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Explaining Quality Indicators of Clinical Education Methods from the Perspective of Medical Assistants

Akram Moghaddasi[1,2], Mohammad AslZare[3], Reza Boostani[4], Hamid Reza Kianifar[5], Reihaneh Shagholi[6*]

[1] *PhD Candidate, Department of Education Management, Semnan University, Semnan, Iran*
[2] *Expert of Education Development Unit, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*
[3] *Associate Professor, Department. of Urology, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*
[4] *Neurologist, Faculty of Medicine, Mashhad University of Medical Sciences, Mashhad, Iran*
[5] *Paediatrician, Department of Paediatrics, Ghaem Hospital, Mashhad, Iran*
[6] *PhD, Academic Member Imam Khomeini Higher Education Center, Agricultural Research, Education and Extension Organization(AREEO)Karaj, Iran*

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ABSTRACT

Introduction: Clinical education is part of medical education where students gradually acquire skills by attending patients' bedside. In fact, students use the acquired skills and logical experiences to resolve patients' problems.
Material and Methods: This qualitative study was performed using the non-guided content analysis method. The study population included 240 assistants from 13 educational groups in the School of Medicine of Mashhad, Iran, 121 of whom were enrolled in the study.
Results: The clinical education methods included four main indicators of content, implementation process, professor, and interaction. According to the results, there were three components in the professor indicator, including the use of experiences of professors, application of expert professors, and continuous presence in all the methods. In addition, components of more practice and training were confirmed in all the methods. In the implementation process indicator, the component of feedback was emphasized in all the methods.
Conclusion: According to our results, attention to the quality indicators of clinical education methods leads to the improvement of education status and performance.

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Introduction

Today, special attention is paid to medical education due to supplying the human resources required for community health. Clinical education is a part of medical training, where students practically use their theoretical knowledge. At this stage of education, medical students attend patients' bedside and gradually acquire skills. In addition, they prepare themselves for resolving actual patient problems by applying their experiences and logic gained during the educational process (1). Clinical education focuses on learning real issues in a professional workplace, and students can learn the skills of history taking, physical examination, interpretation of clinical data, decision making, sympathy, communication skills, diagnostic reasoning, planning of medical treatment, and professional commitment in an integrated form through active participation (2). However, acquiring clinical abilities requires gaining clinical experience by learners and practicing the skills by observing, participating, performing clinical procedures, deducting, and

**Corresponding author:* Reihaneh Shagholi, Academic Member Imam Khomeini Higher Education Center, Agricultural Research, Education and Extension Organization (AREEO) Karaj, Iran. Tel and Fax: 02122419709; Email: r.shagholi@areeo.ac.ir
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managing patients under the supervision of an instructor.

In general, the goal of clinical education is to provide the opportunity to cope with real problems and apply theoretical knowledge in the field, which lead to the development of psychomotor skills and training of competent physicians in various clinical areas (3, 4). Studies show that medical students must attend many practical education sessions since most graduates have poor problem-solving skills and lack the necessary competence to perform clinical tasks (5, 6). Several studies have indicated a relatively deep gap between clinical care performance and the current curricula for the fields of medicine and paramedicine, in a way that students cannot acquire the necessary clinical skills and abilities using the present clinical educations (7). Therefore, it is inevitable to focus on the educational environment as one of the most important determinants of success of an educational program (8).

Professors and various teaching methods, including journal club, joint sessions, specialized clinics, courses and grants, as well as practice and procedure, have a significant effect on the success of clinical education and integration of theoretical and practical educations as important educational opportunities (9). To achieve effective clinical education, it is necessary to constantly assess the status of education (8), enhancement of which leads to the training of competent students (10) and improved quality of medical services (9). Therefore, we aimed to explain the quality indicators of clinical education methods from the perspective of assistants to lay the necessary groundwork for improving clinical education by presenting the optimal indicators of clinical education methods.

Materials and Methods

In this cross-sectional study, non-guided content analysis was applied, and the subjects were selected from fellowship and subspecialty residents in 13 fields of pathology, pediatrics, orthopedics, anesthesiology, dermatology, nuclear medicine, internal medicine, general surgery, plastic surgery, gynecology, neurology, and cardiology. The participants were chosen using the purposive sampling method with maximum variety. The subjects were working in Ghaem Teaching Hospital, Mashhad, Iran, during the academic year of 2015-2016, and sampling was carried out by using the electronic assessment system of assistant education quality. In this system, data are collected by open-ended surveys after explaining the objectives of the study, ensuring the subjects of the confidentiality terms regarding their personal information, and acquiring the necessary permissions. Data analysis was performed in three stages using summarizing content analysis. Overall, 121 assistants were enrolled from 240 fellowship and subspecialty assistants in 13 educational groups who worked in Ghaem Teaching Hospital during the assessment of clinical education quality.

Results

From the 240 fellowship and subspecialty assistants in 13 educational groups, 121 individuals were entered into the study from the fields of urology (N=4), orthopedics (N=4), pediatrics (N=9), dermatology (N=8), internal medicine (N=7), plastic surgery (N=3), general surgery (N=10), gynecology (N=6), neurology (N=8), and cardiology (N=12). The highest number of subjects was related to the fields of anesthesiology (N=19), pathology (N=16), and nuclear medicine (N=15). Qualitative analysis of assistants' opinions led to the recognition of four main indicators of content, implementation process, professor, and interaction in all the clinical educational fields, including journal club, joint meetings, specialized clinics, rounds and grants, operating room, and teaching the procedures. In addition, the opinions of assistants were used to formulate the main indicator of content into two sub-indicators of content features and time management.

On the other hand, the main indicator of implementation process was divided into three sub-indictors of before, during and after the execution, and the indicator of professors was categorized into two sub-indicators of professor characteristics and responsibilities. Finally, the main indicator of interaction was divided into two sub-indicators of opinion exchange and more efficient learning. Four main indicators and 11 sub-indicators were extracted. Results of the quality indicators of clinical education based on various methods are presented in tables 1-5. In clinical education via journal club in the main indicator of content, content features and time management were allocated nine and five components, respectively. The main indicator of the implementation process included five components before the execution, as well as five and one components during and after the implementation, respectively.

In the main indicator of professor, the characteristics and responsibilities of professors were each formulated with seven components. The main indicator of interaction was allocated five and four components for opinion exchange and more efficient learning, respectively (Table 1). In clinical education via joint sessions, content features and time management were assigned nine

and two components, respectively, in the main indicator of content. On the other hand, the main indicator of implementation process included four components before, three components during, and one component after the implementation. In the main indicator of professor, characteristics and responsibilities of instructors were assigned eight and three components, respectively. In the main indicator of interaction, opinion exchange had five components and more efficient learning comprised of three components (Table 2).

In clinical education via specialized clinics, content features and time management were allocated six and two components, respectively, in the main indicator of content. The main indicator of the implementation process included three components before the execution, as well as four and two components during and after the implementation, respectively. In the main indicator of professor, the characteristics and

Table 1. Quality indicators of clinical education journal club from the perspective of assistants

Interaction	Professor	Implementation process	Content
Discussion and idea exchange 1. Consensus opportunity for new ideas 2. Possibility of discussion 3. Possibility of interaction with other groups 4. Possibility of ranking the participants 5. Holding evidence-based journal clubs More efficient learning 1. More practice and education 2. Practice to complete the actual article 3. Attempt at in-depth learning 4. Emphasis on quality and not quantity	Features of professors 1. Using the experiences of professors 2. Study and preparation of professors 3. Use of relevant professors 4. Proper commitment of the responsible professors 5. High academic level of the responsible professor 6. Lack of application of the experiences and beliefs of professors 7. Evidence-based application of opinions of professors Responsibilities of professors 1. Holding by professors and residents 2. Participation of more than one professor 3. Full presence of expert professors 4. Regular presence of statistical professors 5. Selection of article by professors and not assistants 6. Level of aid and guidance provided by the professor in each session 7. Introduction by professor	Before the implementation 1. Continuous holding 2. Preparing materials for members of the session 3. Presenting the list by education 4. Scheduling the sessions 5. Timely notification During the implementation 1. Organization during implementation 2. Cooperation of all beneficiaries 3. Setting the time (duration and time) 4. Providing the file of articles for assistants After the implementation 1. Evaluation and feedback provision	Subject features 1. Selection of proper topics 2. Novelty of topics 3. Use of updated articles 4. Evaluation of practical topics 5. Provision of key notes 6. Not repeated article 7. Attention to the difficulty of the content 8. Expression of common topics 9. Targeted toward needs Time management 1. Fitting of the content volume with time 2. Avoiding long presentation 3. Number of articles per session 4. Fitting the number of articles with time 5. Presentation of an article

Table 2. Quality indicators of clinical education joint sessions from the perspective of assistants

Interaction	Professor	Implementation process	Content
Discussion and idea exchange 1. Consensus opportunity for new ideas 2. Possibility of discussion 3. Possibility of interaction with other groups 4. Scheduling for the presence of all beneficiaries 5. Necessity of reaching a mutual perspective More efficient learning 1. More practice and education 2. Attempt at in-depth learning 3. Emphasis on quality and not quantity	Features of professors 1. Using experiences of professors 2. Study and preparation of professors 3. Use of relevant professors 4. Proper commitment of the responsible professors profe-sssorss 5. Decision making with collective wisdom 6. Scientific dealing with patients 7. Application of the knowledge of young professors Responsibilities of professors 1. Participation of more than one professor 2. Full presence of expert professors 3. Transfer of experiences and empowerment	Before the implementation 1. Continuous holding 2. Prediction of the space and facilities 3. Scheduling the sessions 4. Timely notification During the implementation 1. Organization during imple-menttation 2. Necessity of having specific patients 3. Cooperation of all beneficiaries After the implementation 1. Evaluation and feedback provision	Subject features 1. Selection of proper topics 2. Novelty of topics 3. Use of updated articles 4. Evaluation of practical topics 5. Presenting of less common cases 6. Evaluation of disease aspects 7. Review 8. Presenting less common cases 9. Ability to compare resources Time management 1. Fitting the content volume with time 2. Avoiding long presentation

responsibilities of the professors were formulated with eight and four components, respectively. The main indicator of interaction was allocated four and seven components for opinion exchange and more efficient learning, respectively (Table 3). In clinical education via rounds and grants in the main indicator of content, content features and time management were assigned 11 and 2 components, respectively. The main indicator of implementation process included three components before, one component during, and two components after the implementation. In the main indicator of professor, characteristics and responsibilities of instructors were assigned six and five components, respectively. In the main indicator of interaction, opinion exchange and more efficient learning each had five components (Table 4).

Table 3. Quality indicators of clinical education specialized clinic from the perspective of assistants

Interaction	Professor	Implementation process	Content
Discussion and idea exchange 1. Consensus opportunity for new ideas 2. Possibility of discussion 3. Possibility of interaction with other groups 4. Scheduling for the presence of all beneficiaries More efficient learning 1. More practice and education 2. Familiarization with clinical examination and visit 3. Familiarization with patient management methods 4. Attempt at in-depth learning 5. Emphasis on quality and not quantity 6. Familiarization with outpatients 7. Familiarization with specific diseases	Features of professors 1. Using the experiences of professors 2. Study and preparation of professors 3. Use of relevant professors 4. Proper commitment of in charge professors 5. Fast and completion drawing of conclusion 6. Decision making with collective wisdom 7. Scientific dealing with patients 8. Application of the knowledge of young professors Responsibilities of professors 1. Holding by professors and residents 2. Full presence of expert professors 3. Transfer of experiences and empowerment 4. Bed-side patient care education	Before the implementation 1. Continuous holding 2. Timely notification 3. Prediction of the space and facilities During the implementation 1. Organization during implementation 2. Creating a completely friendly environment 3. Cooperation of all beneficiaries 4. Setting the time (duration and time) After the implementation 1. Informing decisions 2. Evaluation and feedback provision	Subject features 1. Novelty of topics 2. Use of updated articles 3. Evaluation of practical topics 4. Provision of key notes 5. Expression of common topics 6. Evaluation of disease aspects Time management 1. Attention to the standard of visits 2. Low number of clinics and high number of patients

Table 4. Quality indicators of clinical education rounds and grands from the perspective of assistants

Interaction	Professor	Implementation process	Content
Discussion and idea exchange 1. Consensus opportunity for new ideas 2. Possibility of discussion 3. Possibility of interaction with other groups 4. Scheduling for the presence of all beneficiaries 5. Necessity of reaching a mutual perspective More efficient learning 1. More practice and education 2. Familiarization with clinical examination and visit 3. Familiarization with patient management methods 4. Attempt at in-depth learning 5. Emphasis on quality and not quantity	Features of professors 1. Using the experiences of professors 2. Study and preparation of professors 3. Use of relevant professors 4. Proper commitment of responsible professors 5. Evidence-based application of opinions of professors 6. Fast and completion drawing of conclusion Responsibilities of professors 1. Full presence of expert professors 2. Transfer of experiences and empowerment 3. Bed-side patient care education 4. Close monitoring of participation by professors	Before the implementation 1. Continuous holding 2. Scheduling the sessions 3. Prediction of the space and facilities During the implementation 1. Necessity of having specific patients After the implementation 1. Evaluation and feedback provision 2. Informing decisions	Subject features 1. Selection of proper topics 2. Use of updated articles 3. Evaluation of practical topics 4. Provision of key notes 5. Attention to the difficulty of the content 6. Expression of common topics 7. Ability to compare resources 8. Presenting of less common cases 9. Evaluation of disease aspects 10. Turning theory into practice 11. Attention to treatment and education Time management 1. Attention to the standard of visits 2. Increasing the number of grand beneficiaries

Table 5. Quality indicators of clinical education operation and procedures from the perspective of assistants

Interaction	Professor	Implementation process	Content
More efficient learning 1. More practice and education 2. Familiarization with patient management methods 3. Attempt at in-depth learning 4. Emphasis on quality and not quantity	Features of professors 1. Using the experiences of professors 2. Use of relevant professors Responsibilities of professors 1. Full presence of expert professors 2. Transfer of experiences and empowerment 3. Bed-side patient care education	Before the implementation 1. Prediction of the space and facilities 2. Accurate planning 3. Standardization of space and equipment During the implementation 1. Organization during imple-menttation 2. Creating a completely friendly environment 3. Cooperation of all bene-ficiaries 4. Possible complications of operation After the implementation 1. Evaluation and feedback provision	Subject features 1. Provision of key notes 2. Evaluation of disease aspects 3. Turning theory into practice 4. Attention to treatment and education Time management 1. Attention to the standard of visits

In clinical education of operating room and procedures, four components were allocated to the content features and one component was assigned to time management in the main area of content. The main indicator of implementation process included three components for before the implementation, four components for during the implementation, and one component for after the implementation. On the other hand, two and four components were formulated for characteristics and responsibilities of professors in the main indicator of professors. Finally, more efficient learning was assigned four components in the main indicator of interaction (Table 5). Results presented showed that the five components of use of updated articles, applied research, presenting key notes, expression of common issues, and evaluation of disease aspects had the highest frequency (4 out of 5) in the main indicator of content and sub-indicator of content features. On the other hand, two components of continuous holding and prediction of space and facilities had the highest frequency (4 out of five) in the main indicator of implementation process and the sub-indicator of before the implementation. Moreover, two components of organization during implementation and cooperation of all involved individuals had the highest frequency (4 out of 5) in the sub-indicator of during the implementation. Finally, the components of evaluation and feedback provision in all the methods were confirmed in the sub-indicator of after the implementation.

While the highest frequency (4 out of 5) in the main indicator of professor and sub-indicator of professor features was allocated to two components of research and preparedness and proper accountability of professors, two components of using the relevant professors and experiences of professors were confirmed in all the methods in the same indicator. Furthermore, in the sub-indicator of professor responsibility, the two components of holding the course by professors and residents and transfer of experiences and empowering had the highest frequency (4 out of 5). In the same indicator, the component of full presence of experienced professors was confirmed in all the methods.

In the main indicator of interaction and sub-indicator of discussion and exchange of opinion, four components of consensus opportunity for new ideas, possibility of discussion and opinion exchange, interaction with other groups, and planning in the presence of all beneficiaries had the highest frequency (4 out of 5). Moreover, the two components of attempt at in-depth learning and focus on quality and not quantity had the highest frequency (4 out of 5) in the sub-indicator of more efficient learning. In addition, the component of more practice and teaching was confirmed in all the methods. In other words, the three components approved in the five clinical education methods were using the relevant professors, applying experiences of professors and complete presence of experienced professors in the main indicator of professor. Further, the component of more practice and teaching in the main indicator of interaction and the component of evaluation of feedback provision in the main indicator of implementation process were also confirmed. It is notable that none of the components was allocated maximum frequency in the indicator of content.

Discussion

While literature review revealed that no specific study has been conducted to explain the quality indicators of clinical education methods from the perspective of assistants in Iran, several domestic and foreign studies have separately

evaluated the clinical techniques. Results of studies on the improvement of journal club sessions (11-13) emphasized the continuous presence of professors, knowledge of statistical techniques, authority of professors (13, 14), provision of contents prior to sessions (15), and presenting evidence-based topics (16), which are in line with our findings. Results of a study on faculty members and operating room specialists as mentors in the process of education demonstrated the significance of some of the indicators, including clinical competence, theoretical knowledge, as well as professor organization and communication skills (17-19), which is congruence with our findings regarding the recognized indicators. Moreover, the majority of studies have emphasized the role of faculty members and operating room specialists as the first and second mentors in the education of students (20-22).

In terms of clinical education, the indicators of the number and diversity of and time allocated to patients were emphasized in previous studies, asserting that increased number of patients was associated with the allocation of less time to patients (23), which is consistent with the indicators presented in the current research. Regarding round standards in medical education, indicators such as familiarity with patient examination and visit, as well as knowledge about patient management, were confirmed, which were also regarded important by the assistants of the present study. It is worth mentioning that no studies were found on the evaluation of quality indicators of joint clinical education sessions. However, studies have shown that cooperation and discussion over medical issues are essential for successful education (24, 25).

Conclusion

According to the results of the present study, attention to quality indicators of clinical education methods lays the proper foundation for improving the current condition and achieving favorable performance in this regard. Therefore, it is recommended that the indicators found in the present study be considered by the involved individuals to improve the quality of clinical education.

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Conflict of Interest

The authors declare no conflict of interest.

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