



The Impact of Early Clinical Exposure on the Knowledge and Attitude of Basic Sciences Medical Students at Tabriz University of Medical Sciences

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Abstract

Introduction: This study aimed to examine the effects of early clinical exposure to mother and child healthcare on the knowledge and attitude of Tabriz medical school basic sciences students.

Methods: As a sample, 152 of the third semester students were selected, of whom 25 were randomized to the experimental group and the rest, 127 students, were considered the control group.

Results: The results of the study showed that there was a significant difference between the attitudes and knowledge level of the control group who did not experience early clinical exposure and the experimental group who were given clinical exposure with regard to intervention training.

Conclusion: Finally, considering the results, it could be acknowledged that training in the intervention of early clinical exposure could affect the level of students' knowledge and attitudes.

Introduction

Traditionally, it is believed that a physician's clinical skills are obtained through clinical experience. Many medical schools provide a program for early clinical exposure to prepare first-year medical students for clinical education. Early exposure of medical students to clinical experiences will enhance their professional socialization process and will provide effective learning along with understanding. Nowadays, early clinical exposure is done under the guidance of qualified personnel in an educational setting and students are encouraged to participate in clinical training programs. Early exposure to a clinical medicine program helps new students to cope with tension and job stress and improves their awareness of their profession.^{1,2} The challenges related to clinical training of medical students include limitation of facilities in clinical settings, domination of theoretical training over clinical training, poor access to clinical teachers in basic science course, stressful environments for students and the lack of attention to targeted training programs.³

The first years of medical education (especially the first two years) are crucial to the success of medical students. The

success is due not to the knowledge gained, but the attitude and perceptions formed in medical students on the role of physicians and status of medical knowledge.² Thus far, the body of research done in the field of clinical education mainly examines the challenges of clinical training from the viewpoint of medical and paramedical students or professionals using interviews and surveys.⁴⁻¹⁶ However, no experimental study examining the role of clinical training on the skills, knowledge and attitude of students has been completed; therefore, in this study, the researchers tried to examine both the attitude and skills simultaneously using various elements of previous studies' experimental research. Recognition of effective factors on the attitude of medical students can help us to regulate principles, to provide suitable facilities, to make for successful planning to train qualified and competent doctors, and create an interesting and motivating environment in medical schools. Knowing these attitude can be useful for both social behaviors and the interpretation after the occurrence of those behaviors. The present study was designed to evaluate the effects of early clinical exposure on the knowledge and attitude of basic sciences medical students on maternal and child

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health.

Materials and Methods

The population of this experimental study was the basic sciences medical students enrolled in Tabriz University of Medical Sciences. The selection criterion was that the students had to have passed a Community Medicine 3 course (Family Health). For our sample, 152 of the third semester students were selected, of whom 25 were randomized to the experimental group and the rest were considered a control group. Selection criteria for the number of members in the intervention group was based on transportation facilities, health centers and hospitals spaces and number of the colleagues as instructor and supervisor. The students has given the "informed consent" in this study. After informed consent, the students were invited to participate in the study. The objectives and expectations before starting the project were explained to the students in a brief and study methods, goals and objectives of early exposure to clinical training were introduced. In the second stage, students attended at AlZahra hospital, a referral center for obstetrics. At the beginning, some explanations were given about the hospital and its position in the health system with the presence of the project executive (M.A.). Meanwhile, a worksheet based on the objectives of presence in the hospital was set and put at the students' disposal. Students were divided into 5 groups of 5 and rotated at the following wards: NICU, labor, a specialized clinic for high risk pregnancy and a delivery room. The students were asked to write a reflection on their worksheets with the positive and negative points in their learning, paying attention to the experiences and feelings about the programs. After collecting the individual and group reports, the groups discussed their responses with other groups and justified their answers. The instructor, as a facilitator, discussed questions and answers with the student and clarified any concepts that students had difficulty understanding. After completing all stages, a post-test in both the intervention and control groups was given individually.

Ethical Considerations

The ethical review committee of Tabriz University of Medical Sciences approved the present study.

Results

The study involved 152 students, of whom 25 (4.16%) were in the experimental group and 127 (6.83 %) in the control group. In terms of gender, 87 (2.57%) students in the experimental group were female and 65 (8.42%) were male. The number of female students in the control group was 18 (72%) and the number of male students was 7 (28%).

Table 1 shows the distribution of student attitude in the experimental group on clinical education and early clinical exposure. It showed factors such as the usefulness of medicine, awareness of the roles and responsibilities of the job, specialized awareness, and sensitivity to patients' problems, understanding medical limitations, interesting educational materials, familiarity with the future working environment and the belief that the medical profession and

decision to pursue higher education is valuable.

A comparison test showed the differences between the groups' attitude before and after their exposure to a clinical setting. Considering that the average positive attitude was 69/2 before exposure, which increased to 68.3 after exposure, with regard to the t-test (-7.77) on the significance level (0.000), we can conclude that educational intervention in early clinical exposure influenced the attitude of students.

Table 2 showed the frequency distribution of the attitude in the control group on a early exposure. Given that the average positive attitude in the experimental group was 67.2 before exposure and it was 69.2 in control group and t-test (-0.27) with a significance level of 0.78, it could be concluded that there was not a significant difference in the attitude of the experimental and control groups before the educational intervention in early clinical exposure. However, the average attitude in the experimental group were enhanced significantly (3.68) after exposure, which distanced it from the average in control group. The t test (-12.99) and the significance level of 0.000 indicated a significant difference between the control group and the experimental group after exposure.

Table 3 demonstrated the frequency distribution of knowledge in the experimental group on early clinical exposure. The table included some knowledge factors in the early clinical exposure courses such as mother and child care methods, knowledge and information on pre-conception counseling, knowledge and information on postpartum counseling, information on childhood vaccination, things to know in the delivery room, knowledge and information on maternal care clinics, information on breastfeeding practices, information on delivery, knowledge and information on the high-risk pregnancy clinic and terminologies in the field of maternal and child health. The comparison test indicated the differences of knowledge averages in the groups before and after exposure to the clinical settings. Regarding the average positive attitude, which was 2.85 before exposure, and 3.62 after exposure, and t-test (-8.48) with a significance level of 0.000, we conclude that an educational intervention in early clinical exposure was effective on student knowledge level.

Table 4 showed the frequency distribution of knowledge levels in the control group based on early clinical exposure. Given that the average positive attitude score before exposure was 2.82 in the experimental group, 2.83 in the control group, and that the t-test (0.091) had a significance level of 0.92, we conclude that there was no significant difference in the knowledge of the experimental and control groups before the educational intervention in early clinical exposure. This means that both groups had the same attitude toward early clinical exposure programs pre-intervention. However, the average knowledge score in the experimental group increased significantly to 3.68 after exposure, which distanced it from the average in the control group and the t-test (-9.027). The significance level of 0.000 indicated a significant difference between the

Table 1. Frequency results of the attitude in the experimental group

Variable	Disagree		No idea		Agree		Totally agree		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
usefulness of medicine	4	16%	7	28%	8	32%	6	24%	25	100,0
awareness of the roles and responsibilities	3	12%	12	48%	6	24	4	16%	25	100,0
more specialized awareness	1	4%	9	36%	14	56%	1	4%	25	100,0
more sensitive to patients' problems	1	4%	8	32%	11	44%	5	20%	25	100,0
understanding the medical limitations	3	12%	12	48%	6	24%	4	16%	25	100,0
Interesting educational materials	1	4%	7	28%	11	40%	7	28%	25	100,0
Familiar with the future working environment	4	16%	5	20%	11	44%	5	20%	25	100,0
Considering medical profession valuable	4	16%	5	20%	9	36%	7	28%	25	100,0
Decision to pursue higher education.	3	12%	4	16%	10	40%	8	32%	25	100,0

Table 2. Frequency results of the attitudes in the control group

Variable	Totally disagree		disagree		No Idea		Agree		Totally Agree		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
usefulness of medicine	26	17.1	61	40.1	21	13.8	35	23.0	9	5.9	152	100.0
awareness of the roles and responsibilities	6	3.9	79	52.0	34	22.4	19	12.5	14	9.2	152	100.0
more specialized awareness	4	4.0	91	59.9	38	25.0	12	7.9	7	4.6	152	100.0
more sensitive to patients' problems	7	4.6	74	48.7	29	25.7	20	13.2	12	7.9	152	100.0
understanding the medical limitations	-	-	81	53.3	35	23.0	18	11.8	18	11.8	152	100.0
interesting educational materials	12	7.9	75	49.3	33	21.7	24	15.8	8	5.3	152	100.0
familiar with the future working environment	6	3.9	78	51.3	31	20.4	22	14.5	15	9.9	152	100.0
considering medical profession valuable	7	4.6	74	48.7	32	21.1	24	15.8	15	9.9	152	100.0
Decision to pursue higher education.	4	2.6	90	59.2	32	21.1	16	10.5	10	6.6	152	100.0

Table 3. Frequency results of knowledge in the experimental group

Variable	Totally disagree		disagree		No idea		Totally agree		agree		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Maternal and child care methods	1	4,0	1	4,0	5	20.0	11	44,0	11	24,0	25	100.0
knowledge and information on pre-conception counseling	2	8.0	2	8.0	7	28.0	8	32.0	5	20,0	25	100.0
knowledge and information on postpartum counseling	9	5.9	76	50.0	31	20.4	25	16.4	11	7.2	25	100.0
information on child hood vaccination	2	8.0	3	12.0	8	32.0	8	12.0	3	96.0	25	100.0
things to know in delivery room	1	4,0	4	16.0	10	40,0	4	16.0	5	20,0	25	100.0
knowledge and information on maternal care clinics,	1	4,0	1	4,0	7	28,0	9	36.0	6	24.0	25	100.0
information on breastfeeding practices	1	4,0	3	12.0	6	24.0	7	28,0	7	28,0	25	100.0
information on delivery	1	4,0	3	12.0	9	36.0	5	20.0	6	24,0	25	100.0
knowledge and information on high-risk pregnancy clinic	1	4,0	2	8.0	8	32.0	6	24.0	7	28.0	25	100.0
Learn the terminologies in the field of maternal and child health	2	8.0	-	-	3	12.0	16	64.0	3	12.0	25	100.0

control group and the experimental group after the intervention.

Discussion and Conclusion

The present study was designed to evaluate the effects of early clinical exposure in maternal and child health on the knowledge and attitude of basic sciences among medical students in Tabriz University of Medical Sciences. The results suggested that the educational intervention in early clinical exposure made a significant difference in increasing the attitude level of the experimental group who received early exposure experience. The results of this study were in line with the results of the study done by some other researchers.^{3, 17} In their research, they introduced early exposure in a clinical setting as a strategy for professional stress reduction, directing student attitude and creating motivation. Based on the results of the present study, it could be claimed that the educational intervention in early clinical exposure made a significant difference in increasing the knowledge level of the experimental group with early exposure experience. Education improves

knowledge, and clinical education enables the students to put theoretical findings into practice. Also, learning experiences in clinical training sessions has a profound impact on the amount and type of learning, and emphasizes preparation, effect, practice, intensity and application. The presence of exposure to a clinical setting (along with the education process) leads to knowledge improvement. According to education research, the learning environment is one of the most effective factors in increased learning. This indicates the effects of a student's physical presence in clinical situations on increasing and stabilizing level of knowledge. Clinical learning activities provide real-life learning experiences and the opportunity to transfer knowledge to practical situations. Clinical education provides opportunities for students to transform theoretical knowledge to a variety of psychomotor skills necessary for patient care.

The obtained results were compatible with the findings of other studies¹⁸⁻²⁰ showing that early clinical exposure had a profound effect on the learning process. The other result of

Table 4. Frequency results of knowledge in the control group

Variable	Totally disagree		Disagree		No idea		Totally agree		agree		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
maternal and child care methods	9	5.9	37	24.3	30	19.7	57	37.5	19	12.5	152	100.0
knowledge and information on pre-conception counseling	12	7.9	63	41.4	28	18.4	34	22.4	15	9.9	152	100.0
knowledge and information on postpartum counseling	9	5.9	76	50.0	31	20.4	25	16.4	11	7.2	152	100.0
information on child vaccination	10	6.6	68	44.7	31	20.4	29	9.1	14	9.2	152	100.0
things to know in delivery room	14	9.2	52	34.2	33	21.7	35	23.0	18	11.8	152	100.0
knowledge and information on maternal care clinics,	15	9.9	58	38.2	28	18.4	33	21.7	18	11.8	152	100.0
information on breastfeeding practices	8	5.3	79	52.0	36	23.7	19	12.5	10	6.6	152	100.0
information on delivery	12	7.9	69	45.4	32	21.1	27	17.8	12	7.9	152	100.0
knowledge and information on high-risk pregnancy clinic	12	7.9	68	44.7	32	21.1	25	16.4	15	9.9	152	100.0
Learn the terminologies in the field of maternal and child health	14	9.2	63	41.4	29	19.1	29	19.1	17	11.2	152	100.0

the study was the influence of an educational intervention in early clinical exposure at the level of students' attitude. Finally, the results indicated the impact of an educational intervention in early clinical exposure on the knowledge level of students. In general, it should be noted that the clinical setting where the clinical skills of students grow prepare them for their professional community, i.e. the hospital.

Studies have shown that a student's understanding and expectation of a hospital environment are different from actuality. Therefore, the identification of obstacles and problems in clinical education needs to be examined, because the right solution for each of them will lead to educational improvement. The complexity of learning in a clinical setting has led researchers to study various aspects of that setting. Evaluating the views of students for the continuous improvement of clinical education leads to recognition and reinforcement of strengths, and addressing weaknesses in that education. The clinical setting plays an important role in education because theoretical education alone does not lead to the learning of useful clinical experiences. Additionally, clinical learning plays an important role in the improvement of students' practical skills. In fact, the clinical setting

is a bridge between theoretical education and clinical practice. Educational institutions use different tools to increase their clinical activities. Environment (or atmosphere), which is a manifestation of the process of teaching and learning curriculum, shows to what extent the program and human resources can be effective to achieve quality learning, and plays an essential role in the educational success of students. Clinical education is dynamic and increases the ability of students. Achieving good efficiency requires the maximum performance, knowledge and skills needed by students. Therefore, learning in a clinical setting is considered an essential part of any medical education program.

The importance of clinical areas cannot be overstated in terms of its effectiveness, because it is often the turning point in which students select or reject the profession. As such, planners and practitioners should pay attention to it as one of the most important elements of their programs.

Limitations and Recommendations

Like other experimental studies, the present study had some limitations. Among the most

important of these limitations traced is the time limit, especially in health centers. Another limitation was lack of cooperation from some staff in health centers and hospitals. Lastly, cultural constraints, such as the impossibility for male students to participate in the delivery room, and the limitation in student acceptance can be mentioned as the other limitations of this study and similar studies. Based on the findings of the present study and related studies, our applied recommendations of the research are as follows:

- Create more opportunities for students to receive clinical and practical training in hospitals and health centers.
- Evaluate the training constantly and try to resolve its shortcomings and limitations.
- Create a memorandum of cooperation between education and healthcare centers for more coordination and reduction of constraints.
- Encourage students to conduct research related to the effects of early clinical exposure.
- Require students to provide a report from practical achievements of clinical training and present them in the form of scientific and research articles so that others can easily take advantage of the results of these achievements.

Competing Interests

The authors have no conflicts to report this study.

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