

Experiences of Selected Students in the Scientific Olympiad for Medical Students – A Qualitative Study

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Research note

Keywords: Scientific Olympiad for Medical Students

Posted Date: August 14th, 2019

DOI: <https://doi.org/10.21203/rs.2.12837/v1>

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Abstract

Objective: It is of great importance to identify the talent students in the Scientific Olympiad and pay attention to the upgrade of quality of these competitions. The aim of this study was to explain the Students' experiences about the Scientific Olympiad. This research was a phenomenological qualitative study. Data were collected based on questionnaires (27 students) and semi-structured interviews (13 students) who were selected in the Medical Students' Scientific Olympiad. The analyzing of information was performed using clayze method. Results: Students' experiences were divided into two main themes, including motivating and restrictive factors. Scientific level, planning and implementation and welfare issues were obtained as the three main categories by analyzing data. The participants suggested four holding suggestions, side plans, facilities and the notification results. In conclusions, students' experiences stated that the Medical Students' Scientific Olympiad in Iran is still at an early stage that challenges further the knowledge level. Therefore, it is necessary to design questions with high taxonomy by trained academic facilities. Also, the attention to the side programs, welfare amenities and recreational programs as the motivating factors for participating in these competitions recommend.

Introduction

Recent developments have occurred for science topics and science education in all over the world, and scientific advancements are considered as one of the most important indicators for a country [1]. This issue has changed the universities mission to doing their social responsibility, which is also the expert individuals training [2]. Our society requires the high ability individuals with their thoughts, reasons, and their theoretical, critical and analytical skills with high ability [3, 4].

Nowadays most universities have become more active in comparison with the past year's, with a new approach based on a competitive scientific and healthy environment creating along with identifying the talented students for more purposeful researches [3, 5, 6]. The holding of MSSO is one of the effective strategies for this situation, which has been hardly applied in the recent years [7]. Scientific Olympiads are held every year in all over the world in some fields like biology, phasic thinking and protein modeling associated to the Science Ministry[8].

In the Ministry of Health, the MSSO was held for the first time in 2009 in Isfahan University of Medical Sciences for medical students with graduate and postgraduate degrees with the goal the developing the problem solving and reasoning skills, team working, interdisciplinary activities and attending to the purpose of the health system [9]. The Medical University of Shiraz, Tehran and Tabriz were selected as the next hosts for these competitions in order to acquire the above mentioned skills. In addition, by achieving skills and knowledge, they will gain experiences for their future jobs, due to the fact that communication and social interactions are strengthened [10]. Therefore, attention to the participants' satisfaction plays an important role in structuring a peaceful atmosphere between the volunteers during the Olympiad and encourages them to participate in subsequent competition. [11]

In the study done by Adibi, 58% of the participating students were satisfied of the tournament implementation quality in the first Olympiad in 2009.[12] Also, Hadi-Zadeh's research indicated that 52% and 51% of the students believed that the questions designing motivated students' problem solving, reasoning and creativity abilities.[13] Considering that the main purpose of this kinds of Olympiads are for motivating the skills of reasoning, problem solving, creative thinking, collaboration, communication and producing a friendly environment, and also to address these items. Consequently, this research was conducted in order to evaluate the students' experience participating in MSSO using a qualitative approach for introducing a proper pattern for better holding of these Olympiads.

Methods

A qualitative descriptive phenomenological approach was applied in order to collect and analyze the student's experiences who were participated in the 3rd, 4th, 5th, and 6th MSSO. This method has been focused on the experience of students[14]. The main question, which the authors attempted to find its answer, was the nature and meaning of the best holding Condition for National Olympiad for medical students. In this study, we selected students who participated in the National Olympiad for three years and had adequate information about these competitions different stages, without the limitation of age, gender, university and fields[15]. Inclusion criteria for selecting participants were consisted of those students with lived experience in the Olympiad for several times. In fact, the samples selection performed in the purposefully form. In this method, with those who had the most and richest information,[16] this process continued to the stage of data saturation. By the time, the researcher felt that the sampling process[17]. Data were collected over two phases. First phase: We used open ended question, questionnaires that were consisted of two parts including the demographic information and three open ended questions (strength and weakness points in competitions of points, and suggestions on the holding of the best Olympiad) designed by expert individuals. Questionnaires were distributed amongst students in the dormitory at the time that they had more free time for answering to the written questions. **Thirty-six** of them were eligible to participate in the study, and consequently the response rate was 75% (n = 27). Data were analyzed after the questioners' completion and researchers investigated them several times.

In the next phase, researchers prepared the guideline of interview based on the result of the first phase. Interview was conducted with the cooperation of student in order to obtain deep information. In the begging of the interview, the objectives of the study were explained and the permission of recording their voice was obtained. The ethical subjects have been considered in this study. The participation of the students was voluntary, and the content of the interviews was kept confidentially without mentioning the interviewees' name. Chief researcher performed interviews. The duration of each interview was differed from 30–40 minutes. Their comments were recorded using the sound recording device. Moreover, interviewers can use handwritten notes. The level of data saturation was determined by the all of the researchers. Thirty six participants were enrolled into this study. The content of the interviews were reheard several times by the researchers, and were transcribed immediately after the end of each

interviews. The transcripts were double-checked by the independent researchers [18]. To obtain credibility, engaged with data (these cases were read and written several times by the two researchers until immersion in the data), member check (chief researcher discussed with the colleges to reach consensus about extracted codes), triangulation (two method for data collection; questionnaire and semi structured interview). In order to increase this study trustworthiness, we considered four criteria; Credibility, Conformability, Dependability and Transferability. To conformability, a panel discussion was held with the participation of the experts on coding. To dependability and transferability, quotations and external auditor were used, respectively. It is noteworthy to state that the use of organizer experiments and maximum variation sampling were considered. Colaizzi's distinctive seven step processes were used in order to analyzing the data, and these steps are as followings: Each transcript should be read and re-read in order to obtaining a general sense about the whole content, for each transcript, significant statements that pertain to the phenomenon under study was extracted. These statements recorded on a separate sheet noting their pages and lines numbers. Meanings were formulated from these significant statements. The formulated meanings have been sorted into categories, clusters of themes, and themes. This study results integrated into an exhaustive description of the phenomenon under study. The fundamental structure of the phenomenon was described. Finally, the validations of the findings have been sought from the participants[19].

Results

The questionnaires were distributed amongst 36 participants. Twenty seven participants responded to the questionnaires including 12 males (44.4%) and 15 females (55.6%). In the second phase, 13 students were interviewed in order to achieve data saturation.

Data analysis indicated that the students had emphasis on dormitory status, reception, service, recreational-sports facilities, the test questions correction, and the test implementation manner. Therefore, the experiences of the participants were classified into the three general themes, including the scientific level of questions (3 themes and 6 sub themes, Table 1), program and the state of implementation of the tests (3 themes and 6 sub themes, Table2) and welfare (5 themes and 10 sub themes, Table 3).

The participants' suggestions for better implementation of Olympiads were categorized into four main categories (test implementation, lateral programs, amenities and announcing the results). Students' suggestion in test implementation category were: it is better to hold the Olympics at different educational levels, expanding the area of the Olympiad in the other fields such as laboratory sciences will provide a great opportunity for further interaction between the diagnosis and treatment groups, considering different fields of students and compare them with each other within the same field and It would have existed schedule appropriate for exam days and the exams do not interfere with the university. In the lateral programs category, students suggested that should be considered creational facilities for the leisure time of the participants and Workshops should be held for participants during the test days. In the Facilities category, Student recommended that the place of residence of participants should be in places near to the city and online resources should be provided for them, and informing should be appropriate for these

resources using. In the results announcements category student recommended; Student rankings should be announced at the end of the Olympiad and the test results should be announced individually to each university.

In addition, the experiences of the students participated in the Medical Olympiad for university students were categorized into two main teams including, restrictive and motivating factors as followings:

Restrictive factor: The main restrictive factors based on the participants' statements, including time consuming, lack attention to the free time of participants in Olympiad, and inaccessibility to academic supervisors. For example, participant No.3 asserted: "There was a long interruption between the morning and evening exam." On this case, participant No.5 says: "generally, programmes had been planned for the examinations, and we did not have a special program at leisure. Also participant No.8 asserted: "There were no sports facilities. The accessibility to supervisors was difficult because of the inappropriate dormitories location." And participant No.5 believed that: "Officials can plan workshops for different subjects like critical thinking, team working, and communication skill during the holding of the Olympiad in order to meet students from different faculties and strengthen these skills. The participant No.8 opinion was "Student from different faculties had been inhabited in separate dormitory and we can't meet them in the free time.

Motivating factor: The main motivating factors based on participant statements were respect to student, welfare facilities, regulate and peacefulness. In this case, participant No.7 says, "The dormitory welcoming committee had a good behavior. "Also, participant No.9 statements," The authorities have behaved nicely in the first encounter. And, participant No.10 asserted:" The stationery, tables and chairs were proper for the test." And also, participant No.13 believed that:" Slow music playback had a positive effect at the time of the entrance and before the start of exams.

Discussion

Nowadays, it is important to challenge the creativity and innovation power of students by changing the process of education and training. The holding of Olympiad competitions can challenge the students' reasoning, creativity and [problem-based learning](#) skills and enhance the cooperation and team working [20, 21]. It is necessary to conduct several studies about holding details, including of scientific and managerial aspects; therefore, the students participating are the most important source for collecting these information.

The results of this study indicated that students have considered the three main themes further, including welfare issues, lateral programs and the state of implementation of the tests, and scientific level of Olympiad. Modifying these factors has been suggested in order to better handle the holding of Olympiad.

In the part of welfare issue, the students have suggested that if the dormitories were close, students must have easy access to other colleges. As communication with other volunteers is one of the goals of the Olympiad, [10] this subject could be effective in their success and increase their scientific level. Azami et

al pointed to this issue in their study[4]. Most participants had a positive view about offering meals, snacks, and transportation. Unfortunately, some dormitories had not internet, and consequently, the lack of accessibility to the internet was one of the important failures at this tournament. Today the internet permit people to collaborate and communicate on-line [22] as well as connect with family. The students were satisfied with the writing tools that were given during the tests as well as connect with family. The writing tools that were given during the tests satisfied the students; however, they preferred that these tools were delivered to the student at the time of admission. Farrell's study in 1998 that was conducted on the participants' satisfaction and motivation in the sporting events has shown that equipment, physical facilities and easier availability to them are considered to be important volunteers' satisfaction as important volunteers' satisfaction [23].

In the theme of the program and the state of implementation of the tests, the majority of students have evaluated the good planning for holding the tests; however, the lack of sport and scientific tours were the main defect in planning. Arrange the trip or short program with the sporting event during competitions is effective on decreasing stress [24]. Most students have stated that the results of the tests were announced on the late and the dedicated time for the examinations was inappropriate. According to examination regulations, the timely announcing of exams results and appropriate test time must be respected [25].

In the Olympiad, most students have objected to the memorable aspect of some questions. They expected that the questions be based on the reasoning aspects, in order to challenge many of the skills like the creativity of students, along with reducing the level of stress amongst students by creating a healthy academic environment. The study of Vahedi et al. (2014) has shown that stress was one of the major factors in physical and mental power reducing amongst students who were participated in the Olympiad [26]. Other notable issues in this theme were the team competitions deletion. Since team competitions can increase responsibility in students [27] Based on the participants experiences, the specificity of the Olympiad subjects and the impossibility of the participation of the students in other discipline were the other defects of the Olympiad. Increasing the subjects' diversity and the presence of students from other disciplines stated as respect the fairness of the competition. It was most important for students to participate from all disciplines; this student's right should not be taken [28]. As the students of the second Olympiad in Shiraz, as well as faculty members in Iranian National Olympiad have requested widespread theme for these completions for students' participations [8].

Regarding the Olympiads importance and nature, it is necessary to study the strengths and weaknesses points, and application of the participants' suggestions. On the other hand, considering to the low records of student Olympiads in Iran, it is necessary to identify barriers and utilization essential schedules for conducting basic and preliminary studies. Therefore, the application of experiences of participating students, faculty memberships, as well as the experiences of other countries was recommended. The advantage of the current study was that the researchers involved in Talented Student Office and they were familiar with the problems, characteristics and the students' desires.

Limitations

The main limitation of this study was the time of collecting information from the students during examination, due to effect of the examination stress on accountability.

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Student Research Committee of the Tabriz University of Medical Sciences/ Iran (No: IR/Tbzmed.rec.1392.247). The participation in the research was voluntary the following consent obtained from the participants and that they will be free to discontinue participation. At the initial stages of the study, the purposes of the study have been explained by researches. The notes and voices recorded after obtaining permission from the participants. All data were kept stating the name of participants.

Consent for publication

Not Applicable

Availability of data and material

The content of the interviews are only available researcher team.

Competing interests

The authors declare that they have no competing interests.

Funding

Not applicable

Authors' contributions

HH and LV: Interviewed with participants. AZ AND GN: Listened to the interviews several times and written word by word. HH and LV: Coding the interviews. HH, LV, AZ and GN: Finalized extraction codes. LV and HH: Drafting the article. All authors read and approved the final manuscript.

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Acknowledgments: We would like to thank all students who had participated in the 3th, 4th, 5th and 6th MSSO in Tabriz/Iran.

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Tables

Tables:

Table 1: Participants' experiences from Scientific level of Olympiad

Quotations of participants' experiences	sub themes	themes	Open code
The subject of the Olympics was new and applied.	applicability	subject of the Olympics	Infrastructure of designing questions
Only the medical and pharmaceutical disciplines came up with these subjects	General lack of topics		
The questions of the Olympiad did not match the reference. Some of the questions were exactly from the book. Questions were limited to 2 or 3 books. Persian reference was introduced.	Matching questions with reference	Designing questions	
The level of questions was good. Students welcomed the design of questions with Conceptual map form. Proposals were very bulky. The questions were somewhat memorable. Sometimes the questions included uncommon cases. It creates mental creativity. Olympiad creates creative thinking. The Olympiad strengthened student problem solving skills. The questions were superficial rather than argumentative. Creativity was not in the questions, it was similar to the exam questions that the book had to be given to memory	Scientific level and taxonomy of questions		

Table 2: Participants' experiences of program and the state of implementation of the tests

Quotations of participants' experiences	sub themes	themes	Open code
Informing about the test location was good	Time and place	Informing	Test infrastructure
Informing about the start time of the test wasn't good			
The opening plan was deleted.			
The Olympiad was not a media outlet and did not pay enough attention	site and media		
The test was held on a regularly.	Conditions during the test	Holding tests	
Slow music playback had a positive effect During the entrance and before the testing.			
Caregivers of test session did not know enough about the conditions and rules related to answering questions			
The opportunity was low in all three stages of the test.			
The time to answer the questions was short and the test was intensive.			
The duration of the Olympiad was short.			
The Olympiad was more like an exam than a science competition.			
In general, planning was for the hours of the testing and we did not have a special program at leisure.			
There was a long interruption between the morning and evening exam.			
The results were announced late.	How to Announce results	Announce results	
There was not enough coordination in announcing the results.			
Details of the results were not announced.			
The announced results were not acceptable.	Results status		
The protests were not answered			

Table 3: Participants' experiences on welfare issues of test

Quotations of participants' experiences	sub themes	themes	Open code
Dormitories were equipped with self service	Space and distance	Dormitory status	Welfare infrastructure
Dormitories were far away from the place of test.			
Dormitories were far from the city center and there was no access to shopping and sightseeing centers			
There was no dormitory for the married			
Access to supervisors was difficult due to the inappropriate location of dormitories.			
We had difficulty in accessing personal hygiene supplies	Health items		
Quality of catering was suitable among the promises	among the promises	Hospitality	
There was excessive spillage in Catering	snacks		
There wasn't excessive spillage in snacks			
The authorities have behaved appropriately in the first encounter.	personnel	Serving	
The dormitory welcoming committee had a good behavior.			
There was a delay in transportation.	Transportation		
It was better, a separate transportation service was considered for each university			
There was no internet access in dormitories.	Internet	Hardware and software facilities	
The stationery and the table and chair were suitable for the test.	Office equipment and sports		
There were no sports facilities.			
There was a tour of the students.	Recreational	Recreational facilities	

Supplementary Files

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