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Original article

Compares the clinical competencies of general practitioners who are working in health complexes in Tabriz city with the clinical competencies defined in the "document of Iranian general practitioners capabilities"

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ABSTRACT

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Introduction: Evaluation of clinical competencies of general practitioners (GPs) in comprehensive healthcare centers provides a clear manifestation of their performance in the delivery of healthcare services. The present study aimed to compare the clinical competencies of GPs working in the health centers of Tabriz with the Standard clinical competencies. Methodology: Out of 110 physicians working in the health centers, 50 physicians participated in this cross-sectional analytical-comparative study. In the first phase, the participants completed a self-assessment questionnaire. In the second phase, they took the OSCE test designed within a framework with 14 stations. This study used descriptive statistics, Pearson correlation coefficient, two-way ANOVA, and t-test. Findings: The mean scores of self-assessment and OSCE test were, respectively, 54 ± 17.87 and 33.63 ± 3.57 .

Regarding the self-assessment results, the mean scores of clinical skills, communication skills, and patient care were 63.02 ± 18.73 , 34.64 ± 22.31 , and 36.81 ± 25.39 , respectively. Regarding the OSCE test results, the mean scores of clinical skills, communication skills, and patient care were 24.47 ± 4.61 , 58.12 ± 6.19 , and 25.99 ± 2.56 , respectively. Results suggested a significant relationship between self-assessment and OSCE ($p \leq 0.05$). There was no significant difference between the public and private sectors ($p = 0.254$). Conclusion: The findings showed that the self-assessment scores were lower than the OSCE scores. The participants' scores in clinical and patient care skills were high in the self-assessment and low in the OSCE test; whereas, the participants' scores in communication skills was low in the self-assessment and high in the OSCE test. Therefore, authorities and managers of the Department of Health, Treatment, and Medical Education need to improve the way physicians are used in the system, identify educational needs, hold preservice training courses, and recruit GPs according to their competencies in the delivery of health care services.

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1. Introduction

What matters in medical education is learning outcome, which manifests itself as professional competencies (Ghaffari et al., 2012). Competence can be defined as ability to do something special in a way that produces desired outcomes (Mitsuyama et al., 2018). Vander Vleuten defines clinical competence as a combination of knowledge, practical skill, and professional attitude while performing a complex clinical task (Ghaffari et al., 2012). Medical education aims to meet the public health needs (Schwarz, 2000). Family physicians are among the key pillars of healthcare service delivery, especially for managing non-communicable and chronic diseases (Tabrizi et al., 2019). Each community defines physician competencies according to its needs (Albanese et al., 2008). Therefore, expectations from GPs in developing countries are very different from expectations in developed countries. Although some medical competencies have no border, other medical competencies are specific to regional conditions, and even time dependent (Albanese et al., 2008; Naqvi, 2005). In line with social responsibility, the Health Action International Asia Pacific (HAIAP) suggests that the basic skills of GPs should be defined and educational programs should be modified to provide physicians with knowledge and skills necessary to face with clinical medicine and public health challenges (Aretz, 2011).

According to the recommendations of the Family Medicine Department of the Sherbrooke University of Canada, family physicians must keep current with medical and health care developments throughout their careers, which enables them to meet the changing needs of society, patients, and healthcare system (Joolaei et al., 2011). In a study into educational needs of family physicians in Yazd, Karimi et al. (2012) found that the knowledge and skills of medical students could satisfy only 59.5% of expectations held by the Family Physicians Plan. As a result, they highlighted a need for empowering GPs by revising medical curriculum and holding training courses (Karimi et al., 2012). July (2010) studied Family Physician Program of Fars and found that GPs had poor healthcare service delivery skills and highlighted the need for multiple improvement interventions.

Since competencies of physicians in healthcare centers are an important factor in the quality of service delivery and there is no study into the assessment of their professional competencies, the present study aimed to investigate the scientific, professional, and clinical competencies of GPs and compare them with national standards. The results may be useful for the improvement of recruitment procedure in the future.

2. Methodology

This is a cross-sectional analytical-comparative study conducted in Tabriz University of Medical Sciences in 2018. The minimum sample size was estimated 86 based on the Krejcie and Morgan table, 95% confidence, and 10% error rate. Accordingly, 86 GPs were selected based on inclusion criteria, using the systematic random sampling method. The inclusion criterion was GPs working in public and private healthcare centers of Tabriz, based on which the list of eligible consenting participants was made.

Data was collected in two stages. The first stage involved the administration of a two-part questionnaire developed in accordance with the Document of Competencies of General Medicine Graduates. The first part included demographic information (age, gender, work experience, medical experience, work experience in medical clinics, work experience as private physician, university of graduation, graduation date, GPA, MPH degree in family medicine). The second part was comprised of 100 items in three categories: clinical skills (67 items), communication skills (16 items), and patient care (17 items). The clinical skills included ability to obtain medical history from patients, relatives, and other resources (2 abilities), ability to perform clinical examination (3 abilities), ability to record and deliver information (4 abilities), ability to take practical measures (51 abilities), and ability to perform basic laboratory and diagnostic tests (7 capabilities). The communication skills included basic communication skills (5 abilities), effective communication with patients, companions, and family (5 abilities), communication with colleagues, medical staff, and government authorities (4 abilities), and other communication skills (2 abilities).

The patient care included the general principles of patient care (17 abilities) anchored by "I am unable," "I am relatively able," and "I am fully able." Validity of the self-assessment questionnaire was confirmed using content validity. First, the latest version of the Document of Competencies of General Medicine Graduates, approved by the Supreme Planning Council of the Ministry of Health, was delivered to 10 experts for content validity assessment. The questionnaire's reliability was approved (Cronbach's alpha of 0.83) by distributing 10 questionnaires in the pilot stage and analyzing the results. The approved questionnaires were then submitted to the participants in two briefing sessions, to fill them out within a week and return them by email or in person. In the second stage of this study, based on three skills, namely clinical skills (5 sub-skills and 67 abilities), communication skills (4 sub-skills and 16 abilities), and patient care (one sub-skill and 17 abilities) selected from the Document of Competencies of General Medicine Graduates, the OSCE test was designed according to the nature of competencies and in the presence of experts and professors of the General Medical School. The OSCE test included 14 stations, 12 skill stations and 2 resting stations. Each station included a clinical question related to above competencies: an ECG image at Station 1, a chest X-ray at Station 3, a simulated patient at Station 12, prescription at Station 13, and rest at Stations 4 and 9. In addition, a moulage was used in other stations. The testers in each station were residents and faculty members of the relevant specialty who completed the checklist of each participant at each station (standard checklists for the final test of clinical competency in general medicine). All participants were scored at all stations. The time for each station was 5 minutes and the reference used in this test was the last version of the Document of Competencies of General Medicine Graduates.

The questions were designed based on this document and the objectives of the health centers program. The participants were divided into 4 groups, two morning groups (A) and two evening groups (B), which were blinded to each other. The tests were administered in the Clinical Skills Training Center of the School of Medicine. All participants received an invitation card and test-related information.

2.1. Statistical analysis

Collected data was reviewed by the examination authorities and then analyzed using SPSS22. Data analysis was done using descriptive statistics, Pearson correlation coefficient, two-way ANOVA, and t-test at the significant level of 0.05. The reliability of internal consistency of the self-assessment questionnaire was measured using the Cronbach's alpha. The measured alpha (0.98) was higher than 0.7, confirming reliability of the questionnaire. To make the scores comparable, they were normalized using the formula $NS = (RS - 1) / (Max - Min) \times 100$. Based on results, the scores were classified to four groups of very weak (<25), weak (25.01-50), strong (50.01-75), and very strong (75.01-100). The competency scores of the participants were extracted using the self-assessment questionnaire and the OSCE test.

3. Results

The mean age of the participants, including 27 women (54%) and 23 men (46%) men, was 47 years. The mean age of male and female participants was 50 and 44 years, respectively. The mean years' work experience was 19 years, ranging from 6 to 27 years. The mean GPA was 16.02. According to the results, 39 participants (78%) were graduated from Tabriz University of Medical Sciences, and 11 participants (22%) were from different universities in Tehran, Shahr-e Kord, Shiraz, Urmia, and Turkey. In addition, 32 participants (64%) were graduated from state universities and 18 (36%) from Islamic Azad University. Moreover, 8 participants (16%) had a MPH degree, 35 participants (70%) had clinical work experience with a mean of 11.60 years, and 33 participants (66%) had work experience in private clinic with a mean of 8.73 years, 35 participants (70%) were in the public sectors, and 15 participants (30%) were in the private sectors.

Table 1
Sociodemographic characteristics of participants working in healthcare centers.

Specifications	Mean-Std	
Age	47.02 (6.51)	
Work experience (year)	18.92 (5.39)	
Work experience in medical clinics (year)	11.60 (7.91)	
University of graduation	18.92 (5.39)	
Graduation score	16.03 (0.88)	
Medical experience	8.73 (6.42)	
Gender	F: (54%)27	M: (46%)23
University of graduation	Tabriz: (78%)39	Others: (22%)1
Workplace	Governmental: (70%)35	Private: (30%)15
MPH degree	(16%)8	

Table 2
Clinical competency status of participants working in public and private healthcare centers based on self-assessment questionnaire and OSCE test.

Title	Mean	Std	t	p
OSCE Test	33.63	3.57	-8.20	0.00
Self Assesment	57.01	17.87		

The results revealed a significant difference between self-assessment and OSCE test results ($p=0.00$).

Table 3
Assessment of clinical competencies of participants working in public and private healthcare centers using the OSCE test.

Skill	Mean	Median	Std
Interpretation of ECG	2.5	3	3.33
BLS	33.68	36.71	11.97
Graphical interpretation	9.40	10	10.24
Internal	23.36	30/30	14.47
Rheumatology	57.33	56/94	7.60
Ear Examination	44.22	44/44	8.9
Diabetes	17	16/66	2.7
Infant	51.88	58/57	10.45
Women	2.15	72.22	8.25
Psychiatry	4.90	42.50	14.26
Skin	5.99	5.23	2.56
EYE	41.07	41.66	12.42
Total stations	3.63	33.53	3.45

Results of the present study showed that the mean score of all OSCE stations was 33.63. Station 1 (ECG interpretation) and Station 11 (women) accounted for the lowest score (2.5) and highest score, respectively.

Table 4

Comparison of clinical competencies of participants working in public and private healthcare centers based on self-assessment and OSCE test scores in 3 domains (clinical skills, communication skills, and patient care).

Domain	OSCE	Self assessment
	Mean/Std	Mean/Std
Clinical skill	(24.47)4.61	(18.73)63.02
Communication skill	(58.12)6.19	(34.64)22.31
Patient care	(5.9 9)2.562	(36.8 1)25.39

According to the self-assessment results, the mean scores of clinical skill, communication skill, and patient care were 63.02±18.73, 34.64±22.31. According to the OSCE results, the mean scores of clinical skill, communication skill, and patient care were 24.47±4.61, 58.12 ±6.19, and 25.99±2.56 respectively.

4. Discussion and conclusion

Based on the results, the mean and standard deviation of overall score of OSCE test was 33.63±3.45. The participants score in OSCE test was lower than the cutoff score 60. The self-assessment scores were high in clinical skill and patient care skill; whereas, the OSCE scores were low in these skills. The self-assessment and OSCE scores of communication skill were, respectively, low and high. In a study by July (2010) into the clinical skills of family physicians in Fars, the total and mean OSCE scores were 190 and 113±15.2, respectively, with a maximum score of 151.25 and a minimum score of 55.5. In a study by Aalami (2014) to determine the correlation between the OSCE and pre-internship test results, the OSCE test score was 112.57±21.43. The mean total score was 21.46±3.8 in the study conducted by Abbasi et al. (2016). Changiz et al. (2015) performed an objective test on physicians of South Africa and the mean score was 43% of the total score.

The mean±standard deviation self-assessment score of the participants was 54.01±17.87. According to the definition, the participants' status was considered to be strong in this study. The mean±standard deviation scores of male and female participants were 48.48±19.00 and 58.40±15.91, respectively. According to the results, self-assessment scores of the participating GPs were high. In Abbasi et al. (2016) study, the mean self-assessment score was 21.46±3.8, indicating moderate knowledge of the participants. Young et al. (2002) believe that although self-assessment of knowledge and skills is valuable, it is more useful to estimate the "positive predictive value" because the participants are not aware of all objective criteria for acquiring knowledge or skill.

Parker et al. (2004) also found similar results in their study on residents of different disciplines. According to them, consistency of the results of self-assessment and external evaluation (real-skill assessment) ranged from 3% to 23% (Parker et al., 2004). In addition, Johnson et al. (1998) considered the validity of self-assessment less than performing a test, so that no difference was occurred in the results of self-assessment even after informing people about the test results. The mean total score of OSCE of all stations was 33.63, with the lowest score (2.5) pertaining to Station 1 "ECG interpretation station" and the highest score (72.15) to Station 11 "gynecology", and the mean score of self-assessment was 54.01±17.87.

Changiz et al. (2015) showed that physicians, specifically the graduates, were optimistic in self-assessment and gave high scores to their own performance. In that, the competency score of physicians was higher in self-assessment than objective test results (Abbasi et al., 2016). In a study on non-experienced physicians in Sydney, Australia, the participants' self-report scores were low, and even lower in the objective test (Barnsley et al., 2004). Numerous studies in England indicated that the competency of physicians graduated from domestic universities was not much desirable (Barnsley et al., 2004; Burch et al., 2005).

The results showed no significant difference between the public and private sectors in the self-assessment, OSCE test, and total scores (p=0.254). Rahmanian et al. (2003) showed that there is no significant relationship between knowledge of GPs and their workplace, which is consistent with the results of our study.

The results of this study showed that physicians working in health centers should be retrained for ECG interpretation, basic life support (BLS), internal lung and rheumatology radiography interpretation, ear

examination, diabetes, pediatrics, psychiatry, skin, and eye examination. Terrace et al. obtained a low correlation coefficient between the results of self- assessment and the results of test-based assessments in GPs, and concluded that they had little self-awareness of their educational needs (Young et al., 2002). In a study by Hodges et al. (2001) the probability of inaccurate self-assessment was higher in those who lacked clinical skills.

Evaluation of clinical competencies with quantitative variables showed that the competencies of physicians based on self-assessment and the OSCE test were inversely related to age, work experience in clinics, work experience, and graduation date and directly related to GPA; however, these relationships were not significant. In addition, the clinical competencies of physicians had a significant relationship with gender, university of graduation, university type (public/private), MPH degree, and work experience in private clinic.

In this study, many changes in the scores among physicians indicate that they are very different in terms of medical skills. In addition, the highest mean was observed in gynecology station, which can be attributed to the sensitivity of the subject and that maternal as development indicator. The lowest scores were observed in ECG interpretation, prescription, pediculosis, and interpretation of chest radiography, which can be attributed to poor educational programs during studentship and internship, lack of interest in educational courses, and poor performance of OSCE test in assessing the skills of the participants.

The final results obtained from this study showed that according to the definition in this study, the status of GPs in clinical competencies was strong based on self-assessment (54.01 ± 17.87) and weak based on the OSCE test. In addition, the results indicated that the OSCE test can better reflect the clinical skills of physicians. This is confirmed in numerous studies (Parker et al., 2004; Fernandes et al., 2007; Frohna et al., 2006).

Suggestions and recommendations for future research

Selection of high sample size and design of more OSCE stations (25) to evaluate most areas, training physicians in outpatient fields in skill labs, reviewing the retraining courses by the Continuous Education Department and Health Deputies, motivating GPs working in health centers in order to update their information and improve the quality of services, and assessing health centers and physicians based on their qualitative and quantitative health and treatment performance, and conducting studies at a wider level (in terms of number of physicians and diversity of stations).

Study limitations

The small sample size (50 physicians from all physicians working in health centers), high costs of the OSCE test, time-consuming test, and difficulty in coordination of the examiners were the limitations of this study.

Ethical considerations

Ethical considerations included obtaining permission from the Medical Education Research and Development Center, obtaining ethical permission from the Ethics Committee, confidentiality of information, obtaining informed consent from the participants, introducing the researcher, and sending the results to the participants if they were interested.

Ethical approval

Compliance with ethical guidelines. Approval for this study was obtained from Tabriz University of Medical Sciences Research Committee (IR.TBZMED.REC.1396.731).

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Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agreed to be responsible for all the aspects of this work.

Conflict of interest

The authors declared no conflict of interest.

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