RDME
Research and Development in Medical Education
Res Dev Med Educ, 2020, 9, 4
doi: 10.34172/rdme.2020.004
https://rdme.tbzmed.ac.ir
TUOMS PRESS

Original Research

# Evaluating clinical teaching in a pediatric hospital in Iran: Viewpoints of academic members and medical students

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**Article info**

***Article History:***
Received: 30 Dec. 2019
Accepted: 8 Apr. 2020
epublished: 27 Apr. 2020

***Keywords:***
Evaluation
Standards
Clinical teaching

**Abstract**

***Background:*** Evaluating the state of clinical teaching is a very essential aspect of useful teaching. It helps in determining areas of strength and areas for improvement. Accordingly, the aim of this study was to evaluate clinical teaching activities in a pediatric hospital at the Tabriz University of Medical Sciences, based on standards provided by the Ministry of Health in Iran.

***Methods:*** A cross-sectional study was conducted from October to December 2018 in the setting of a pediatric hospital of the Tabriz University of medical sciences. Participants were selected from this hospital: academic members and medical students who were present in the pediatric hospital during this investigation. The evaluation tool was a checklist of standards relating to clinical teaching settings. The outcome measures included four domains, assessed using mean standard scores: teaching round, morning report, journal club, and outpatient clinic. Analysis of variance (ANOVA) was used to compare scores on the checklist among academic members and medical students.

***Results:*** A total of 126 participants completed the checklist. Among the participants, 50 (39.6 %) were 5th-year medical students, 51 (40.4%) were final-year medical students and 25(19.8%) were academic members. The highest and lowest mean standard scores were 85.3 and 34.5, the morning report and the teaching round by final-year medical students, respectively. No statistically significant differences were found among academic members and medical students' mean standard scores for teaching round ($P=0.983$), morning report ($P=0.696$), journal club ($P=0.952$), and outpatient clinic ($P=0.060$).

***Conclusion:*** Considering both academic members and medical students, clinical teaching standards were not widely regarded as important in the pediatric wards of the Tabriz University of Medical Sciences. Some interventions are indicated to improve adherence to the Ministry of Health standards.

## Introduction

Although classroom teaching is very useful for undergraduate medical students, the most important methods are clinical experiences.[1] Through clinical teaching, clinical instructors can pass on their experiences to students, teach appropriate subjects in contexts, and help incorporate theoretical information into clinical practice. However, clinical instruction is complex pedagogy: clinical instructors need not only medical information but also communication skills, patient care skills and group-working skills.[2] In recent years, clinical teaching in medical universities has declined from 37% to 16%. Considering the importance of clinical teaching, evaluating clinical teaching practice in medical universities is of great importance.[3]

The evaluation of clinical teaching is the subject of extensive investigation in medical education. It helps in determining areas of strength as well as areas for improvement. Teachers, students, program coordinators, and the health care system itself, along with patients, can all benefit from improvement in clinical teaching.[4]

The Ministry of Health in Iran determined standards for clinical teaching, including teaching rounds, morning reports, outpatient clinics and journal club standards.[5] To

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be useful, clinical teaching should meet some specified accepted principles, for example, having routine and expected times, explicit objectives, suitable duration, obligatory participation, having adequate equipments and all required tools, and delivering appropriate feedback to students.[6] The standards provided by the Ministry of Health in Iran consist of essential principles. Although these standards have been clearly defined, the next step in implementation is to measure their use in teaching hospitals. To improve clinical teaching, the first step is to evaluate ongoing clinical teaching activities to find areas of strength and improvement. By implementing practical interventions, more favorable clinical teaching practices would be anticipated. Accordingly, the object of this study was to evaluate the current status of clinical teaching in a pediatric hospital in Tabriz according to both academic members and medical students in 2018.

## Materials and Methods

### *Participants and setting*

The current cross-sectional study was conducted from October to December 2018 in a pediatric hospital at the Tabriz University of Medical Sciences, one of the main universities in Iran. Both academic members and medical students who were present in this hospital during our investigation participated in the study. Because of limited number of academic members and medical students in the pediatrics wards, all were selected to participate in this survey.

Medical students in pediatrics wards are trained in an externship program for 5th-year medical students and an internship program for final-year medical students. Both programs are three months in length. Inclusion criteria included being a 5th-year medical student, being a final-year medical student, or being an academic member in the pediatric hospital of the Tabriz University of Medical Sciences.

Among medical students, orientation to clinical teaching status in the pediatric hospital increases as the program continues, so data were gathered in the last week of the internship and externship to control for this confounding factor.

### *Data collection tool*

The assessment tool consisted of a checklist containing various domains of standards. The checklist was created by the Iranian Ministry of Health from the clinical teaching standards booklet, developed in 2015.[7] The checklist includes four parts: teaching rounds (9 items), outpatient clinics (11 items), journal clubs (3 items), and morning reports (7 items), for a total of 30 items. In order to ensure face and content validity, all items of checklist were evaluated and approved by ten faculty members involved in medical education.[8] The lowest content validity ratio (CVR) and content validity index (CVI) were 0.79 and 0.81, respectively. Cronbach alpha ranged from 0.87 to 0.90. Paired sample correlation coefficients ranged from 0.98 to 0.94. Checklists were distributed among participants to be completed. The items of the checklist are in yes/no format (the item is either performed or not). Respondents choose the option that best indicates their view. For scoring, each "yes" is worth one point and each "no" is worth zero points. The possible score range (0 to 100) was then calculated by a formula adapted for the varying number of participants in each subgroup: 100*total score for each group/maximum obtainable score.

### *Statistical analysis*

The main outcome variable was the mean standard score of each domain. Analysis of variance (ANOVA) was used to assess differences among the mean standard scores of each domain for each of the three groups. The Kolmogorov-Smirnov test was used to check distribution of the data as the assumption to choose ANOVA. *P* values of less than 0.05 were considered statistically significant. Multiple imputations were used to handle missing data. Data were analyzed with SPSS version 16.

## Results

In the current study, a total of 126 participants completed the 30-item checklist. Among the participants, 50 (39.6 %) were 5th-year medical students, 51 (40.4%) were final-year medical students and 25 (19.8%) were academic members. Demographic characteristics of participants are shown in Table 1. Of 34 academic members at the Tabriz University of Medical Sciences, 25 completed the checklists for a response rate of 74%. The response rate among all students was 100%. All items were completed by participants, for no missing data. Frequencies regarding checklist items in the four domains are presented in Tables 2, 3, 4 and 5.

Mean scores of the four domains of the checklist are shown in Table 6. Teaching rounds received the highest score from the academic members. No statistically significant differences were seen in overall teaching round scores among the 5th-year medical students, the final-year medicine students and the academic members using ANOVA. Outpatient clinics and journal club received the highest scores from the academic members. The morning

**Table 1**. Demographic characteristics of participants included age (year), gender and years spend in clinical teaching

| Variables | Groups | | |
|---|---|---|---|
| | 5th year students | Final-year students | Pediatric professors |
| Age (mean ±SD), years | 23.1 ± 2.5 | 25.2 ± 1.7 | 45.2 ± 3.5 |
| Gender, Female, n (%) | 35 (70) | 33 (64.7) | 10 (40) |
| Years spend in clinical teaching (mean ±SD) | - | - | 14.3 ± 1.2 |

**Table 2.** Items of checklist for assessing teaching round and mean standard scores of each item by three groups of participants

| No. | Items | 5th year students | Final-year students | Academic pediatric |
|---|---|---|---|---|
| 1 | A clinical academic conducts teaching rounds. | 98 | 98 | 100 |
| 2 | In turn, clinical academics conduct teaching rounds. | 86 | 100 | 100 |
| 3 | Teaching rounds have been conducted at the bedside. | 84 | 100 | 100 |
| 4 | During the teaching round, physical examination tools like the stethoscope, the otoscope, the manometer, etc are available | 12 | 2 | 22 |
| 5 | Before starting the teaching round, patients' permission for students' participation in visits have been obtained. | 68 | 76 | 100 |
| 6 | During teaching round, discomfort and painful physical examinations have been avoided | 50 | 56.9 | 88 |
| 7 | During teaching round, feedback to students have been delivered kindly. | 90 | 96 | 100 |
| 8 | The feedbacks about student s academic behaviors have been delivered after teaching round and not in front of patient. | 16 | 3.9 | 26 |
| 9 | Related references are in ward for the students uses. | 0 | 0 | 14 |

**Table 3.** Items of checklist for assessing morning report and mean standard scores of each item by three groups of participants

| No. | Items | 5th year students | Final-year students | Academic pediatric |
|---|---|---|---|---|
| 1 | Morning report sessions have been conducted to training medicine students of various level. | 100 | 100 | 100 |
| 2 | Morning report room have been equipped with required tools for the physical examination. | 84 | 100 | 100 |
| 3 | Students have been trained at least three days per a week in morning report sessions. | 100 | 100 | 100 |
| 4 | Subjects have been selected that are interesting and useful for students. | 72 | 72.5 | 74 |
| 5 | Students present patients history completely. | 92 | 90 | 96.1 |
| 6 | Morning reports format consists of management of introduced patients, direct *patient* care, communicate with *patients* and families but not theoretical details. | 22 | 20 | 25.5 |
| 7 | The atmosphere in morning report sessions are friendly and not stressful. | 6 | 3.9 | 20 |

report received the highest scores from both the final-year medical students and the academic members. No statistically significant differences were found among their scores.

## Discussion

Our investigation found that none of the standards of clinical teachings' domains are being met completely according to the viewpoints of all three groups who participated. This was expected regarding the number of current studies that have discussed the decline in clinical skills in the young physician,[9,10] although it is widely and repeatedly acknowledged that clinical experiences are the most valuable means for teaching clinical skills.[7] In all domains except that of the morning report, the academic members in comparison to the 5th year medical students and the final-year medical students scored higher for outpatient clinics, teaching rounds and journal clubs. This may be expected, since academic members have many roles to play in outpatient clinics, teaching rounds and journal clubs. However, medical students have the critical responsibility of delivering the morning report.

One of the domains in clinical teaching is the teaching rounds, an essential part of teaching in pediatric medicine. This study featured the important aspects of ward, or teaching, rounds which need enrichment in order to magnify their advantages to the learners. Our study found that the availability of physical examination tools and related references was not enough. Additionally, feedback to students is currently the weakest aspect of the ward rounds. Even though academic members conduct effective teaching rounds, the majority of participants (80%) believed that there was a lack of effective feedback during ward rounds. This indicates a need to modify the current state of ward rounds in order to address needs and expectations of both students and academic members.

Several investigators examined ward rounds and subsequently suggested solutions and areas of focus for the potential improvement of ward rounds. The issues identified included time limitations, the way of

**Table 4.** Items of checklist for assessing journal club and mean standard scores of each item by three groups of participants

| No. | Items | 5th year students | Final-year students | Academic pediatric |
|---|---|---|---|---|
| 1 | Medicine students of various level have been trained in journal club sessions. | 100 | 100 | 100 |
| 2 | Students have been trained at least one day per a month in journal club sessions. | 100 | 96 | 100 |
| 3 | medicine students of various level participate in evidence-based journal club sessions. | 52 | 94 | 100 |

**Table 5.** Items of checklist for assessing outpatient clinic and mean standard scores of each item by three groups of participants

| No. | Items | 5th year students | Final-year students | Academic Pediatric |
|---|---|---|---|---|
| 1 | Students visit patients under the supervision of clinical teacher at outpatient clinics. | 100 | 88 | 100 |
| 2 | The *maximum* number of *students* who are under the supervision of clinical teacher is five at outpatient clinics. | 4 | 2 | 18 |
| 3 | Teaching hospitals have a general outpatient clinic for training students. | 100 | 100 | 100 |
| 4 | Each office equipped with required tools for the physical examination. | 3 | 0 | 6 |
| 5 | Outpatient clinics equipped with enough chairs and tables for students. | 90 | 59 | 88 |
| 6 | Students have been trained at least two days per a week in outpatient clinics. | 90 | 80 | 100 |
| 7 | Learning goals and necessary experiences have already been determined and informed students. | 20 | 30 | 60 |
| 8 | The Training methods have been used that students will able to visits prevalent patients independently at the *end* of their *clinical course*. | 6 | 4 | 20 |
| 9 | For each outpatient visits have been done effective educational communication between trainer and students for about minimum three minutes. | 96 | 92 | 100 |
| 10 | Students actions have been documented in students log books. | 8 | 10 | 26 |
| 11 | Assessment of students constitute their practice in outpatient clinic. | 6 | 10 | 12 |

**Table 6.** Mean standard scores of each domains and standard deviations (SD) in three groups of participants. Statistical test for comparison among groups was ANOVA

| Domains | Groups | | | *P* value |
|---|---|---|---|---|
| | 5th year students | Final-year students | Faculty members | |
| | Mean ± SD | Mean ± SD | Mean ± SD | |
| Teaching round | 60.85 ± 11.09 | 34.5 ± 12.38 | 67.33 ± 7.04 | 0.983 |
| Morning report | 81.25 ± 7.09 | 85.27 ± 8.33 | 84.51 ± 6.35 | 0.696 |
| Journal club | 79.2 ± 15.8 | 80 ± 20 | 85.11 ± 9.6 | 0.952 |
| Outpatient clinic | 67.6 ± 10.44 | 68.88 ± 12.53 | 70.26 ± 12.53 | 0.06 |

thinking, understanding and experience among the faculty members, lack of respect for patients, and over-dependence on technology.[11] Nikendei et al in their investigation found that final-year students had severe issues with clinical skills, seeing the most severe deficits in physical examination, chart reviewing, prescriptions, and documentation in ward rounds.[12] One of the most important factors influencing these issues was a lack of supervision.[13] Supervision was often lacking, especially where students conducted independent patient examinations and did not have opportunities to conduct supervised examinations.[14] In our study, from both the academic member and the student perspective, supervision in the teaching rounds was conducted according to the Ministry of Health standards. The comparative analysis in our study showed that the supervision in the teaching rounds received equivalent scores from both the academic members and the medical students. This may be a result of the fact that most academic members are interested in conducting teaching rounds with students.

In the typical morning report, the group on night duty introduces currently admitted patients, followed by general discussion of cases and other relevant matters. The morning reports afford the opportunity for young doctors to actively learn through group discussions about interesting cases.[15,16] Our study found that the cases that had been selected were not interesting or useful for the students and the morning report format was not set according to the Ministry of Health standards. One reason may be that the most of academic members who selected cases and organized morning report sessions were not aware of the recommended morning report format, which consists of management of introduced patients, direct patient care, and communication with patients and families.

In morning reports, the emphasis is on a complete, precise case introduction, and short presentations are beneficial. A complete, unbroken presentation takes about five minutes.[17] In our study, most participants agreed that students had presented patient history completely. In morning report sessions, it is important to provide positive comments in public, and to deliver any negative feedback after the morning report session in private. This helps prevent public embarrassment and difficulty.[18] Possibly because of the paternalistic relationship between academic members and medical students, the reported atmosphere in the pediatric morning reports was not friendly and was sometimes stressful. Some studies have addressed timing, recommending starting the session on schedule and closing early when possible.[18] In this study, there were no timing standards, but respondents agreed that students had been trained at least three days per a week in morning report sessions.

In many studies, it was valuable to recognize the learning purposes that students could experience in an ambulatory care setting.[19] In our current, determining learning goals and necessary experiences was not always followed. This may be in part because defining learning goals is time consuming and academic members may not have enough time. How many students can be accommodated in an ambulatory care teaching setting is a critical variable,[20] and in our study, this number was not regarded as sufficient from the viewpoint of our participants, since the number of medical students has increased in recent years and yet the number of teaching hospitals has remained the same. In addition, from the viewpoints of the participants, academic members have not always used appropriate training methods such that students would be able to visit patients independently by the end of their clinical course. It is also essential to identify a location where students can see patients.[21] In our study this had also not always been effective from the viewpoint of participants. Providing a study guide and log book, outlining the objectives of the visit, and providing space for recording reflections on clinical encounters is of primary importance[22] that was indicated by documenting student actions in log books in our study.

Delivering scheduled journal clubs is important in medical students' training programs. Attendance is often imperative, especially if the journal club has a curriculum-based arrangement.[23] It has been recommended that journal clubs be conducted at regular predictable intervals (e.g., monthly). In our study this item was well regarded. However, the current study did not ask about conducting journal club at appropriate times of the day for all participants or giving incentives to attendances such as food,[24] or applying organized critical appraisal approaches and structured forms during each journal club session, which leads to creative discussion.[25]

There are numerous limitations influencing this study design that should be considered. First, the study was performed in a single hospital at a single department, which leads to limitations in generalizability. Second, this study was limited by the fact that the checklists applied to mark and assess the standards of the clinical training programs may have been affected by recall bias. Third, in our scoring system of checklists, each item was given equal weight regardless of the meaningful variety of the study domains. Additionally, this study relied on subjective ratings, which might lead to response bias.

Further study is recommended to use this checklist at other departments and universities. Furthermore, examining its validity and reliability in other universities is recommended so that comparison among departments of universities and teaching hospitals will be possible.

## Conclusion

From the participants' view, none of the domains for the clinical teaching standards (teaching round, morning report, journal club and outpatient clinic) were completely followed in the pediatric wards of the Tabriz University of Medical Sciences. Some interventions are indicated to

improve them.

## Ethical approval

We respected the autonomy and dignity of participants and protected their confidentiality and anonymity. This research project was approved by the Ethics Committee of the Tabriz University of Medical Sciences (Ethics No. IR. TBZMED. REC.1397.810).

## Competing interests

The authors declare that there is no conflict of interest.

## Authors' contributions

MB and FH recruited participants, collected and analyzed data; FH contributed to the design of this study; MB and FH wrote the first draft of manuscript together. All authors read and approved the final manuscript.

## Acknowledgements

We appreciate the contributions of the academic members and medical students at the Tabriz University of Medical Sciences. This study was part of a project to evaluate the implementation of a clinical teaching standards checklist in the pediatric and internal medicine wards at the Tabriz University of Medical Sciences. This research was funded by the Medical Education Research Center, Tabriz University of Medical Sciences.

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