

Medical Student's Benefit Rates from the Clinical Teaching Rounds and Its Associated Factors in Tehran University of Medical Sciences in the Year 2010

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Abstract- Among the various methods of clinical teaching, rounds and grand rounds are considered as the gold standards. Clinical round includes some standard components and it plays an effective role in student's learning process. The aim of this study was to evaluate the content of teaching rounds in 40 clinical wards in 4 medical teaching hospitals affiliated to Tehran University of Medical Sciences in Tehran, Iran, and also to assess the learners benefit rate from these programs and determine the factors affecting those. This is a cross sectional, descriptive and analytical study conducted on 318 medical learners in different grades, about the content of clinical rounds. The data collection tool was a questionnaire made by researchers. The validity of the questionnaire according to experts opinions and the reliability with a pilot study conducted on 30 cases were confirmed ($\alpha=0.826$). Data entered into the SPSS software and for analysis Chi-square, Student's t-test, ANOVA and linear regression analysis tests were used. In this study 20 subjects related to clinical rounds content were assessed. The highest score was related to the subject of diagnosis and the lowest one was related to legal issues. Overall, the mean score of the learner's benefit rate to this method was 3.52 out of five. The level of learner's benefit rate was above the average and the benefit rates according to educational grade, number of the students and faculties were significantly different ($P<0.05$). Average of the benefit rate among residents were significantly higher than the other medical trainees ($P<0.05$). In conclusion, in understudied clinical rounds, there has been more emphasized on history taking, clinical examinations and diagnosis subjects, and Issues like: accountability, health economy, patient's nutrition, non-drug treatments and medical legal issues are less considered in the studied rounds.

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Introduction

Clinical taught in the presence of the patient which called "clinical round", provide a unique and valuable opportunity to integrate knowledge and skills which are directly benefit for the patients. This method can improves the communication skills, history taking, medical examinations, medical ethics, practical skills and strengthen the professionalism in medical learners. In clinical rounds, learning is possible in a real situation and allows students to strengthen their emotional and humanistic relationships. In such situations, students not only listened, but also use their other senses, like sight,

smell and touch (1-4). So, clinical teaching round is a core activity during which doctors and medical students interact with the patients, synthesize of required information and make many decisions (5).

Students like this method, because, it is a patient-centered approach and includes many of the points, which are appropriate for their future profession (6). Gonzalo et al, in their study, have been mentioned 6 themes for clinical rounds as follow: a) Learner's skill development b) Observation and receiving feedback c) Role modeling d) Training team forming e) improving the patient care f) and promoting the patient centered culture (7) For medical students, clinical experience is

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The content of the clinical rounds in 40 clinical wards

the most desirable way for learning of the needed skills. In this learning process, they solve the patient problems in cooperation with themselves, and this is more satisfying for them compared with the other training methods (8).

Clinical round as an effective method, has found its position in teaching of the other professional competencies particular in medical ethics issues (9). This method, keep the doctors up to date, improve their practical changes and also improve disease outcomes (10).

The content of clinical rounds, may be a series of medical topics such as: history taking, clinical interview, physical examination, data analysis and synthesis, clinical reasoning, critical thinking ways, the ways to increase students confidence, communication, rational administration of the drugs, judgments, time management, the ways of respect to the patients, patient education, monitoring and evaluation of diseases, consultation etc. Therefore, clinical rounds according to their content have an important role in empowerment of the clerks, interns and residents competencies (10).

Clinical teaching rounds are very important in the students' training and they are effective for strengthening the communication skills, procedural skills, patient management, analysis and interpretation of the laboratory findings, ethical issues, professionalism and other educational needs for the doctors. All these issues can form the content of clinical teaching rounds.

This study has been done to determine the clinical teaching rounds contents in 40 internal medicine, general surgery, gynecology, and pediatrics teaching wards affiliated to Tehran University of Medical Sciences and also to determine the benefit rate of the learners from the contents and its associated factors.

Materials and Methods

This cross-sectional (descriptive and analytical) study has been done on 326 medical learners included 99 clerks, 94 interns and 123 residents in 40 clinical wards of four major hospitals affiliated to Tehran University of Medical Sciences in Tehran-Iran in the year 2010. The considered clinical wards in this research were, internal medicine, surgery, gynecology, and pediatrics.

Inclusion criteria in this study were: medical clerks, interns and residents who spent their courses in internal medicine, surgery, gynecology and pediatrics wards, and those who were present in clinical teaching rounds at least two times at the time of completing the questionnaire, and The exclusion criteria included:

incomplete responses to questionnaires and clerks, interns and residents who have participated in clinical rounds for the first time.

In this study, the main variable was the content of the rounds and the independent variables were, age, sex and educational level of trainees, duration of the round, the number of learners and faculties in the rounds. The number of rounds held during the week, number of patients who are examined in each round and the type of the rounds (teaching or working rounds). For data collecting, a rating scaled questionnaire (Likert scale), which was made by the researchers was used.

For evaluation of the questionnaire validity, it was presented to some faculty members of Tehran University of Medical Sciences and after obtaining their opinions, some questions or statements, of the questionnaire were modified. As well as, to evaluate the reliability of the questionnaire, a pilot study was done on 30 clerks, interns and residents and the α -Cronbach index was calculated ($\alpha=0.82$).

In this study, the benefit rate is defined as increased knowledge, changes in attitude towards the educational objectives and improve the clinical performance of the learners even in a minor level on the basis of themselves opinions. For assessing the learner's benefit rates, the numerical rates were: Too much= 5, high= 4, Medium= 3, Low= 2, and very low= 1

Finally, these rates were converted to three degrees as: high (over than grade 3) intermediate (3) and low (lower than grade 3).

We used SPSS v15 software for data processing, and t-test, ANOVA (Chi-square), and linear regression method for data analysis. For adherence to ethical issues, the following points were observed:

- ✓ Questionnaires were completed anonymously.
- ✓ The information was kept confidential.
- ✓ Questionnaires were distributed, among the volunteer learners.
- ✓ To prevent interference to daily educational activities in the wards, already taken the necessary coordination with the chairman of the department.
- ✓ The respondents were given enough times to reflect on the questions.

Results

In this study, 99 medical clerks (31.3%), 94 interns (29.7%) and 123 residents (39%), completed the research questionnaire and their view points as well as their benefit rates from clinical teaching rounds were evaluated.

Learners aged 20 to 35 years. The gender distribution was 34.6% females and 65.4% males. One hundred seventeen (37%) of the learners were from the department of internal medicine, 113 (35.6%) from department of surgery, 42 (13.2%) from department of obstetrics and gynecology and 45 (14.2%) of them were from pediatrics departments. The average scores given by the learners to their benefit rates to clinical rounds topics (perceived ability), were as follows (maximum score was 5):

Effective communicating with patients (3.64), history taking (3.65), physical examination (3.71), patients profile completion (3.52), interpretation of test results (3.6), interpretation of radiographic images (3.66), interpretation of electro-diagnostic tests (3.41), analysis of clinical and laboratory findings (3.58), clinical reasoning and judgment (3.57), diagnosis and differential diagnosis of diseases (3.76), clinical decision making (3.66), rational drug prescribing (3.55), carry out the Procedures (3.65), non-drug treatment (3.21), patients care (3.67), patients nutrition (3.37),

accountability (3.39), professional ethics (3.6), medico-legal issues (3.03) and health economics (3.61).

In this study, we obtained the benefit rates of the learners from the 20 considered clinical skills and activities and evaluated the correlations of these rates with the other variables. Tables 1 and 2.

As can be seen, learners in all topics have been declared their benefit rate, over the high and intermediate level. The highest score was related to diagnosis and differential diagnosis of diseases and the lowest one was associated to medico-legal issues.

In this study, the average of total scores of benefit rate was 3.52 and the benefit rate in 6 topics includes electro-diagnostic tests, non-drug treatment, patients' nutrition, accountability, health economy, and medico-legal issues, were lower than this score and the rest topics were higher than average score.

Table 1, shows the considered educational topics in the rounds, and also it shows the learners benefit rates in a rating scale with 5 scales form.

Table 1. Distribution of educational topics and the average of benefit rate among the learners from each of the subjects presented in clinical rounds.

Round content	Degree of perceived benefit		Low		Intermediate		High		No exist		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Appropriate and effective communication	19	6.3	101	33.7	160	53.4	20	6.6	300	100		
Taking history	25	8.3	93	31.1	174	58.3	7	2.3	299	100		
Physical exam.	28	9.3	83	27.6	176	58.4	14	4.7	301	100		
How to complete the patients file	37	12.4	85	28.5	140	47	36	12.1	298	100		
Lab. tests interpretation	32	10.7	81	27.2	162	54.4	23	7.7	298	100		
Med. imaging interpretation	34	11.2	83	27.4	271	56.4	15	5	303	100		
Electro-diagnostic tests interpretation	49	5.16	87	2.29	137	46	25	8.4	298	100		
Data analysis	34	5.11	90	2.30	157	6.52	17	5.7	303	100		
Clinical Reasoning & Judgment	42	8.13	73	1.24	172	8.56	16	5.3	294	100		
Diagnosis & DD	29	9.8	74	2.25	180	2.61	11	3.7	302	100		
Clinical decision making	32	5.10	72	8.23	171	6.56	27	8.9	298	100		
Rational drugs administration	39	1.13	86	9.28	150	3.50	23	7.7	296	100		
Clinical Procedures	47	8.15	70	6.23	154	52	25	8.4	305	100		
Non drug treatments	63	6.20	85	9.27	105	4.34	52	17	298	100		
Patient care	23	7.7	92	9.30	156	4.52	27	9.1	307	100		
Patient nutrition	37	12	103	6.23	114	1.37	53	3.17	301	100		
Social accountability	45	15	116	5.38	109	2.36	31	3.10	308	100		
Professional ethics	32	4.10	99	1.32	152	4.49	25	1.8	296	100		
Medical legal aspects	56	19	71	24	120	5.40	49	16	296	100		
Health economics	74	25	74	25	96	5.32	52	6.17	296	100		

Table 2. Association between perceived benefit rate by the learners and independent variables.

Independent variables	Significance	P-value
Hospital	No	0.999
Educational grade	Yes	0.001
Age	Yes	0.001
Duration of presence in the ward	Yes	0.001
Time of the round	Yes	0.001
Rounds number in a week	Yes	0.038
Number of clerks in the rounds	Yes	0.001
Number of interns in the rounds	Yes	0.002
Number of residents in the rounds	No	0.811
Number of faculties in the rounds	Yes	0.001
Number of visits during the rounds	Yes	0.030
Type of the rounds	Yes	0.001
Manager of the rounds	Yes	0.001

Students' benefit rates from the contents of the rounds, according to hospitals have significant differences and these rates were in the highest level in surgical and in the lowest one in pediatrics wards. The benefit rates among the residents were higher than clerks and interns. This rate among the learners aged 30-34 years was the highest rate and among the learners over the age of 35 years was less than others. The rate was almost equal in each gender, and among the single trainees was more than those who have been married.

Discussion

In this study, 20 topics which presented in clinical teaching rounds at the main clinical wards affiliated to Tehran University of Medical Sciences were investigated. These topics were included: communication skills, history taking, physical examination, medical records, interpretation of tests, graphs, and electro-diagnostic tests, analysis of clinical findings, clinical judgment, diagnosis, clinical decision making, rational drug prescribing, non-drug treatments, patient care, nutrition, social accountability, professional ethics, legal issues, health economics and medical procedures. Overall, according to learners view points, all the above mentioned subjects were considered in clinical rounds and the highest benefit rate was associated to the diagnosis and differential diagnosis of patients and the lowest one has been related to subject of legislation.

The situation of educational subjects, and the benefit rates of the learners about each subjects, were as bellow:

About communication skills, as we know, the medical graduates should be able to communicate

effectively with colleagues, patients and their relatives.

In addition, he or she must be able to show their competence in all areas of oral, written, electronic or telephone communication (11,12).

Clinical rounds provide appropriate conditions for practice of communication skills with patients and their family for medical students.

Muething *et al.* in their study, have stated that the Family-Centered Bedside Rounds (FCBRs) are effective in augmentation of clinical decision making and communication skills (13).

Although in our study specifically we have not addressed the issue of the rounds in the presence of the family members, but regarding to popular process in our universities in the country, and observing the understudied rounds process by the researchers, family participation in rounds is not common and only in few cases, *e.g.* in those wards which are running both mother and baby room program, sometimes mothers have participated in the rounds.

Therefore, it is suggested that, first, this issue be considered in subsequent studies, second, faculties, corporate informed patient's family members in clinical rounds, so that in addition to teaching communication skills to students, they also help to their socialization.

Some competence such as: history taking, clinical examination, and medical records of patients included: writing daily progressing notes, medical commands and writing the summary of the cases, counseling and completing the referral sheet for the patients, all are the needed skills for medical students (11,12) that can form the content of training.

In our study, history taking of patients with an average score of 3.65 and clinical examinations,

averaging 3.71, were the topics that more emphasized in the rounds and learners benefit rate from these subjects were higher than total average of scores, but the manner of completion the medical records of the patients, with the score of 3.52 was to be less stressed in the rounds.

Other necessary basic skills for medical students, was diagnostic reasoning and the ability of select appropriate diagnostic tests for the patients.

Steiger *et al.*, in their study introduced a type of the grand round, entitled diagnostic grand round (DGR). In this type of round, there were taught to students, selecting of appropriate diagnostic tests and interpreting the results (14). According to these researchers views, holding this type of round is a successful way for improvement of students' clinical reasoning skill (4).

In our studied clinical rounds, in addition to emphasis only on diagnostic skills, we emphasized on various clinical skills including diagnostic tests. In our study, the score of each diagnostic skill was above the average of averages. Overall, it appears that it is not necessary, only reinforce on the strength of diagnostic reasoning, and perhaps offering a variety of issues in the round be associate with more satisfaction of the learners.

In this study, the situation of patient's nutrition education was not desirable in the rounds, while, to days, special teams as Nutrition Support Teams (NSTs) are responsible to hospitalized patients nutrition programs. These are multi-disciplinary teams comprising medical doctor, nurse, dietitian, clinical pharmacist, social worker and a medical technologist who are participating in clinical rounds (15).

Dashti-Khavidaki *et al.* in their study, stated that, participation of clinical pharmacists in the rounds are considered useful for enhancing of treatment and patient care quality, and reducing drug costs for patients and society (16).

In our study, rational drug prescribing training score was 3.55 out of five. Although this score was above average of averages, but we need to try more for train this expertise to participate in clinical rounds. On the other hand, regarding to health economic aspects, we found that the deployment of this expertise in the rounds can be helpful in reducing drug costs. According to results of our study, the important issue of health economics are not enough emphasized in our clinical rounds and its score was 3.16. Therefore, it is necessary to be more emphasis on this issue.

In our study, some topics such as social accountability, medico-legal issues and alternative medicine has been less emphasized, therefore, it seems that these subjects should also be more addressed in

clinical rounds.

It seems that, in clinical rounds, except for issues related to diagnosis and treatment, it should be more emphasis on some subjects such as: health economy, patient's nutrition, non-drug treatments and medico-legal issues.

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The content of the clinical rounds in 40 clinical wards

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