meeting the sustainable development goals. *Bmj* 2018; 362:k2813.  
42 2. United Nations. The Sustainable Development Agenda: United Nations 2015  
43 [22/December/2021]. Available from: [https://www.un.org/sustainabledevelopment/development-](https://www.un.org/sustainabledevelopment/development-agenda/)  
44 [agenda/](https://www.un.org/sustainabledevelopment/development-agenda/).  
45 3. Frenk J, Chen L, Bhutta ZA et al. Health professionals for a new century: transforming education  
46 to strengthen health systems in an interdependent world. *Lancet* 2010;376(9756):1923-58.  
47 4. Cassiani SHDB, Wilson LL, Mikael SdSE et al. The situation of nursing education in Latin America  
48 and the Caribbean towards universal health. *Rev Lat Am Enfermagem* 2017;25(11):e2913.  
49 5. WHO. Global standards for the initial education of professional nurses and midwives. Switzerland:  
50 Department of Human Resources for Health, World Health Organization; 2009.  
51 6. Bvumbwe T, Mtshali N. Nursing education challenges and solutions in Sub Saharan Africa: an  
52 integrative review. *BMC Nurs* 2018;17(3):1-11.  
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7. Mgbekem M, Akpan P, editors. Quality Assurance in Nursing Education: An Absolute Necessity. Second Regional Conference on reforms and revitalization in higher education: Research evidence from Sub-Saharan African organized by Higher Education, Research and Policy Network (HERPNET) 2007.
8. Englund H, Ludvigsen E. Performance measurement systems as management control in R&D organizations: A case study. Karlskrona, Sweden: Blekinge Tekniska Högskola; 2015.
9. Velimirović D, Velimirović M, Stanković R. Role and importance of key performance indicators measurement. Serbian Journal of Management 2011;6(1):63-72.
10. Anninos LN, editor University performance evaluation approaches: The case of ranking systems. 10th QMOD Conference Quality Management and Organizational Development Our Dreams of Excellence; 18-20 June; 2007 in Helsingborg; Sweden; 2008: Linköping University Electronic Press.
11. Lighter DE. How (and why) do quality improvement professionals measure performance? Int J Pediatr Adolesc Med 2015;2(1):7-11.
12. Goe L, Holdheide L, Miller T. A Practical Guide to Designing Comprehensive Teacher Evaluation Systems: A Tool to Assist in the Development of Teacher Evaluation Systems. Washington, DC: National Comprehensive Center for Teacher Quality, 2011.
13. Degtjarjova I, Lapina I, Freidenfelds D. Student as stakeholder: "voice of customer" in higher education quality development. Marketing and Management of Innovations 2018(2):388-98.
14. Ahmadi Chenari H, Zakerimoghadam M, Baumann SL. Nursing in Iran: Issues and Challenges. Nurs Sci Q 2020;33(3):264-7.
15. Kalateh Sadati A, Heydari ST, Ebrahimzade N et al. A Qualitative Study of Nursing Management in Iran. J Environ Public Health 2021;2021:1315734.
16. Zamanzadeh V, Valizadeh L, Neshat H. Challenges of human resources management in nursing in Iran: A qualitative content analysis. Nursing open 2020;7(1):319-25.
17. Barasteh S, Rassouli M, Karimirad MR et al. Future Challenges of Nursing in Health System of Iran. Front Public Health 2021;9:676160-.
18. Bahrami M, Purfarzad Z, Keshvari M et al. The Components of Nursing Competence in Caring for Older People in Iranian Hospitals: A Qualitative Study. Iran J Nurs Midwifery Res 2019;24(2):124-30.
19. Webometrics Ranking of World Universities. Consejo Superior de Investigaciones Científicas (CSIC); 2021. Available from: <https://www.webometrics.info/en/asia/iran%20%28islamic%20republic%20of%29>.
20. Gray JR, Grove SK, Sutherland S. Burns and Grove's The Practice of Nursing Research - E-Book: Appraisal, Synthesis, and Generation of Evidence. 2016.
21. NHS Improvement. A model for measuring quality care. Online library of Quality, Service Improvement and Redesign tools. 2005.
22. Berwick D, Fox DM. "Evaluating the Quality of Medical Care": Donabedian's Classic Article 50 Years Later. Milbank Q 2016;94(2):237-41.
23. Kajonius PJ, Kazemi A. Structure and process quality as predictors of satisfaction with elderly care. Health Soc Care Community 2016;24(6):699-707.
24. Shah M, Nair CS. Enrolling in Higher Education: The Perceptions of Stakeholders. Journal of Institutional Research 2010;15(1):9-15.
25. Musa MF, Ahmad@Baharum Z. Higher Education Physical Assets and Facilities. Procedia Soc Behav Sci 2012;50:472-8.
26. Karabulut N, Aktaş YY, Alemdar DK. The relationship of clinical learning environment to nursing students' academic motivation. Kontakt 2015;17(1):e6-e12.
27. Dube MB, Mlotshwa PR. Factors influencing enrolled nursing students' academic performance at a selected private nursing education institution in KwaZulu-Natal. Curationis 2018;41(1):1-7.

- 1  
2  
3 28. Angasu K, Bekela T. Achievement of Clinical Learning Outcomes and Associated Factors Among  
4 Midwifery and Nursing Undergraduate Students of Jimma University, Ethiopia. *Adv Med Educ Pract*  
5 2021;12:987-94.  
6 29. Parvan K, Hosseini F, Bagherian S. The relationship between nursing instructors' clinical teaching  
7 behaviors and nursing students' learning in Tabriz University of Medical Sciences in 2016. *Education for*  
8 *Health* 2018;31(1):32-8.  
9

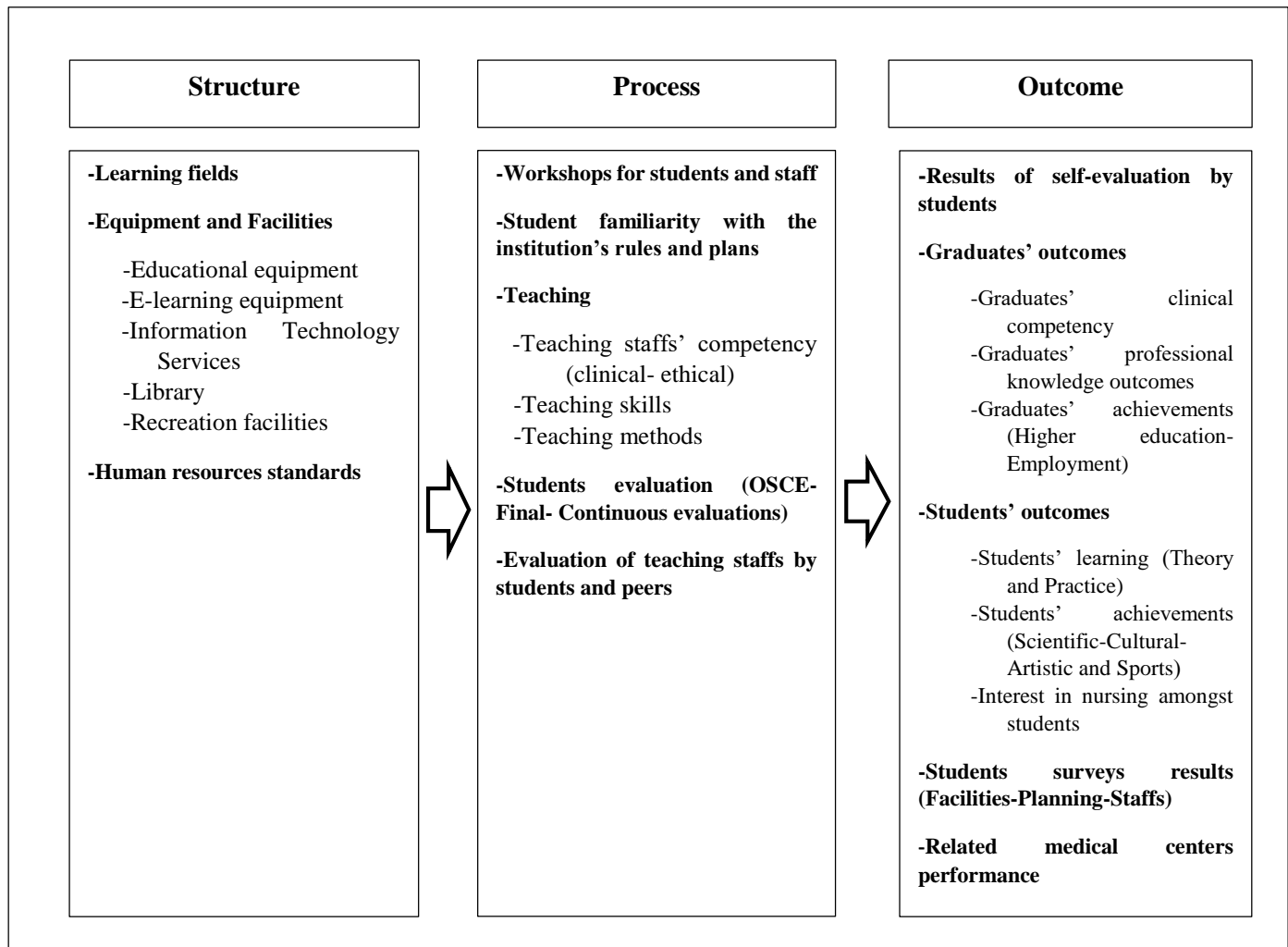
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14 *Figure 1: Donabedian model components and related emerged categories*

15 *Categories that were emerged during data analysis process were compared and assigned to each of the*  
16 *related three components of Donabedian's model (structure-process-outcome).*  
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Figure 1 (Donabedian model components and related emerged categories)



## Standards for Reporting Qualitative Research (SRQR)\*

Page/line no(s).

### Title and abstract

<p><b>Title</b> - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended</p>	Page 2
<p><b>Abstract</b> - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions</p>	Page 2

### Introduction

<p><b>Problem formulation</b> - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement</p>	Page 3
<p><b>Purpose or research question</b> - Purpose of the study and specific objectives or questions</p>	Page 3

### Methods

<p><b>Qualitative approach and research paradigm</b> - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**</p>	Page 4
<p><b>Researcher characteristics and reflexivity</b> - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability</p>	Researchers' characteristics aren't influential in this study
<p><b>Context</b> - Setting/site and salient contextual factors; rationale**</p>	Page 4
<p><b>Sampling strategy</b> - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**</p>	Page 4
<p><b>Ethical issues pertaining to human subjects</b> - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues</p>	Page 5
<p><b>Data collection methods</b> - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**</p>	Page 4
<p><b>Data collection instruments and technologies</b> - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study</p>	Page 4

1 2 3	<b>Units of study</b> - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	Page 5
4 5 6 7	<b>Data processing</b> - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	Pages 4 and 5
8 9 10 11	<b>Data analysis</b> - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	Pages 4 and 5
12 13 14 15	<b>Techniques to enhance trustworthiness</b> - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	Page 5

### Results/findings

18 19 20 21	<b>Synthesis and interpretation</b> - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	Pages 5-9
22 23 24	<b>Links to empirical data</b> - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	Pages 6-9

### Discussion

27 28 29 30 31 32	<b>Integration with prior work, implications, transferability, and contribution(s) to the field</b> - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	Pages 9 and 10
33 34	<b>Limitations</b> - Trustworthiness and limitations of findings	Page 10

### Other

37 38 39	<b>Conflicts of interest</b> - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	Page 11
40 41 42	<b>Funding</b> - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	Page 11

\*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

\*\*The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

### Reference:

1 O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative**  
2 **research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014  
3 DOI: 10.1097/ACM.0000000000000388  
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# BMJ Open

## What should be measured? Nursing education institutions performance: a qualitative study

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**Title:**

What should be measured? Nursing education institutions performance: a qualitative study

**Running title:**

Nursing education institutions performance measurement

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Ali Jannati: Author

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**Keywords:** Education, Nursing, Quality Improvement, Stakeholder Participation

**World count:** 5500

## What should be measured? Nursing education institutions performance: a qualitative study

### Abstract:

**Objectives:** In this qualitative study, we specify important domains of a nursing education institution that need to be measured to represent its performance via 'students' perspectives, one of the most important stakeholders in higher education.

**Setting:** This study was conducted in a nursing and midwifery faculty.

**Participants:** Participants were bachelor's, master's, and Ph.D. students in nursing. Convenience sampling was used. The aim and methods of the study were explained to the students, and they were invited to participate in the focus groups. Four focus groups (n=27) were held.

**Results:** Thirteen categories emerged that were assigned to three components of the Donabedian Model. The structure component contained three categories: Learning fields, Equipment and Facilities, and Human resources standards. The process component contained five categories: Workshops for students and staff, Student familiarity with the institution's rules and plans, Teaching, Students evaluation, and Evaluation of teaching staff by students and peers. And outcome components contained five categories: Results of self-evaluation by students, Graduates' outcomes, Students' outcomes, Students surveys results, and Related medical centers performance.

**Conclusion(s):** Based on the needs and ideas of this important group of stakeholders, we can proceed further. Once we specify what is important to be measured, then it is appropriate to develop or choose suitable and measurable performance indicators for each of the recognized categories.

### Strengths and limitations of this study:

- Separating the focus group session of the D.Ph. students, created more homogeneous groups.
- About this topic, using focus groups as a means of data collection improved participation.
- Those who volunteered to participate in focus groups may be different from others that did not.



## Introduction:

Quality essential healthcare services are required to reach the sustainable development goal for health.(1) The increase in development and training of the health workforce in developing countries is also targeted as part of the third goal (target 3c), in the 2030 Agenda for Sustainable Development, by United Nations Member States in 2015.(2)

Properly educated and trained students in health education institutes can be effective clinical practitioners and decision-makers.(3) Nurses, along with midwives, are the largest part and essential members of the health workforce.(4) Nurses have an essential role in the provision and coordination of care, prevention of adverse events, health service productivity, and patient outcomes.(5) Improvements in nurses' and midwives' education are considered an important way to increase workforce numbers and enhance the quality of health care and health systems.(6)

Nursing education is responsible for training nurses efficiently,(6) and the Quality of nursing education programs can contribute to universal health coverage by the production of qualified nurses.(7) Improving the quality of higher education organizations should be considered an important priority. To achieve this goal, evidence-based evaluation and audit are needed. There are different models and approaches around the world for the evaluation and audit of higher education. Countries develop these models to evaluate educational performance.(8) Measurement may be the first step to improvement.(9) Managers can use performance measurement as a powerful tool for evaluating and controlling their organizations.(10) The role of measurement in quality improvement is as important as lab and imaging studies in clinical medicine.(11)

Decision makers have developed an understanding that stakeholder engagement and public participation for effective decision-making and greater public acceptance is very essential.(12) Different groups of stakeholders have different goals, needs, and priorities and use different criteria. Students are the most important stakeholders, and failure in fulfilling their needs and expectations may dramatically affect the operation of higher education institutions.(13)

As a developing country, Iran encounters different nursing challenges such as significant nursing and nurse educator shortage and the aging of the nursing workforce.(14) In Kalateh Sadati et al.'s study, a weak educational system was recognized as the most important structural deficiency. Participants believed that the nursing educational system does not have a high quality.(15) In Zamanzadeh et al.'s study, one of the challenges was the scientific competency of nurses. The participants mentioned the ineffective preparation of newly recruited nurses and the inadequacy of in-service training among the issues affecting the scientific competency of nurses.(16) It seems that the future nursing of Iran will face many uncertainties.(17)

Knowing the defects that exist in nursing education in Iran, and considering the measurement as an effective way for improvement, and also the lack of well-designed systems and criteria for nursing education institutions' performance measurement in our country, we tried to take the first step by gathering stakeholders' perspectives. We guided the data analysis in this study with the Donabdin Quality Improvement Model. Donabedian Model, first described by Avedis Donabedian in 1966,(18) is the most widely recognized and comprehensive quality evaluation framework that defines three different aspects for quality that are structure, process, and outcome.(19) This model

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2  
3 provides a better image of a service. Because instead of focusing on outcomes solely, it moves to  
4 understand what has made the outcomes.(18) This model would help us to consider and classify  
5 students' perspectives on all aspects of the school.  
6

7  
8 In this qualitative study, we aimed to specify important domains of a nursing education institution  
9 that need to be measured to represent its performance via students' perspectives, who are one of  
10 the most important stakeholders in higher education.  
11

## 12 **Methods:**

### 13 **Design:**

14  
15 A qualitative descriptive-exploratory study was conducted. The main purpose of descriptive-  
16 exploratory studies is to describe or explore a phenomenon, problem, or subject and includes a  
17 wide range of questions on individuals' experiences, knowledge, attitudes, emotions, perceptions,  
18 or views points.(20)  
19  
20

### 21 **Setting and samples:**

22  
23 This study was conducted in the nursing and midwifery faculty, Tabriz University of Medical  
24 Sciences. Tabriz University of Medical Sciences is located in Tabriz, East Azerbaijan  
25 Province, Iran. It is ranked as one of Iran's top universities based on the ranking web of universities  
26 published in 2021 (ranking=12).(21) Tabriz University of Medical Sciences operates over ten  
27 teaching hospitals that provide different kinds of specialized and sub-specialized learning fields  
28 for students. Tabriz Nursing and Midwifery Faculty is the first nursing training institute in Iran. It  
29 was founded in 1996 when the faculty managed to admit nursing students in the Ph.D. program as  
30 the first one in Iran. There are three degrees for nursing in Iran: Bachelor, Master, and Ph.D.  
31 A Bachelor's degree in nursing is four years; a Master's degree is two years, and a Doctorate degree  
32 is four years.  
33  
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36  
37 Participants were bachelor's, master's, and Ph.D. students in nursing. Tabriz's nursing and  
38 midwifery faculty had about 560 Bachelor's students, 113 Master's students, and 24 Ph.D. students  
39 in nursing during the sampling.(22) Convenience sampling was used. Students in different parts of  
40 the faculty (classrooms, campus, and dormitories) were being informed about the study and its  
41 aims and topic, directly by the researchers themselves or through other instructors, professors, or  
42 students. They were being invited to participate in the study. Those who were willing to participate  
43 were being linked to the focus group's facilitator. The time and place for the sessions would be set  
44 and students would attend the focus groups. Inviting participants and holding focus group meetings  
45 were done over time and continued until data saturation was reached.  
46  
47

### 48 **Data collection:**

49  
50 Four focus groups were held. Focus groups were designed to obtain the participants' perceptions  
51 of a focused topic in a permissive and nonthreatening setting.(23) Groups had between 5-9  
52 participants. Sessions lasted between 35 to 60 minutes. Bachelor and Master 'students' focus  
53 groups were separated from Ph.D.'s' , as we thought that the former may reluctant to speak in the  
54 presence of Ph.D.s. They may avoid speaking freely because they may feel inferior in knowledge  
55  
56  
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1  
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3 related to the topic and fear sounding irrelevant. Selecting participants who are similar to one  
4 another in lifestyle or experiences, views, and characteristics is believed to facilitate open  
5 discussion and interaction.(23) One of the researchers herself was the facilitator. Semi-structured  
6 interviews were used. We tried to keep a comfortable and friendly atmosphere during interviews  
7 as participants could speak freely. We had one main open-ended question and some other exploring  
8 questions in case of necessity to explore more about the topic. The main question was:  
9

11 “If we want to know about a nursing education institution performance, what must be measured?”  
12

13 Sessions were recorded, and further investigation was conducted on the data.  
14

### 15 **Data analysis:**

16  
17 Audio-recorded interviews were transcribed verbatim by the first author. Content analysis was  
18 used for data analysis. Content analysis is designed to classify the words in a text into categories.  
19 The researcher is looking for repeated ideas or patterns of thought. In exploratory descriptive  
20 qualitative studies, researchers may analyze the content of the text using concepts from a guiding  
21 theory.(23) In this study, we used Donabedian’s three component quality improvement model. The  
22 three components are structure, process, and outcome. Donabedian believed that there is a  
23 relationship between structure, process, and outcome. Good structure will promote good process,  
24 and good process leads to good outcome.(24) The organizing concepts of structure, process, and  
25 outcome remain central to measuring and improving quality.(25)  
26  
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28

29 The data analysis process involved reading, re-reading, and immersing in data, coding, and  
30 extracting the categories. Later these emerged categories were compared and assigned to each of  
31 the related three components of Donabedian’s model.  
32

### 33 **Trustworthiness:**

34  
35 To improve the rigor of the study, all the processes of the data collection and analysis were  
36 reviewed and checked by two members of the study group. Also codes, categories, and assignment  
37 of categories to components of the model were discussed in the study group involving four of the  
38 authors. Findings also checked with one of the members, and her confirmation was obtained.  
39  
40

### 41 **Ethical considerations:**

42  
43 The study and its method used were approved by the ethics committee of Tabriz University of  
44 Medical Sciences (IR.TBZMED.REC.1399.1128). Confidentiality and anonymity for the research  
45 study participants were provided. The aim of the study and the participants’ role was explained,  
46 and written informed consent was taken from all the participants. Permission was obtained to  
47 record the sessions.  
48

### 49 **Patient and Public Involvement:**

50  
51 Patients or the public were not involved in the design, conduct, reporting, or dissemination plans  
52 of our research.  
53

### 54 **Results:**

## Demographic characteristics

Four focus groups (n=27) were held. Participants were 16 (59.3%) female and 11 (40.7%) male. 77.8 percent of the participants (n=21) were studying for a Bachelor's degree in nursing, 3.7 % (n=1) for a Master's degree and 18.5 % (n=5) for a Ph.D. None of the participants were transferred from other universities. 33.3% of participants lived in dormitories.

## Components

Thirteen categories emerged as each of the structure, process, and outcome components contained three, five, and five, categories respectively (Figure 1).

Donabedian defined structure as the attributes in and with which care occurs; Process factors as all the acts of caregiving, and outcome or results as all the effects of care.(26) We used the Donabedian's Model, its components, and the definition of components as a framework considering nursing education. In the following, we employed each of three components, their definitions, related categories, and also some quotations from participants.

### Structure component:

By defining structure as the attributes which in and with the nursing education can occur, three categories were assigned to the structure component (figure 1).

### Learning fields:

Experiencing different learning fields and learning situations during a nursing course, participants believed could improve learning. Close observatin or managing real patients with different kinds of diseases or conditions, that may need various types of care and treatments will provide various types of learning opportunities. Several participants in this study mentioned that they spent their clinical training hours in the same departments of the hospital for several consecutive semesters. They believed that this would decline learning different skills because the clinical cases and the care they observed or implemented were mostly the same.

- "For example, most of us were in the same groups from the first semester, we did not go to the departments like endocrinology, gastroenterology, ENT (Other participants: we did not go either, always internal medicine and surgical wards)."

### Equipment and Facilities

This category consists of five subcategories (figure 1). Students will need both enough and suitable equipment to help them in achieving learning goals long with some other kind of facilities like recreation facilities.

Students say that one of the problems they faced during their study period was the lack of different types of teaching aid equipment. They believed that the presence of a sufficient number of suitable and up-to-date equipment, such as books, moulages, and computers is effective in improving their learning outcomes.

1  
2  
3 - “Those mouldages were also a limitation because they said that their price is too high.” (Educational  
4 equipment)  
5

6 - “IT, most of the computers do not connect to the Internet.” (Information Technology Services)  
7

8 - “... I wanted a book; the latest version is 2020. The version in the library I think is 2008, books  
9 aren't up to date.” (Library)  
10

11 Students were also very dissatisfied with the quality of online classes, especially during the Covid-  
12 19 crisis.  
13

14 - “A voice file had been uploaded, it couldn't be played, ..., online education is really weak, I  
15 really did not learn anything from the fifth semester” (E-learning equipment)  
16

17 They also stated that in addition to teaching and learning, other aspects of the school such as  
18 environments and recreational facilities are very important.  
19

20 “For example, if the space doesn't be too small, the space of the college itself, the rest  
21 environment be enough for students, it is important...” (Recreation facilities)  
22  
23

#### 24 **Human resources standards**

25 It is important to comply with the standards for human resources, these standards are set to  
26 guarantee the students receive the proper training. Participants stated that in clinical fields, when  
27 the number of students under the training of a clinical instructor increases, or when the number of  
28 students in the class is more than usual, the teacher's ability to convey knowledge and skills  
29 decreases.  
30  
31

32 “... for example, in each clinical learning environment, there are seven or eight students with one  
33 instructor. The instructor can't manage them.”  
34  
35

#### 36 **Process component:**

37 By defining process as all the acts of nursing education institutions, five categories were assigned  
38 to the process component (figure 1).  
39  
40

#### 41 **Workshops for students and staff**

42 Besides learning goals and requirements specified in the curriculum, there is a need for extra  
43 training and education in the format of workshops with topics related to the nursing practice or  
44 any other skills that can help the students during the academic path or later in the labor market as  
45 a nurse or still later in life as a member of society.  
46  
47

48 Participants believed that improving their personal and professional skills requires additional  
49 training in the form of various workshops so that each person can participate in those workshops  
50 according to their learning needs in a specific field.  
51

52 - “In addition to that academic and practical skills, I think that other workshops that are held,  
53 usually in colleges, which, for example, strengthen communication skills or self-confidence, are  
54 also very effective.”  
55  
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57

Students believed teaching staff may need specific continuing education and training to improve their skills in emerging teaching and nursing topics.

- “They offer online medical education courses for faculty members. This actually teaches them to be good teachers as well.”

### **Student familiarity with the institution’s rules and plans**

Students’ confusion about steps they must take or the process they have to continue solving a specific issue while pursuing their academic path may impose stress on students.

Participants stated that administrative processes and other processes related to students should be clearly defined and communicated to students.

- “Another issue is the administrative procedures of the college. For example, there is a problem for example in the planning of the internship groups; when we go to the department of education, he says it is not my job. when we go to another person he would say no in such and such meeting this decision has made, no one is in his place...”

### **Teaching**

The teaching category consists of three subcategories (figure 1). Teaching is considered one of the most important acts of nursing education institutions based on students’ perspectives. These can be implemented by teachers and instructors properly only if the required tools and characteristics exist.

The students participating in this study emphasized that in addition to the scientific knowledge that a professor should have, clinical skills and experience in a field such as nursing are very important. Also the students especially expected ethical behavior from the teachers. Ethical behavior from the point of view of students includes appropriate and respectful behavior with students.

- “...do they have the qualifications to teach a Bachelor’s degree student who will work as a nurse? There must be some indicators that measure them in terms of professional competence in nursing, which is a practical and theoretical field together.” {Teaching staffs’ competency (clinical- ethical)}

- “Whatever the level of the teacher be good, in all aspects, both academically and ethically, everything ... I think it would be more useful” {Teaching staffs’ competency (clinical- ethical)}

The ability to transfer this knowledge and skills is also important.

- “It is not only the scientific knowledge, but it is also important that if they can present appropriately in a class, we had many professors who, for example, had a good scientific knowledge, but their expression was weak.” (Teaching skills)

In addition to the characteristics and abilities of a person, a suitable method is also needed to be chosen so that teachers can teach different subjects appropriately.

- “some of the lessons must be taught practically not just by lecture” (Teaching methods)

### **Students evaluation (OSCE-Final-Continuous evaluations)**

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2  
3 Continuous and proper evaluation of the students is an important aspect of the educational process.  
4 It helps to understand what is working well and what needs improvement. The students agreed  
5 with their evaluation by the teachers, but they stated that the evaluation methods are sometimes  
6 not appropriate to the learning goals. Evaluation should be done continuously and there is still a  
7 need to develop standard and reliable OSCE or Final exit exam.  
8  
9

10 - "But if it is continuous, for example, make a general evaluation of the student every month, this  
11 can be effective."  
12

13 - "I myself agree with this OSCE or the Final, I think it is very good because the student does not  
14 enter the clinical settings without enough information, but first of all, some changes and  
15 improvements are needed."  
16

### 17 **Evaluation of teaching staff by students and peers**

18  
19 Evaluating is an important step for improving teachers. Teachers are the pillars for education,  
20 knowing their strengths and weaknesses may help them move forward to better performance.  
21 Students, as the direct recipients of their services, are the proper means to do the evaluation.  
22

23  
24 The students stated that, although they complete the evaluation form of the teachers, their opinions  
25 in the final evaluations are not taken into account.  
26

27 - "Another important thing is teachers' evaluation, here the evaluation that we do for teachers  
28 have no influence; it means that we may not have given a good rating to our teacher, but it had no  
29 effect, or they do not check the results at all" (Evaluation of teaching staff by students and peers)  
30

31 Also, because teachers are familiar with the nature and the requirements of the nurse education  
32 alongside their colleagues' performance, they can also help in evaluation. Students thought that  
33 there was a void for peer assessment in colleges.  
34

35  
36 - "For example, peer checking itself is very good. We never have peer checking for teachers"  
37 (Evaluation of teaching staff by students and peers)  
38

39 But these evaluations need to be done in a way that can overcome the inherent biases.  
40

### 41 **Outcome component:**

42  
43 By defining outcome or results as all the effects of nursing education institutions, five categories  
44 were assigned to the outcome component categories (figure 1).  
45

### 46 **Results of self-evaluation by students**

47  
48 Each person, her/himself, can evaluate her/his progress better than anyone else. So providing a  
49 situation for a student to rate her/his learning may help us to understand if an institution has been  
50 successful or not. Students requested that it be possible for them to evaluate their progress at the  
51 end of each semester or in general.  
52

53 - "There should also be a survey to see if, for example, you have seen an improvement in your  
54 skills after these semesters?" (Results of self-evaluation by students)  
55  
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57

1  
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3 - “For example, we can ask the students themselves; finally the student is more aware of her own  
4 situation” (Results of self-evaluation by students)  
5

### 6 **Graduates’ outcomes**

7  
8 Graduates’ outcomes category consists of three subcategories (figure 1). This differs from self-  
9 evaluation because we here need to assess the objective outcomes achieved by graduates using  
10 proper measures. These outcomes can be related to knowledge, attitude, or performance, in  
11 addition to all aspects of the institution, whether the main role is nursing education or other side  
12 activities like sport and art. Things like higher education, being employed in nursing jobs, or the  
13 quality of clinical performance of the graduates of an institution, according to the participants of  
14 this study, can represent the appropriate performance of that institution.  
15

16  
17 - “...the graduate follow-up I think is a good metric, including how many of our graduates are  
18 continuing higher educations, hiring, and how many are attracted to the clinical settings and how  
19 much they give up their job” {Graduates’ achievements (Higher education- Employment)}  
20

21  
22 - “... for example we were in a hospital, I had taken my friend (he was sick). The new nurse did  
23 not know what to do, how to use iv catheter properly. Well, this is another evaluation criterion”  
24 (Graduates’ clinical competency)  
25

### 26 **Students’ outcomes**

27  
28 This category is similar to graduates’ outcomes, but the achievements and learning outcomes  
29 expected from students differ from graduates.  
30

31 One of the most important things mentioned by the students is the level of interest that will arise  
32 in students towards their field of study. The performance of instructors, professors, staff, and in  
33 general all elements of the faculty can increase the student's interest in the field s/he chose to study  
34 or can even lead the student to drop out.  
35

36  
37 - “Even the level of interest of students in the field of study” (Interest in nursing amongst students)  
38

39 In addition to the main goal of the school, which is to achieve the learning goals set for the student  
40 in relation to nursing, it is important for the students that the school can provide the possibility of  
41 flourishing in other aspects of their interest, such as sports, art, etc.  
42

43 - “Students' other activities, how much they do other things besides studying (other participants:  
44 Yes, in other words, such as research and cultural activities)” {Students' achievements (Scientific-  
45 Cultural- Artistic and Sports)}  
46

47 - “The ideal state of a college is that whatever it is, for example, you study nursing here, it should  
48 not be just nursing, it should be music, it should be art, these should be taught to some extent”  
49 {Students' achievements (Scientific-Cultural- Artistic and Sports)}.  
50

51 While perhaps the most important function of the school should be the students’ learning. Students  
52 believe that even some initial learning goals have not been achieved even until the final semesters.  
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3 - “When we are in the seventh semester and this semester we just have learned how to give a  
4 medicine to a patient. We can infusion it with how much fluid in how many minutes. This is a big  
5 problem in my opinion” {Students' learning (Theory and Practice)}.

### 6 7 **Students surveys results (Facilities-Planning-Staffs)**

8  
9 As one of the most important stakeholders in higher education, students can rate institutions in  
10 different aspects because they have been in close contact with these components. The students  
11 mentioned that unfortunately they were not given an opportunity to talk about their problems in  
12 relation to the school. There is no possibility, opportunity, or means to express schools' defects.

13  
14  
15 -“...For example, we really wanted to talk about problems; for example, if I were myself, I would  
16 talk, ... they never conducted a survey of students, we never saw.”

### 17 18 **Related medical centers performance**

19  
20 As a consequence of all the institution's and its outputs' and employments' functions, related  
21 medical centers performance may improve. The participants stated that by examining the  
22 performance of medical centers that are affiliated with the school in long-term periods, the impact  
23 of the performance of the school and its outputs in these centers can be investigated, which can  
24 actually be a representative of the performance of the school.

25  
26  
27 - “What to do about education in clinical settings. What changes have been made in these few  
28 years, for example? Certainly, in short periods of time, one year, two years, it is not possible to do  
29 this like accreditation, but for example, we can say in five years in a clinical setting, how was its  
30 start, and what achievements it has made in five years...”

### 31 32 **Discussion:**

33  
34 In this qualitative study, we aimed to specify important domains of a nursing education institution  
35 that need to be measured to represent its performance via students' perspectives, one of the most  
36 important stakeholders in higher education. In this section, we bring our findings related to  
37 structure, process and outcome and discuss them based on findings of other studies.

38  
39  
40 Findings of our study indicate that “learning fields”, “equipment and facilities”, and “human  
41 resources standards” are among those factors that shape important aspects of a nursing school  
42 structure. In a study that aimed to find factors that form quality in higher education from student  
43 perspectives, “facilities”, and “support staff quality” were among the factors mentioned by  
44 students.(27) In another study some of the factors that significantly influence the quality of higher  
45 education were: “quality of the study materials”; “friendly administrative staff”; “equipment and  
46 infrastructure relevant to the needs of the study process”.(13) Dube & Mlotshwa's study results  
47 also showed that classroom computer technological gadgets, internet connection, and adequate  
48 learning facilities were perceived as fostering better academic performance of students.(28)

49  
50  
51 Findings of these studies along with our study show that equipment, facilities, and administrative  
52 staff are important for students and need to be measured. But in our study, the insist was on the  
53 number of the staff, while in two other studies mostly their behavior were important. In another  
54 study high volume of students in the clinical learning area was positively associated with the  
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3 achievement of clinical learning outcomes,(29) which is opposite to our study findings. Students  
4 in our study believed that the more students in the clinical area the harder for the instructor to  
5 manage. The “learning fields” is also reported in our study findings as an important aspect to be  
6 measured. A study by Karabulut et al. found that nursing students' academic motivation increased  
7 as the quality of their clinical learning environment improved.(30) while in this study quality of  
8 learning fields is important, in our study, participants demand to experience different type of  
9 learning fields.  
10  
11

12 In the process component of our findings, “teaching” category were similar to finding of Abbas’s  
13 and Degtjarjova’s studies. Abbas’s study reports teaching quality (teachers’ subject knowledge,  
14 communication/pastoral skills, syllabus/curriculum quality, teaching style and dealing/behavior  
15 with students).(27) and Degtjarjova et al.’s study reports “teachers' competence” and “teaching  
16 methods”.(13) It is clear that in all three studies, the quality of teaching, teaching methods and  
17 teachers’ competence were important for the participating students. How teachers treat or deal with  
18 students also got attention in these studies. Furthermore in Parvan et al.’s study teaching behavior  
19 reported important for learning by the students.(31) Dube & Mlotshwa's study results showed that  
20 good and supportive relationships between nurse educators and students were perceived as  
21 fostering better academic performance of students.(28) Another finding of our study was  
22 "workshops for students and staff”, which is similar to extra-curricular activities (counseling and  
23 personal development) in the Abbas’s study.(27) Participants in our study stated there is a need for  
24 workshops besides usual learning goals to improve their personal and professional skills.  
25  
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29 Student in our study also considered “Students evaluation (OSCE-Final- Continuous  
30 evaluations)” as a factor that need to be measured. In our study, students believed that the  
31 examinations held by the school are part of its performance. In a study by Andersson et al., the  
32 nursing students considered the national clinical final examination as an important means of quality  
33 assurance.(32) The findings of Müller et al.’s study also suggest that students consider the OSCE  
34 to be a valuable tool. Students believed that the OSCE may have an impact on the educational  
35 process and support the development of skills and behaviours required for clinical practice.(33)  
36 Holmes found that students thought they improved their learning, particularly their understanding,  
37 as a result of the continuous assessment.(34) Delaram et al.’s study showed that weekly quiz tests  
38 increased the test scores in the midterm and final examinations in the students.(35) All of these  
39 studies, along with our study, consider students evaluation important. But in the opposite, in Al  
40 Ahmad et al.’s study many students do not see any benefit for the exit exam.(36)  
41  
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45 Wang et al. based on their finding recommend that students should play multiple roles as  
46 participants, consumers, and evaluators in higher education quality assessment. They also advise  
47 considering the perspective of students as an important element of quality evaluation,  
48 enhancement, assurance, and control at the institutional level.(37) Our participants believe students  
49 should be evaluators, too, to evaluate teachers, themselves, and even schools (Students surveys).  
50 The findings of Ulker’s study demonstrate that student evaluations can lead to the improvement  
51 of teaching quality.(38) In another study, findings revealed the need elements of self-assessment  
52 in relation to examination to make the students more aware of their clinical competence.(39)  
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3 Based on our study findings, besides students' self-evaluation and surveys results, students' and  
4 graduates' outcomes, and related medical centers' performance are among nursing education  
5 institutions' outcomes that should be considered. In a study study, employability links (links with  
6 employers and employability training),(27) and in Degtjarjova et al. study clear achievement  
7 assessment and feedback, higher education future prospects; graduates' competitiveness in the  
8 labor market,(13) were among the quality factors. The results of these studies are almost  
9 compatible with ours. In our study, higher education, employment, learning and competence of  
10 graduates/students, were important for participants too.  
11  
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13  
14 Measuring related medical centers' performance as an indicator of the performance of the school  
15 can be a new finding that has not been discussed in the studies. One of the reasons that can cause  
16 this matter to get less attention is that this is a problem specific to disciplines with clinical practice  
17 like nursing. Furthermore measuring this dimension can be very difficult and requires careful  
18 planning. We also could not find a study that reports about student familiarity with the institution's  
19 rules and plans.  
20  
21

22 The findings of our study were expressed from the perspective of students, one of the most  
23 important stakeholders of higher education. Educational leaders can consider these results in  
24 planning for the design of performance measurement systems that are carried out in order to  
25 improve the performance of educational institutions. Many simple but important aspects from the  
26 perspective of students have been neglected in measuring the performance of educational  
27 institutions such as self-evaluation by students or peer evaluation for teachers. Nursing educators  
28 can also evaluate the dimensions that are mentioned in this study and are in the scope of their  
29 performance with appropriate tools and improve it if needed. Researchers may provide a more  
30 comprehensive view of the issue by examining the opinions of other stakeholders that are less  
31 addressed, such as nurses or families, and integrate and compare the findings of these studies with  
32 our findings and other studies.  
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36 The limitation in this study was that because our data collection method was focus group and  
37 students were invited to join the sessions voluntarily, so characteristics of those who accepted to  
38 participate may be different from others. The truth is that those who tend to speak in front of a  
39 group of people can have different personality traits than people who don't like to talk in groups.  
40 But considering that we are not investigating any personality traits in people, this type of sampling  
41 used in our study cannot cause bias in the samples and thus threaten the rigor of data collected.  
42  
43

#### 44 **Conclusion:**

45  
46 Important aspects of nursing education institution performance that need to be measured in the  
47 students' perspective were determined in this context. Stakeholders' consultation can be considered  
48 as one of the very first steps in developing a measurement system with the aim of improvement.  
49 Based on the needs and ideas of this important group of stakeholders, we can proceed further. Still  
50 more investigation amongst other groups of stakeholders and understanding their point of view is  
51 also essential. When specified what is important to be measured, it is appropriate to develop or  
52 choose suitable and measurable performance indicators for each of the recognized categories so it  
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will make a management dashboard for responsible parties to determine issues and weak points, plan, and take required actions.

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Conceptualization, M.G., L.V. and V.Z.; methodology, M.G., L.V., V.Z. and F.T.; validation, M.G., L.V. and V.Z.; formal analysis, M.G., L.V., V.Z., A.G. and A.J.; investigation, M.G. and L.V.; resources, L.V., V.Z. and F.T.; data curation, M.G.; writing—original draft preparation, M.G.; writing—review and editing, M.G., LV and VZ; visualization, M.G., L.V., V.Z., and A.G.; supervision, L.V.; project administration, M.G., and L.V.; funding acquisition, L.V.

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### **Data sharing statement:**

No additional data available.

### **Ethics statement:**

The study and its method used were approved by the ethics committee of Tabriz University of Medical Sciences (IR.TBZMED.REC.1399.1128).

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### **References:**

1. Rowe AK, Labadie G, Jackson D et al. Improving health worker performance: an ongoing challenge for meeting the sustainable development goals. *Bmj* 2018; 362:k2813. doi: 10.1136/bmj.k2813
2. United Nations. The Sustainable Development Agenda: United Nations 2015 [22/December/2021]. Available from: <https://www.un.org/sustainabledevelopment/development-agenda/>.
3. Ploylearmsang C, Tongsir S, Pirikannont M, Srisaknok T. Effects of home-based care inter-professional education on students' outcomes: Mahasarakham University Experiences. *Med Sci Educ*. 2021;31(2):677-85. doi: 10.1007/s40670-021-01244-8
4. Cassiani SHDB, Wilson LL, Mikael SdSE, Peña LM, Grajales RAZ, McCreary LL, et al. The situation of nursing education in Latin America and the Caribbean towards universal health. *Rev Lat Am Enfermagem*. 2017;25(11):e2913. doi: 10.1590/1518-8345.2232.2913

5. Oldland E, Botti M, Hutchinson AM, Redley B. A framework of nurses' responsibilities for quality healthcare — Exploration of content validity. *Collegian*. 2020;27(2):150-63. doi: 10.1016/j.colegn.2019.07.007.
6. Bvumbwe T, Mtshali N. Nursing education challenges and solutions in Sub Saharan Africa: an integrative review. *BMC Nurs*. 2018;17(3):1-11. doi: 10.1186/s12912-018-0272-4
7. Appiah S. Quality of nursing education programme in the Philippines: faculty members perspectives. *BMC Nurs*. 2020;19(1):110. doi: 10.1186/s12912-020-00508-9
8. Tabrizi JS, Farahsa S. How evaluation and audit is implemented in educational organizations? a systematic review. *Research and Development in Medical Education*. 2015;4(1):3-16. doi: 10.15171/rdme.2015.002
9. Beaussier A-L, Demeritt D, Griffiths A, Rothstein H. Steering by their own lights: Why regulators across Europe use different indicators to measure healthcare quality. *Health Policy*. 2020;124(5):501-10. doi: 10.1016/j.healthpol.2020.02.012
10. Englund H, Ludvigsen E. Performance measurement systems as management control in R&D organizations: A case study [Master Thesis]. Karlskrona, Sweden: Blekinge Tekniska Högskola; 2015.
11. Lighter DE. How (and why) do quality improvement professionals measure performance? *Int J Pediatr Adolesc Med*. 2015;2(1):7-11. doi: 10.1016/j.ijpam.2015.03.003
12. Gunnarsdóttir I, Davíðsdóttir B, Worrell E, Sigurgeirsdóttir S. It is best to ask: designing a stakeholder-centric approach to selecting sustainable energy development indicators. *Energy Research & Social Science*. 2021;74:101968. doi: 10.1016/j.erss.2021.101968
13. Degtjarjova I, Lapina I, Freidenfelds D. Student as stakeholder: "voice of customer" in higher education quality development. *Marketing and Management of Innovations*. 2018(2):388-98. doi: 10.21272/mmi.2018.2-30
14. Ahmadi Chenari H, Zakerimoghadam M, Baumann SL. Nursing in Iran: Issues and Challenges. *Nurs Sci Q*. 2020;33(3):264-7. doi: 10.1177/0894318420920603
15. Kalateh Sadati A, Heydari ST, Ebrahimzade N, Bagheri Lankarani K. A Qualitative Study of Nursing Management in Iran. *J Environ Public Health*. 2021;2021:1315734. doi:10.1155/2021/1315734
16. Zamanzadeh V, Valizadeh L, Neshat H. Challenges of human resources management in nursing in Iran: A qualitative content analysis. *Nursing open*. 2020;7(1):319-25. doi: 10.1002/nop.2.393
17. Barasteh S, Rassouli M, Karimirad MR, Ebadi A. Future Challenges of Nursing in Health System of Iran. *Front Public Health*. 2021;9:676160-. doi: 10.3389/fpubh.2021.676160
18. Gentry SV, Powers EFJ, Azim N, Maidrag M. Effectiveness of a voluntary family befriending service: a mixed methods evaluation using the Donabedian model. *Public Health*. 2018;160:87-93. doi: 10.1016/j.puhe.2018.03.034
19. Munea AM, Alene GD, Debelew GT. Quality of youth friendly sexual and reproductive health Services in West Gojjam Zone, north West Ethiopia: with special reference to the application of the Donabedian model. *BMC Health Serv Res*. 2020;20(1):245. doi: 10.1186/s12913-020-05113-9
20. Bahrami M, Purfarzad Z, Keshvari M, Rafiei M. The Components of Nursing Competence in Caring for Older People in Iranian Hospitals: A Qualitative Study. *Iran J Nurs Midwifery Res*. 2019;24(2):124-30. doi: 10.4103/ijnmr.IJNMR\_83\_18
21. Webometrics Ranking of World Universities. Consejo Superior de Investigaciones Científicas (CSIC); 2021. Available from: <https://www.webometrics.info/en/asia/iran%20%28islamic%20republic%20of%29>.
22. Tabriz nursing and midwifery faculty. Statistics and information of faculty's students Iran: Tabriz university of medical sciences; 2021 [cited 10/september/2022]. Available from: <https://nursing.tbzmed.ac.ir/page/457/>.
23. Gray JR, Grove SK, Sutherland S. Burns and Grove's The Practice of Nursing Research - E-Book: Appraisal, Synthesis, and Generation of Evidence. 2016.

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51  
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24. Ameh S, Gómez-Olivé FX, Kahn K, Tollman SM, Klipstein-Grobusch K. Relationships between structure, process and outcome to assess quality of integrated chronic disease management in a rural South African setting: applying a structural equation model. *BMC Health Serv Res*. 2017;17(1):229. doi: 10.1186/s12913-017-2177-4
  25. Berwick D, Fox DM. "Evaluating the Quality of Medical Care": Donabedian's Classic Article 50 Years Later. *Milbank Q*. 2016;94(2):237-41.
  26. Kajonius PJ, Kazemi A. Structure and process quality as predictors of satisfaction with elderly care. *Health Soc Care Community*. 2016;24(6):699-707. doi: 10.1111/hsc.12230
  27. Abbas J. Service quality in higher education institutions: qualitative evidence from the students' perspectives using Maslow hierarchy of needs. *International Journal of Quality and Service Sciences*. 2020; 12(3):371-84. doi:10.1108/IJQSS-02-2020-0016
  28. Dube MB, Mlotshwa PR. Factors influencing enrolled nursing students' academic performance at a selected private nursing education institution in KwaZulu-Natal. *Curationis*. 2018;41(1):1-7. doi: 10.4102/curationis.v41i1.1850
  29. Angasu K, Bekela T. Achievement of Clinical Learning Outcomes and Associated Factors Among Midwifery and Nursing Undergraduate Students of Jimma University, Ethiopia. *Adv Med Educ Pract*. 2021;12:987-94. doi: 10.2147/AMEP.S321116
  30. Karabulut N, Aktaş YY, Alemdar DK. The relationship of clinical learning environment to nursing students' academic motivation. *Kontakt*. 2015;17(1):e6-e12. doi: 10.1016/j.kontakt.2015.01.003
  31. Parvan K, Hosseini F, Bagherian S. The relationship between nursing instructors' clinical teaching behaviors and nursing students' learning in Tabriz University of Medical Sciences in 2016. *Educ Health*. 2018;31(1):32-8. doi: 10.4103/1357-6283.239044
  32. Lilja Andersson P, Ahlner-Elmqvist M, Johansson U-B, Larsson M, Ziegert K. Nursing students' experiences of assessment by the Swedish National Clinical Final Examination. *Nurse Education Today*. 2013;33(5):536-40. doi: 10.1016/j.nedt.2011.12.004
  33. Müller S, Settmacher U, Koch I, Dahmen U. A pilot survey of student perceptions on the benefit of the OSCE and MCQ modalities. *GMS J Med Educ*. 2018;35(4):Doc51. doi: 10.3205/zma001197
  34. Holmes N. Student perceptions of their learning and engagement in response to the use of a continuous e-assessment in an undergraduate module. *Assessment & Evaluation in Higher Education*. 2015;40(1):1-14. doi: [10.1080/02602938.2014.881978](https://doi.org/10.1080/02602938.2014.881978)
  35. Delaram M, Shams S, Gandomani HS. The effect of quizzes on test scores of nursing students for learning maternal and child health. *Journal of Medical Education*. 2017;16(2). e105578. doi: [10.22037/jme.v16i2.13582](https://doi.org/10.22037/jme.v16i2.13582)
  36. Al Ahmad M, Al Marzouqi AH, Hussien M. Exit exam as academic performance indicator. *Turkish Online Journal of Educational Technology*. 2014;13(3):58-67.
  37. Wang D, Sun Y, Jiang T. The Assessment of higher education quality from the perspective of students through a case study analysis. *Front Educ China*. 2018;13(2):267-87. doi:10.1007/s11516-018-0014-0
  38. Ulker N. How can student evaluations lead to improvement of teaching quality? A cross-national analysis. *Research in Post-Compulsory Education*. 2021;26(1):19-37. doi:10.1080/13596748.2021.1873406
  39. Forsman H, Jansson I, Leksell J, Lepp M, Sundin Andersson C, Engström M, et al. Clusters of competence: relationship between self-reported professional competence and achievement on a national examination among graduating nursing students. *J Adv Nurs*. 2020;76(1):199-208. doi: 10.1111/jan.14222

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Figure 1: The Donabedian Model components and related emerged categories

Categories that emerged during the data analysis process were compared and assigned to related component of the Donabedian Model (structure-process-outcome)

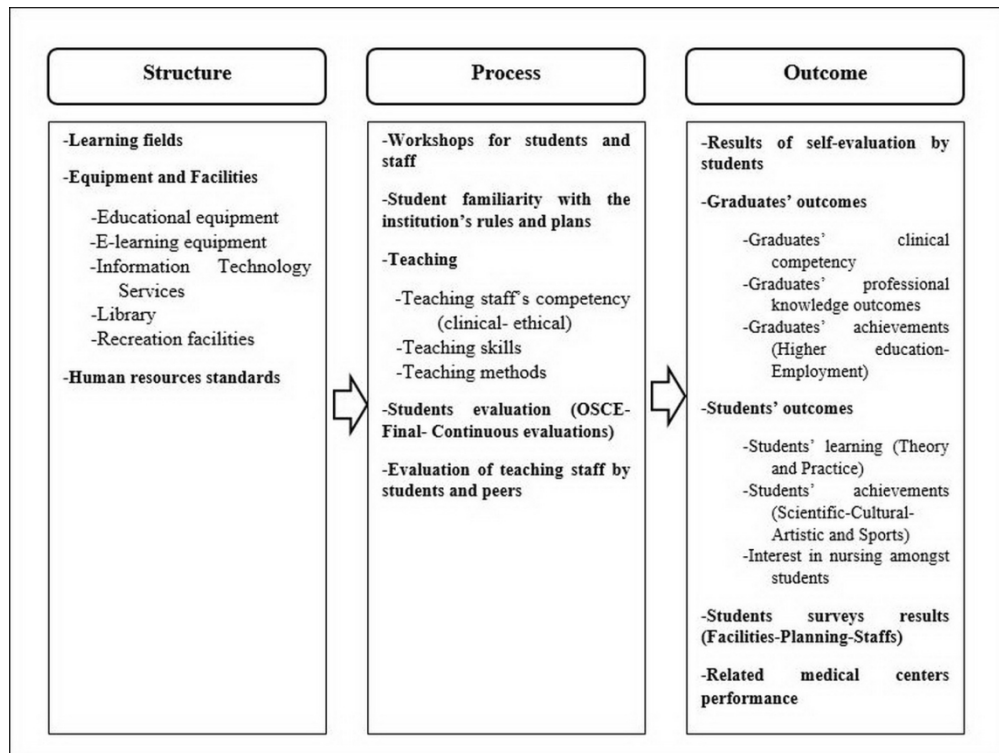


Figure 1: The Donabedian Model components and related emerged categories

Categories that emerged during the data analysis process were compared and assigned to related component of the Donabedian Model (structure-process-outcome).

120x90mm (300 x 300 DPI)

## Standards for Reporting Qualitative Research (SRQR)\*

Page/line no(s).

### Title and abstract

<p><b>Title</b> - Concise description of the nature and topic of the study Identifying the study as qualitative or indicating the approach (e.g., ethnography, grounded theory) or data collection methods (e.g., interview, focus group) is recommended</p>	Page 2
<p><b>Abstract</b> - Summary of key elements of the study using the abstract format of the intended publication; typically includes background, purpose, methods, results, and conclusions</p>	Page 2

### Introduction

<p><b>Problem formulation</b> - Description and significance of the problem/phenomenon studied; review of relevant theory and empirical work; problem statement</p>	Page 3
<p><b>Purpose or research question</b> - Purpose of the study and specific objectives or questions</p>	Pages 3 and 4

### Methods

<p><b>Qualitative approach and research paradigm</b> - Qualitative approach (e.g., ethnography, grounded theory, case study, phenomenology, narrative research) and guiding theory if appropriate; identifying the research paradigm (e.g., postpositivist, constructivist/ interpretivist) is also recommended; rationale**</p>	Page 4
<p><b>Researcher characteristics and reflexivity</b> - Researchers' characteristics that may influence the research, including personal attributes, qualifications/experience, relationship with participants, assumptions, and/or presuppositions; potential or actual interaction between researchers' characteristics and the research questions, approach, methods, results, and/or transferability</p>	Researchers' characteristics aren't influential in this study
<p><b>Context</b> - Setting/site and salient contextual factors; rationale**</p>	Page 4
<p><b>Sampling strategy</b> - How and why research participants, documents, or events were selected; criteria for deciding when no further sampling was necessary (e.g., sampling saturation); rationale**</p>	Page 4
<p><b>Ethical issues pertaining to human subjects</b> - Documentation of approval by an appropriate ethics review board and participant consent, or explanation for lack thereof; other confidentiality and data security issues</p>	Page 5
<p><b>Data collection methods</b> - Types of data collected; details of data collection procedures including (as appropriate) start and stop dates of data collection and analysis, iterative process, triangulation of sources/methods, and modification of procedures in response to evolving study findings; rationale**</p>	Page 4



1 2 3 4 5	<b>Data collection instruments and technologies</b> - Description of instruments (e.g., interview guides, questionnaires) and devices (e.g., audio recorders) used for data collection; if/how the instrument(s) changed over the course of the study	Page 4
6 7 8	<b>Units of study</b> - Number and relevant characteristics of participants, documents, or events included in the study; level of participation (could be reported in results)	Pages 4 and 5
9 10 11 12	<b>Data processing</b> - Methods for processing data prior to and during analysis, including transcription, data entry, data management and security, verification of data integrity, data coding, and anonymization/de-identification of excerpts	Page 5
13 14 15 16	<b>Data analysis</b> - Process by which inferences, themes, etc., were identified and developed, including the researchers involved in data analysis; usually references a specific paradigm or approach; rationale**	Pages 5
17 18 19 20	<b>Techniques to enhance trustworthiness</b> - Techniques to enhance trustworthiness and credibility of data analysis (e.g., member checking, audit trail, triangulation); rationale**	Page 5

### Results/findings

23 24 25 26	<b>Synthesis and interpretation</b> - Main findings (e.g., interpretations, inferences, and themes); might include development of a theory or model, or integration with prior research or theory	Pages 6-11
27 28 29	<b>Links to empirical data</b> - Evidence (e.g., quotes, field notes, text excerpts, photographs) to substantiate analytic findings	Pages 6-11

### Discussion

32 33 34 35 36 37 38	<b>Integration with prior work, implications, transferability, and contribution(s) to the field</b> - Short summary of main findings; explanation of how findings and conclusions connect to, support, elaborate on, or challenge conclusions of earlier scholarship; discussion of scope of application/generalizability; identification of unique contribution(s) to scholarship in a discipline or field	Pages 11-13
39	<b>Limitations</b> - Trustworthiness and limitations of findings	Page 13

### Other

42 43 44	<b>Conflicts of interest</b> - Potential sources of influence or perceived influence on study conduct and conclusions; how these were managed	Page 14
45 46 47	<b>Funding</b> - Sources of funding and other support; role of funders in data collection, interpretation, and reporting	Page 14

\*The authors created the SRQR by searching the literature to identify guidelines, reporting standards, and critical appraisal criteria for qualitative research; reviewing the reference lists of retrieved sources; and contacting experts to gain feedback. The SRQR aims to improve the transparency of all aspects of qualitative research by providing clear standards for reporting qualitative research.

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\*\*The rationale should briefly discuss the justification for choosing that theory, approach, method, or technique rather than other options available, the assumptions and limitations implicit in those choices, and how those choices influence study conclusions and transferability. As appropriate, the rationale for several items might be discussed together.

**Reference:**

O'Brien BC, Harris IB, Beckman TJ, Reed DA, Cook DA. **Standards for reporting qualitative research: a synthesis of recommendations.** *Academic Medicine*, Vol. 89, No. 9 / Sept 2014  
DOI: 10.1097/ACM.0000000000000388

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