



Role of Talented Student Office in Encouraging Medical Science Students for Participating in Scientific Olympiads

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Abstract

Introduction: Scientific Olympiads and the Talented Student Office (TSO) are two strategies for the identification and training of gifted and talented medical science students. The aim of the present study is to identify students' viewpoints about the facilities and privileges of the TSO in stimulating them to participate in the Medical Science Olympiad.

Methods: This study was a cross-sectional descriptive study and all participating in the 4th and 5th National Medical Science Olympiad in Iran from 2011 to 2012 were selected using the census method. The validity of a researcher-made questionnaire was confirmed by experts. The content validity index (CVI) was 0.95. Reliability was evaluated using Cronbach's alpha ($\alpha=0.8$) and the test-retest method (ICC=0.85). Descriptive statistics including frequency, percent, mean and standard deviation were calculated by SPSS 19.

Results: In total, 261 students responded to the questionnaires. About 36% of participants in this study had low or very low familiarity with regulations of the TSO. Continuing education to higher levels (master's, Ph.D., residency) and being recruited as a faculty member were the most motivational factors for participation and the least was the permission to select more courses (up to 27 units).

Conclusion: Continuing education to higher levels and recruitment as a faculty member were two important factors for participating in the National Medical Science Olympiad. Therefore, personnel in the TSO and related managers should prompt medical students to these centers by highlighting the facilities.

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Introduction

Medical science students are intellectual powers in a community and play an important role in health development. The identification and support of talented students and the creation of opportunities for their growth are some of the most important responsibilities of educational institutions.^{1,2} Thus, for the scientific promotion of students, the Talented Student Office (TSO) in universities of medical sciences was established under the supervision of the Education Vice Chancellor. The Regulation of the Council of Talented Students of the

Ministry of Health and Medical Education was approved in the 502nd meeting of the Supreme Council of the Cultural Revolution in 2002.³ Finally, the Regulation of Educational and Research Facilities for Talented Students was adopted to establish special educational and research facilities for gifted and talented students and help their potential talents prosper based on Islamic, humanitarian and national values.⁴

However, the Ministry of Science, Research and Technology held the National Medical Science Olympiad in different

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areas from the year 1996.⁵ The Ministry of Health and Medical Education held Scientific Olympiads for students from 2009 onward; the first was held in Isfahan University of Medical Sciences, followed by Shiraz, Tehran, Tabriz and Kerman universities. The next Olympiads were held in Iran and Tehran universities. Participants were selected by screening tests for 3 or 4 fields (clinical reasoning in clinical sciences, scientific reasoning in basic sciences, management in health system, and innovative fields) in their own university. After succeeding in these tests, they competed at the National Olympiad.⁶⁻⁷ The first, second and third persons in individual exams and members of the first groups in team exams could use the facilities of the Talented Student Offices (TSO).

A major concern of managers was the unfamiliarity of students with the goals and mission of TSOs and the ways these offices communicated with the talented students. These problems could be partially solved by holding the Scientific Olympiads.⁸ Therefore, the universities can discover top students and the strengths and weaknesses of TSOs through these tournaments.

The National Medical Science Olympiads are a great and valuable source for studying the effectiveness of facilities on talented students. The aim of the present study was to identify the view of students who participated in the 4th and 5th olympiads about impact of facilities and privileges of TSOs in encouraging students to participate in the Scientific Olympiads.

Materials and Methods

This study was a cross-sectional descriptive study, which was conducted in 2012-2013 in Tabriz University of Medical Sciences.

Inclusion and Exclusion Criteria

All medical science students had the opportunity to participate with the exception of junior students. They could participate in a compact course held in three or four fields (clinical reasoning in clinical sciences, scientific reasoning in basic sciences, management in health system, and innovative field). The students selected fields based on their interest. After these courses, an assessment was done in each university. Then, students with the highest grades could participate in the National Olympiad. Each university was allowed to introduce three students in each field. Lack of interest in participating, voluntary withdrawal from the study and incomplete questionnaires were exclusion criteria.

Data gathering tool

We tried to provide an accurate, reliable and timely method to evaluate participants. Van der Vleuten described the criteria for determining the usefulness of a method of evaluation: reliability (the degree to which the measurement is correct and reproducible) and validity (whether the evaluation measures what it claims to measure).⁹

A researcher-made questionnaire composed of both open- and close-ended questions was used to collect data. The variables of the first part included age, gender, average

score, degree of education, rank in the screening tests and TSO membership and variables in the second part included the level of familiarity of students with regulations and facilities of the TSO and impact of items and privileges of regulations for participating in Scientific Olympiads. The questionnaire was designed on a Likert scale (spectrum for options).¹⁰ Items of a questionnaire were based on a four-point Likert scale with very high ranking four and very low ranking one.

An important components analysis was conducted to research the subscale structure of the scales. Therefore, reliability was evaluated from analyses of internal consistency using Cronbach's alpha, inter-rater agreement, and temporal stability, for which test-retest reliability of ≥ 0.7 is considered to be acceptable. In some other studies, an alpha coefficient above 0.6 is considered to be acceptable.¹¹ In the current study, Cronbach's alpha was 0.8 using SPSS 19. The content validity of the researcher-designed questionnaire was determined by experts and eighteen Olympiad question designers that were faculty members of medical universities. The content validity index (CVI) was 0.95 and test-re test method was ICC=0.85. The reliability of the questionnaire was confirmed by Cronbach's alpha, which was $\alpha=0.8$. The format of questionnaires was designed so that participants could choose the best answer from a list of feasible answers most commonly used.

Evaluation and selection of participants

All participants were selected using a census method referring to the complete enumeration of students.¹² Students were all participants in the 4th and 5th National Medical Science Olympiad in Iran. Finally, 261 participants were enrolled.

Data Extraction and Statistical Analysis

Data were analyzed using SPSS 19 for means and standard deviations for normally distributed continuous variables. Frequency, percentage, ratio and analysis were used for categorical variables.

Ethical Standards

The questionnaires were distributed among students and completed by them. The aims of the study were mentioned in each questionnaire and explained by staff and student members of TSOs. Ethical aspects were considered and the proposal approved by the Ethics Committee of the university (No=225). We got permission from the students for participation in study. They were assured that their information would be kept secret. In the questionnaires, the names of students were not requested. Every student was able to exclude themselves voluntary from this study. The student information was kept secret even to the analyzer.

Results

Demographic characteristics of participants are summarized in Table 1.

In total, around 550 participants were potentially eligible, only 163 of whom participated in the study. Forty-nine students who received questionnaires dropped out

voluntarily. Of the 338 questionnaires, 77 were incomplete. Finally, 261 participants were enrolled. Of a total of 261 students who participated in this study, 135 (51.6%) were undergraduate medical, pharmacy and dentistry students and 126 (48.4%) were undergraduate bachelor's students. Students participated in different fields with 120 (46%) students related to management in health systems, 57 (21.8%) students from innovative field, 48 (18.4%) students from scientific reasoning in basic sciences and 36 (13.8%) students from clinical reasoning in clinical sciences. The mean average was calculated for participants. Average is referring to the mean scores of students at the end of last semester. We considered the last average of students and it

was 17.49.

Thirty six percent of students reported that they had low or very low familiarity with the regulations of the TSO and the level of familiarity was acceptable. This relationship is shown in Figure 1.

The effect of each facility on encouraging students to participate in the National Medical Science Olympiad is shown in Table 2.

More students believed that continuing education to higher levels and recruitment as a faculty academic member motivated them more than other facilities, and taking more educational units (up to 27 units) had little effect. The effect of continuing education to higher levels is

Table 1. Demographic variables of participants.

Variables	Level	Frequency (%)
Degrees	Under graduated professional doctor	135(51.6)
	Under graduated bachelor	126(48.4)
Fields	Clinical reasoning in clinical sciences	36(13.8)
	Scientific reasoning in basic sciences	48(18.4)
	Management in health system	120(46)
	Innovative filed	57(21.8)
Membership at TSO*	Yes	99(37.9)
	No	162(62.1)
Rankings of inter university	The first	93(35.6)
	The second	63(24.1)
	The third	60(23)
	Not documented	45(17.3)

* TSO = Gifted and Talented student supporting office

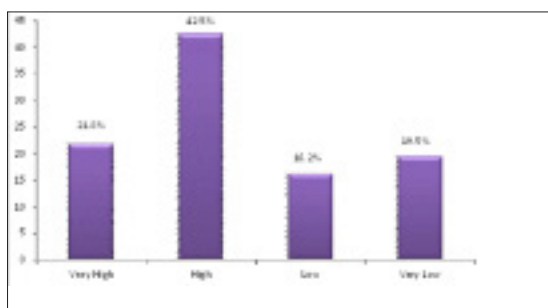


Figure 1. Level of familiarity of participants in the 4th and 5th National Medical Science Olympiad in Iran with the regulation of the Talented Student Office (TSO)

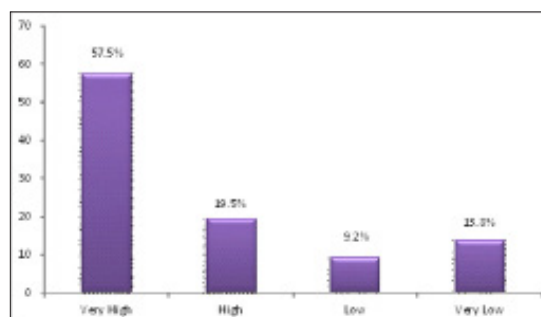


Figure 2. Impact of continuing education to higher levels and participation in the 4th and 5th National Medical Science Olympiad in Iran.

Table 2. The impact of each facility in encouraging students for participating in the National Medical Science Olympiad in Iran.

No.	Query	Very Low	Low	High	Very High
1	Continuing education to higher levels	36(13.8%)	24(9.2%)	51(19.5%)	150(57.5%)
2	Exemption or deduction of military service	36(15%)	54(22.5%)	72(30%)	78(32.5%)
3	Concurrent study in two fields	87(34.5%)	42(16.7%)	66(26.2%)	57(22.6%)
4	Spending of workforce planning	59(22.6%)	45(17.4%)	68(26%)	89(34%)
5	Employment in offices and organizations	63(24.5%)	30(11.6%)	57(22%)	108(41.9%)
6	Recruiting as faculty academic member	48(18.7%)	33(12.9%)	63(24.6%)	112(43.8%)
7	Passing of more educational units (Up to 27 unites)	87(33.3%)	90(34.5%)	54(20.7%)	30(11.5%)
8	Passing of general units in the form of class-absence	72(27.6%)	60(23%)	78(30%)	51(19.4%)
9	Financial support from participating in scientific conferences and workshops	51(19.5%)	49(18.8%)	61(23.4%)	100(38.3%)
10	Using from the library, computer, internet, and laboratory	62(23.7%)	41(15.8%)	59(22.6%)	99(37.9%)

* All numbers were shown as number (%)

shown in Figure 2.

Discussions

The main purpose of medical science universities is the training of individuals that are able to manage and improve the health of the public community.¹³

Thus, the role of medical science universities is very crucial. Today, most universities fill their role and duty more effectively by using new approaches based on creating a safe and scientific environment for competitions and also identifying gifted and talented students for a more targeted investment. Holding Scientific Olympiads for students is one of the effective strategies.¹⁴⁻¹⁶ Also, the Talented Student Office (TSO) was established under the Education Vice Chancellor in the Medical Science Universities to promote the university scientific level and educate academicians. Then, the regulation of educational and research facilities was approved in the Ministry of Health and Medical Education to identify gifted students based on Islamic, national and humanitarian values. It would be an effective policy if appropriate communication was used and/or goals were integrated between Olympiads and the TSO. In recent years, managers have considered the number of mechanisms and strategies to lead participating students in Olympiad toward the TSO. Therefore, the results of this study presented that participants in 4th and 5th scientific Olympiads had acceptable familiarity with regulations of the TSO, and continuing education to higher levels was an important factor for participating in Olympiads. In addition, enrolling in more educational units (up to 27 units) had little effect.

According to findings of the present study, approximately 36% of participants had low or very low familiarity with TSO regulations, and certainly, this subject should be higher among students who did not participate in Olympiads. However, the TSO has the responsibility to inform not only medical science students, but also authorities and associated organizations with Scientific Olympiads. A study by Azarpira *et al.* in Shiraz showed that inappropriate and poor informing were major weaknesses of Olympiads.⁸ Therefore, it is necessary to increase students' awareness about the regulation privileges of the TSO due to joining and using these facilities. So, we could increase the knowledge of students by providing introductory pamphlets about TSO, holding introductory tours in these offices or in the faculties, improving and revising of TSO websites and linking TSO with the Sama System (education management system).

According to this study, two factors had the most effect on participating: continuing education in higher levels and recruitment as a faculty academic member.

In India, the Ministry of Science and Technology offers different awards such as monetary awards and scholarships in scientific courses to students succeeding in the International Scientific Olympiads in order to help them to get better positions.¹⁷ It seems, continuing higher education and recruitment as a faculty member have been highlighted among students because of the increasing

number of students in the lower grades, and, subsequently, the increasing desire to continue in higher education, the rise of unemployment among educated individuals and the lack of sufficient income outside jobs in academia. Therefore, the TSO and related authorities can increase the tendency of students to take the advantages these offices through highlighting the facilities.

In previous studies, the mission of Olympiads included the promotion and improvement of community health, training in problem-solving and reasoning skills, attention to creative and critical thinking, attention to the goals of health care, encouragement of teamwork and interdisciplinary activities,^{1,2} increasing self-esteem among students, helping to choose future jobs³ and guidance of talented students.⁴ According to the Unit of Scientific Olympiads, the purpose of Olympiads is detecting talented students in the country and encouraging them to study and research and creating opportunities to increase their knowledge.⁵ Regarding the summary and overview of the mission of Olympiads, the goal of Scientific Olympiads is to identify, strengthen and support talented students, which is similar to the mission and vision of the TSO at the Medical Science University. So, the TSO can improve tasks and help the Olympiad organizers to identify, attract and support talented students for participating in Scientific Olympiads.

In the current study, familiarity with TSO regulations was low or very low among talented students and continuing in higher education and faculty absorption were the most important factors for participation in the Scientific Olympiads. Thus, other facilities failed to provide sufficient incentives for students and there is a defect in attracting and supporting talented students in this field. Therefore, it is essential that we plan for more alignment of TSO tasks and Olympiad organizers in order to enhance student support.

The advantage of this study was the participation of talented and top students from diverse regions of Iran. This study had some limitations. Participants were limited to students of the 4th and 5th Medical Scientific Olympiads. It seems that we could obtain more accurate results by reviewing the comments of other students. Finally, regarding the potentiality of qualitative studies,¹⁸⁻²⁰ we recommend that other qualitative studies with the same topic be performed to provide a strengthened foundation for TSOs. This study was designed regarding the condition of 4th and 5th Olympiads. In addition, the items of TSO regulation were changed and corrected frequently. Therefore, the study was purposed according to new regulations and Olympiads.

Conclusion

According to this study, continuing higher education and recruitment as a faculty member were the two main factors for participating in the National Medical Science Olympiad. Therefore, TSOs and related managers could increase the tendency of students to join these offices by highlighting these facilities and expanding related stimulants so that these centers are able to perform their

missions efficiently. In addition, it is necessary to expand and develop appropriate informing mechanisms because of low familiarity of some students with TSO objectives and regulations.

Finally, further studies, especially multi-center studies are recommended for the future.

Competing interests

none

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References

1. Farajollahi A, Amini A, Rashidi MR, Shahbazi A, Azami-Aghdash S. The situation analysis of the international relations management and inter-university collaboration in Tabriz University of Medical Sciences, Iran, during the years 2005-2010. *Journal of Analytical Research in Clinical Medicine* 2013;1(1):25-31. doi:10.5681/jarcm.2013.004
2. Ghojzadeh M, Azami-Aghdash S, Naghavi behzad M. Education in order to empower students master role. *Quarterly Educational Development of Jundishapur* 2013; 4(1):90-94.
3. Ministry of Health and Treatment. Regulation of Gifted and Talented student Council in Ministry of Health, and Medical Education (IRAN) [Online]. 2002 [cited 2014 Oct 31]. Available from: http://edc.behdasht.gov.ir/uploads/Ayeen_DerakhshanHedayat.htm
4. Regulation of special research, education and welfare facilities for gifted and talented students (IRAN) [Online]. 2009 [cited 2014 Oct 31]. Available from: http://edc.behdasht.gov.ir/uploads/Ayeen_DerakhshanHedayat.htm
5. Hadizadeh F, Yazdani S, Ferdosi M, Haghdoost AA, Rashidian A, Hadadgar A, et al. The first national Olympiad on reasoning and decision making in Health system management an experience Report. *Iranian Journal of Medical Education* 2011; 10(5):1018-1032. [In Persian].
6. Ghojzadeh M, Ahmadi S, Hosseini MA, Shahabi S, Tahamtani T, Nourbakhsh F, et al. Assessment of scientific thinking in basic science questions in the Iranian Fourth National Olympiad for medical science students. *Journal of Analytical Research in Clinical Medicine* 2014;2(3):142-151. doi: 10.5681/jarcm.2014.024
7. Adibi P, Hadadgar A, Hadizadeh F, Monajemi AR, Eftekhari H, Haghjoo Javanmard S, et al. Implementation of The First Medical science Olympiad in Iran: A report. *Iranian Journal of Medical Education* 2011; 10(5):1006-1017. [In Persian].
8. Azarpira N, Amini M, Kojuri J, Pasalar P, Soleimani M, Hossein Khani S, et al. Assessment of scientific thinking in basic science in the Iranian second national Olympiad. *BMC Res Notes* 2012;5:61. doi:10.1186/1756-0500-5-61
9. Epstein RM. Assessment in medical education. *New England Journal of Medicine* 2007;356(4):387-396. doi:10.1056/nejmra054784
10. Boone HN, Boone DA. Analyzing likert data. *Journal of Extension* 2012;50(2):1-5.
11. Du Y, Kou J, Coghill D. The validity, reliability and normative scores of the parent, teacher and self report versions of the Strengths and Difficulties Questionnaire in China. *Child Adolesc Psychiatry Ment Health* 2008;2(1):8. doi:10.1186/1753-2000-2-8
12. Vahedi L, Jabarpour-Bonyadi M, Ghojzadeh M, Hazrati H, Rafeey M. Association Between Outcomes and Demographic Factors in an Azeri Turkish Population With Cystic Fibrosis: A Cross-Sectional Study in Iran From 2001 Through 2014. *Iranian Red Crescent Medical Journal*. Inpress (Inpress):e29615. doi:10.5812/ircmj.29615
13. Israel BA, Schulz AJ, Parker EA, Becker AB. Review of community-based research: assessing partnership approaches to improve public health. *Annu Rev Public Health* 1998;19:173-202. doi:10.1146/annurev.publhealth.19.1.173
14. Heller KA, Hany E. Identification of gifted and talented students. *Psychology Science* 2004; 46(3):302-323.
15. Khoshbaten M. Fourth Supplement of Science the Olympiad of medical universities students throughout the country: Iran. Tabriz: Jahan Ghazi Publication; 2013.
16. Banae Esfahani A. Student Science Olympiad. *Nashreh Nesha Elm* 2013;3(1):68-73. [In Persian].
17. Mahajan B. Biology Olympiad program in India. *Current Science* 2000; 79(8):1085-61.
18. Ghojzadeh M, Hajebrahimi S, Azami-Aghdash S, Pournaghi Azar F, Keshavarz M, Naghavi-Behzad M, et al. Medical students' attitudes on and experiences with evidence-based medicine: a qualitative study. *Journal of Evaluation in Clinical Practice* 2014;20(6):779-785. doi:10.1111/jep.12191
19. Hesse-Biber S, Leavy P. The practice of qualitative research. Thousand Oaks, USA: Sage Publication; 2006.
20. Hollway W, Jefferson T. *Doing Qualitative Research Differently: Free Association, Narrative and the Interview Method*. London: Sage; 2000.