Comparison of the Effect of Lecture and Group Discussion on Health Workers' Knowledge and Attitudes about Asthma Based on the IraPEN Program

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Abstract

Background: The group discussion method is one of the student-centered and active teaching methods in which learners actively participate in educational activities using discussion, and they are given the opportunity to share their opinions and experiences with others.

Objectives: The present study was conducted to compare the effects of the group discussion method and the lecture method on health workers' knowledge and attitudes.

Methods: In this quasi-experimental study, 70 health workers working in Baft, Kerman province, were selected by census method and divided into two groups of 35 people. Asthma-related educational content was presented for one group as a lecture and the other as a group discussion. Before and after the intervention, health workers' knowledge and attitudes scores were evaluated and compared using a researcher-made questionnaire.

Results: The mean age of participants was 38 ± 2.7 years. After the intervention, the mean score of attitude was 65.86 ± 6 in the lecture group and 68.66 ± 4.7 in the group discussion group, indicating a significant difference (p = 0.04). The mean score of knowledge after the intervention was 11.4 ± 1.66 in the lecture group and 11.28 ± 1.6 in the group discussion group, which was not statistically significant (p = 0.77). In both groups, the mean scores of knowledge and attitude increased significantly after the intervention (p<0.0001).

Conclusion: The results showed that education affected the increase of health workers' knowledge and attitudes in both groups. Also, the group discussion method had a greater effect on increasing the attitude of individuals compared to the lecture method; however, this effect was not significant for knowledge. Therefore, it can be concluded that for the training of health workers, it is better to use integrated teaching methods to create deep and efficient learning as well as positive attitude and motivation.

Keywords: Lecture, Group Discussion, Knowledge, Attitude, Asthma

Background

In the last two decades, significant efforts have been made to improve teaching-learning methods in the field of medical sciences. The lecture method has a long history in medical education but has been widely criticized for its inefficiency in achieving educational goals in various fields. In a traditional lecture, learners are passive recipients of information and do not actively participate in the learning process (1). The group discussion method is one of the student-centered and active teaching methods in which learners actively participate in educational activities using discussion, and they are given the opportunity to share their opinions and experiences with others. The group discussion teaching method increases the power of criticism in learners (2). Many scientific principles of education can be well generalized in the field of medical education. Medical education includes various dimensions, such as characteristics of the subject under study, educational environment, a sense of responsibility, organizational belonging, and relationship with peers, professors, and patients (3).

Based on the results of Azizifar's (2020) study, there is a significant difference between the effectiveness of the group discussion and the lecture teaching methods in teaching curricula on academic performance in

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technical school, in such a way that the performance scores of technical school learners taught by the group discussion teaching method increased significantly compared to the lecture teaching method (4).

The results of Zhao and Potter's study (2016) showed that only after one educational session a significant difference was observed between the scores of students in the control group and the intervention group in both groups, but in multiple-choice tests, this difference was not observed in the scores. It seems that discussion-based learning may lead to better practical knowledge and possible retention of long-term knowledge compared to lecture-based learning (5). At present, the common and formal method in medical education is the lecture method, which has advantages such as cost-effectiveness, but there is much dispute about the role that this teaching method should play in modern medical education. Certainly, traditional lectures do not correspond to modern learning theory (6). The group discussion teaching method significantly increases interaction skills and problem tracking. It can be due to the need for learners to interact and cooperate in group discussion and thus strengthen these skills (7).

In order to investigate the role of the group discussion method in increasing learning and learners' sense of participation, Safari et al. (2011) concluded that the scores of a group of students who had learned the materials theoretically and practically along with group discussion were significantly higher than individuals who had learned them in the form of lectures and theoretical and practical topics, and the amount of learning in them was more than the traditional method of teaching anatomy. Probably, the presence of a sense of group participation and more communication between the professor and the student will increase the motivation for further study (8). Due to the increasing developments of knowledge and continuous confrontation with new dimensions of new treatmentcare methods, self-direction in learning is considered one of the students' most important professional competencies (9). Encouraging students to study and search for texts and resources to find the latest and most valid evidence and present it in the classroom, the discussion-based learning method, on the one hand, draws students' attention to education and, on the other hand, provides a fun educational environment to ask questions and provide opinions by creating a learning atmosphere from each other (10).

In a study, Raut et al. (2014) used the group discussion method as an innovative teaching method (microbiology) at Chuan Medical School, Nanded College. After holding the group discussion sessions, the learners' scores increased significantly, and the students agreed that there was no confusion during the group discussion method, and group discussion helped them better understand and recall the subject and develop the basic characteristics of a successful physician (11). Traditional education is not enough to meet the educational needs of employees and manage complex affairs in today's world; therefore, new and appropriate patterns and methods, as well as scientific and systematic methods, should be used, both in determining the needs and in implementing the desired education so that managers and employees are encouraged to shift from a passive and traditional to an active and creative role (12).

In Rieshahri et al.'s (2018) study conducted to compare the effects of lecture, group discussion, and educational package teaching methods on the level of awareness regarding drug abuse in high school male students in Bushehr, the results of statistical analysis showed that group discussion, lecture, and educational package positively and significantly affected the students' awareness. Also, the group discussion teaching method had a greater impact on learners than the lecture and educational package methods; therefore, this study showed that group discussion was the most effective teaching method in increasing the level of awareness regarding drug abuse (13).

In the health system of the country, the first category of human resources at the forefront of providing health care is the health workers in health centers who are responsible for educating and providing health services in the villages and if education is provided for this stratum of society and the educational courses are designed based on the educational needs of health workers, not only health workers but also clients of health centers will benefit from these educations, and the waste of national capitals will be prevented (14). The package of essential noncommunicable (IraPEN) disease program was implemented for the first time in the four cities of Baft, Nagadeh, Shahreza, and Maragheh in 2015. In this program, in health centers and health bases, the 10-year risk of fatal and non-fatal heart and brain attacks and strokes and the target population of the program are identified, even when they are not symptomatic or ill, and in proportion to the obtained probability, measures are taken to prevent the disease or its complications. In addition, in the field of cancer diseases (colon, breast, cervix) and asthma, measures are taken for early diagnosis and interventions (15).

So far, no codified study has been conducted to examine health workers' knowledge and attitudes about

IraPEN in the country. The results of the health workers' awareness test on IraPEN and asthma are not desirable. On the one hand, the usual teaching method for teaching health content to employees has always been lecture, but this teaching method seemingly is not able to create deep, effective, and efficient learning. The present study compared a teacher-centered teaching method (lecture) and a learner-centered method (group discussion). Also, the studies have found that the effects of group discussion and lecture on medical and paramedical students and even students are compared, and no study was found to examine the effects of these two methods on health workers, who are at the forefront of health education. On the other hand, in the studied texts, contradictory results were obtained from the effect of group discussion compared to the lecture method.

Objectives

The present study was conducted to compare the effects of the group discussion method and the lecture method on health workers' knowledge and attitudes.

Methods

The present study is a quasi-experimental intervention to compare the effectiveness of the group discussion and lecture teaching methods on health workers' knowledge and attitudes about asthma. Due to the limited statistical population, all health workers (n = 70) were included in the study by census method. Then, the individuals were divided into two groups of 35 people. The individuals' placement in lecture and group discussion groups was performed using the block randomization method in R software version 4.1.0. The education sessions of the two lecture and group discussion groups were held on different days so that the way of holding sessions of the two groups did not affect each other. The instructor was the same for both groups. The content of the asthma educational package was presented for one group as a lecture and for the other group as a group discussion in 4 sessions of 60 minutes. The rules for holding sessions were reminded to the participants in the group discussion method. Individuals were assigned into groups of five, and no framework was considered in terms of gender segregation so that individuals could better communicate with group members. The composition of the groups was constant until the end of the sessions. One person was elected as the leader of each group, and the seats were arranged in a circle.

The topics discussed in each session were identified for each group, the content raised in each session was also divided into several sections, and they were asked to study the same section for 5 minutes. Then, all group members discussed the matter and, while discussing, asked each other questions and answered. The instructor did not have an active role in the teaching process and only tried to direct the discussion, prevent the discussion from deviation, and answer the questions and problems of the group members by moving between different groups. After the groups finished reading the material, each group raised five questions for the next group; therefore, aiming at raising a question, the contents were reminded once again for each group. The questions of each group were given to the next group to answer in consultation with each other, and the final answer was provided conclusively. After collecting the answers, all groups were gathered in one place and discussed the questions and answers, and the instructor was only the discussion leader.

Session 1: At first, the participants in the group discussion group were pretested. Then, an educational video on asthma was first shown to the participants to arouse their interest in the discussion subject. Individuals were placed in their own groupings, and the discussion began according to the rules of group discussion classes. The raised material in this session included asthma-related introductory topics, disease definition, causes of asthma, disease course, and asthma symptoms.

Session 2: In this session, topics related to an asthma attack, disease diagnosis methods, how to use a breath meter, asthma control, and treatment, and patient education were discussed. Sometimes the group members deviated from the discussion, which was one of the instructor's problems in returning the individuals' focus to the subject. Since individuals had not been educated in this way previously, they expected the instructor to play a greater role, but the instructor's role was only to facilitate the discussion and try to have the least involvement in the individuals' discussion in each group.

Session 3: The raised topics included therapeutic assistive devices and inhalation techniques, asthma pharmacotherapy, determining a treatment plan for asthma attacks, and asthma control in specific conditions. During the group discussion, disagreements occurred between the group members, and it was difficult for them to accept opposing views; the group leader was asked to help solve this problem. Someone took notes of what the group members were saying to present at the end. Session 4: The duties of the health worker and the health caregiver regarding the asthma prevention and control program, identification of suspicious individuals, referral of suspicious individuals, and patients' follow-up and care were discussed. In this session, a general practitioner was also invited as an informed guest member so that the members of each group could ask their questions and the problems would be resolved.

For the participants in the lecture group, the research objectives and expectations were clearly explained in the introductory session. In order to increase the interaction between the learner and the teacher, feedback was regularly received from the learners during the lecture session, and their opinions on the raised issues were asked; sometimes, the question design method was also used to create the concentration in learners; they were asked to bring paper and pen to take notes for deeper learning, and a summary was made at the end of each session.

Session 1: At the beginning of the session, the research objectives were shared with the participants. Of the estimated 60 minutes, 50 minutes was devoted to teaching asthma-related introductory topics, disease definition, causes of asthma, disease course, and asthma symptoms, and at the end, 10 minutes was devoted to asking and answering questions.

Session 2: At the beginning of the second session, the participants' level of awareness regarding the previous topics was assessed using oral questions, a summary of the content was provided as a reminder, and topics related to an asthma attack, disease diagnosis methods, how to use a breath meter, asthma control, and treatment, and patient education were taught by lecture method. For practical work, learners were asked to measure their normal lung function with the device.

Session 3: With the coordination made, the learners attended the class, and the problems of the previous sessions were resolved. The topics related to therapeutic assistive devices and inhalation techniques, asthma pharmacotherapy, determining a treatment plan for asthma attacks, and asthma control in specific conditions were then taught completely. Learners were

also asked to write their questions on small pieces of paper. Finally, the papers were collected, the questions were answered, and the last 10 minutes were devoted to asking and answering questions.

Session 4: Materials related to the duties of the health worker and health caregivers in the asthma prevention and control program, identification of suspicious individuals, referral of suspicious individuals, and patients' follow-up and care were taught. All materials stated from the first to the last session were summarized in the final session. One month later, the post-test questionnaire was distributed among the participants of the two groups, and they completed the questionnaire.

The data collection tool was a researcher-made questionnaire with a content validity index (CVI) of 0.80 [CVI = 0.80] and a content validity ratio of 0.99 [CVR = 0.99] of the questionnaire calculated by Cronbach's alpha method, which the reliability of the attitude questionnaire, knowledge questionnaire, and total reliability were obtained 0.76, 0.72, and 0.72, respectively. The research findings were analyzed using SPSS21 software. The paired t-test was used to compare the scores before and after the health workers' knowledge and attitudes with the lecture teaching method, as well as the attitudes before and after the group discussion method, and the Wilcoxon test was used to compare the knowledge before and after the group discussion method. In order to compare the health workers' attitude scores in group discussion and lecture after the intervention, the independent t-test was used, and for their knowledge score, the Mann-Whitney test was used.

Results

The mean age and standard deviation of the study samples (70 health workers working in Baft health center) were 38 ± 2.7 . Also, 68.6% of participants were female, and 31.4% were male. Other demographic information is provided in Table 1.

Table 1 shows the health workers' demographic characteristics in the two lecture and group discussion groups. According to this table, the participants' demographic characteristics were not statistically significant in the two groups.

Variable		Group		p-value
		Group Discussion (Percentage) Frequency	Lecture (Percentage) Frequency	
Gender	Female	24 (68.6)	24 (68.6)	1
	Male	11 (31.4)	11 (31.4)	
Level of education	Elementary school	2 (5.7)	1 (2.9)	0.37
	Middle school	5 (14.3)	8 (22.9)	
	Diploma	19 (54.3)	22 (62.9)	
	Associate	6 (17.1)	4 (11.4)	
	Bachelor	3 (8.6)	0 (0)	
Work experience	0-10 years	10 (28.6)	13 (37.1)	0.18
	11-20 years	14 (40)	7 (20.0)	
	21-30 years	11 (31.4)	15 (42.9)	
Age	22-34 years old	10 (28.6)	13 (37.1)	0.74
	35-47 years old	16 (45.7)	14 (40.0)	
	48-60 years old	9 (25.7)	8 (22.9)	

 Table 1. Comparison of health workers' demographic characteristics in the two lecture and group discussion groups

Table 2 shows the comparison of the mean scores of health workers' knowledge and attitudes in the two lecture and group discussion groups before and after the intervention. Before the intervention, no significant difference was observed between the lecture and group discussion groups in terms of knowledge and attitude mean scores (p>0.05). After the intervention, there was

no statistically significant difference in the mean scores of knowledge in the two lecture and group discussion groups, but the mean score of attitude in group discussion was significantly higher than that in the lecture group (P = 0.04).

 Table 2. Comparison of the mean scores of health workers' knowledge and attitudes in the two lecture and group discussion groups

Variable		Group Mean (SD)		p-value
		Group Discussion	Lecture	
Before	Knowledge	2.17 (7.25)	2.45 (7.8)	0.33
	Attitude	8.29 (61.5)	7.44 (63.14)	0.27
After	Knowledge	1.63 (11.28)	1.66 (11.4)	0.77
	Attitude	4.78 (68.66)	6 (65.86)	0.04

Table 3 shows the comparison of the mean scores of knowledge and attitudes of each group before and after the intervention. According to this table, after the intervention, the mean score of health workers'

knowledge and attitudes in the lecture group increased significantly (P<0.0001).

Table 3. Comparison of the mean scores of knowledge and attitudes of each group before and after the intervention

Variable	Group	Before the Intervention Mean (SD)	After the Intervention Mean (SD)	p-value
Knowledge	Lecture	2.45 (7.8)	1.66 (11.4)	
	Group discussion	2.17 (7.25)	1.63 (11.28)	< 0.0001
Attitude	Lecture	7.44 (63.14)	6 (65.86)	< 0.0001
	Group discussion	8.29 (61.05)	4.7 (68.66) 8	

Also, after the intervention, the mean score of health workers' knowledge and attitudes in the group discussion group increased significantly (P<0.0001). (Table 3)

Discussion

Based on the obtained results, education, both in lecture and in group discussion teaching methods, positively affected health workers' knowledge and attitudes, and the scores of both groups increased significantly after education. Also, the attitude scores of health workers who were taught by group discussion were significantly higher than those in the lecture group, indicating the greater impact of the group discussion method on the attitude of participants in this study. The present research showed that the mean scores of health workers' knowledge about asthma in the two lecture and group discussion groups were not statistically significant at the end of the intervention. In the explanation of the above findings, it can be said that the lack of significant difference in subjects' knowledge scores between the two lecture and group discussion teaching methods in this study may be due to the evaluation of the effectiveness of these two methods in inappropriate time intervals with education sessions. On the other hand, health workers who have always been taught by the lecture method are more familiar with traditional teachinglearning systems and feel more comfortable with these methods, which may be due to their previous level of education and experience as well. Also, due to the unfamiliarity of health workers with the way of implementing group discussion and this teachinglearning method, it seems that there is less flexibility for accepting new teaching methods among health workers, and the lack of significant difference between the two methods does not reject the superiority of group discussion, and the participants were implicitly satisfied with the group discussion method, too. The difference between the statistical population of this study and other studies can also be the reason for the discrepancy in the results.

The results of Sohrabi et al.'s (2021) study conducted to compare the effect of education through lecture and group discussion on nursing students' learning and satisfaction showed that the difference between the final scores and satisfaction in the two groups was significant. This difference was quite evident regarding satisfaction with the teaching method, ease of receiving answers to questions, spending participants' energy, and creating motivation in the two groups. However, in this study, the group discussion method did not improve students' scores (6). Also, in our study, no statistically significant difference was observed in the knowledge scores of the participants in the group taught by lecture and group discussion teaching methods.

In Isfahan Kalati's (2014) study conducted to compare the two lecture and group discussion methods on pregnant women's level of nutritional awareness, the results of awareness assessment in the final test showed no significant difference between the two methods, but in both groups, after the intervention, the pregnant women's level of knowledge increased compared to before (16), which is consistent with the results of this study on the learners' level of knowledge.

The results of Motrofin et al.'s (2017) study conducted to investigate the difference in the effects of the lecture versus group discussion teaching methods on the learning outcomes of trainee students showed that the learning outcomes of students who were taught by the lecture method were different from those taught by the group discussion method and it was proved that the group discussion method was more effective in improving students' learning outcomes than the lecture method (17).

The results of Arias' study conducted to compare small group discussion with a traditional lecture showed that the educational consequences of small group discussion were more effective in dentistry students' learning and students' practical skill acquisition than the traditional lecture. The learners of discussion groups had a higher score than the learners in lecture groups when testing the skill performance, but no significant difference was observed in the score of knowledge acquired between the two groups in the written test. The format of the education session did not seem to have a direct effect on the acquired knowledge, but in terms of performance, group discussion learners scored better (18). The results of this study are in line with our study regarding knowledge, and there is no difference in both groups.

The results of Karimi et al.'s (2006) study conducted to compare the effects of lecture and group discussion on learning and recall in nursing and pediatric diseases in nursing students also indicated that the level of learning in the two lecture and group discussion teaching groups increased significantly and the level of learning in the lecture group was significantly higher than that in the group discussion method, but the persistence of the learned material significantly increased in group discussion teaching method than the lecture method (19), which is consistent with the results of our research as such education in both methods has affected the increase of learners' level of awareness. It is worth noting that in this study, it is not the case that group discussion always has had a better result than lecture.

In Johnson et al.'s (2009) study, the students who had been taught by the conventional method showed an improvement in attitude, knowledge, and performance scores, but this improvement was not evident in the problem-based learning (PBL) method (20).

The results obtained from Hekmatpo et al.'s (2013) study regarding the subjects' knowledge and awareness and also the students' views and attitudes on the way of living lesson showed that group discussion led to increasing the learners' awareness of this lesson than the lecture method, but there was no significant difference between the two methods in their view of the lesson content (21), which was exactly the opposite of the results of our research because there was no difference between the learners' knowledge scores between the two methods, but individuals' attitudes regarding asthma had improved in the group discussion teaching method than lecture.

Rawas et al. (2020) conducted a study in Saudi Arabia to compare the effect of traditional education and individual activities versus small group discussion on the students' test performance. In this study, students were assigned to two groups. The educational content was presented to one group as an activity in small groups and to the other group as individual activities and traditional education. At the end of the sessions, the test was performed. The results showed a significant difference in the scores of the two groups, and students taught in the small group discussion method obtained a higher mean score (22).

The results of Aghapour et al.'s (2015) study conducted to compare the effects of the two lecture and group discussion teaching methods on the subject of clinical theory of pregnancy showed that teaching through the student-centered group discussion method with observing relevant standards was more effective on the learning level of midwifery students than lecture; on the other hand, the information retention was also higher. The results of this study showed that the desire and interest of learners in the group discussion teaching method was stronger and the time spent studying these courses was much less than in the classes taught by the lecture method. Comparing the results of the end-ofclass test to each session shows the students' learning and perception in the group discussion method compared to the lecture method classes, showing a significant difference (7).

In Raut et al.'s (2014) study, which used the group discussion method as an innovative method for teaching microbiology at Chuan Medical School, Nanded College, the data analysis showed that after group discussion sessions, learners' scores increased significantly, and the students agreed that there was no confusion during the group discussion and that the group discussion not only helps better understand and recall the topic but also develops the basic characteristics of a successful physician (11). In Raut, Rawas, Johnson, and Aghapour's studies, the group discussion method was more effective than the lecture method.

In a study entitled "Changing Internships from Traditional Lectures to Small Groups" on medical students to teach general surgery, Cendan et al. (2011) showed that the mean scores of students educated in small groups versus only-lecture groups significantly improved. The time spent preparing the group was longer, but the satisfaction with the educational environment was also higher than the lecture group (22), which is not consistent with the results of this study.

In this study, the level of attitudes of the participants in the group educated by the group discussion method compared to lecture increased significantly, which can be due to the fact that in the group discussion method, the learner's power of expression is strengthened, and finally, his/her tolerance in hearing different opinions promotes and acquires the skills of interacting and exchanging ideas with others through cooperation. On the other hand, this method increases self-confidence and reduces shyness in learners, and makes them practice things such as listening correctly, paying attention, respecting the rights of others, respecting the opinions of others, and accepting the opinions of others. The lack of a significant difference between the knowledge scores in these two teaching methods is not a reason for the inefficiency of the group discussion method. Therefore, it can be concluded that for health workers' training, a combination of teaching methods can be used to create deep and efficient learning and positive motivation and attitude because it seems that in the case of asthma, if health workers have enough motivation to screen, educate, and care for patients, they can take an effective step to reduce the incidence and better quality of life of patients.

Conclusion

The health workers' attitude score increased during the group discussion method. Increased learners' participation is recommended by applying active teaching methods that can provide more learning opportunities and motivation.

Supplementary material(s): is available here [To read supplementary materials, please refer to the journal website and open PDF/HTML].

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