Original Article

Assessment of interprofessional professionalism of surgical residents and workers in operating units in teaching hospitals: A cross-sectional study

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Abstract

Background & Objective: Professionalism and interprofessional cooperation are essential capabilities of health team members. Educational systems must use an appropriate approach for training and evaluating these capabilities. The present study aimed to investigate the adherence of surgical residents and personnel to the interprofessional professionalism behavior in the operating units using the interprofessional professionalism Assessment (IPA).

Materials & Methods: This cross-sectional study was conducted at Shahid Sadoughi University of Medical Sciences from 2019 to 2020. The performance of surgical team members, including 113 residents, surgical technologists (operating room), and anesthesia technicians, was evaluated using the interprofessional professionalism assessment tool (IPA). Data were analyzed using descriptive (mean and standard deviation) and analytical (ANOVA, Chi-square) tests.

Results: The score of interprofessional professionalism behavior of the team members in the operating units were reported as 1.16 ± 0.27 out of 5. No significant difference (F=0.24, P=0.333) was observed between the participants' scores in different disciplines. The lowest scores of the participants in the "excellent" range were 1.04±0.31 out of 5.

Conclusion: The results showed that interprofessional professionalism behavior among the participants was weak. It is suggested that planning for formal curriculum and continuous evaluation of adherence to improve the interprofessional behavior among surgical team members.

Keywords: Interprofessional, Professionalism, Profession, Surgery, Operating room

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Introduction

Interprofessional collaboration was introduced as one of the strategies to achieve patient safety by providing team-based services (1). Interprofessional collaboration is defined as healthcare workers from different professions working together with the patient, family, and other health personnel to provide the highest quality of care (1). Interprofessional collaboration is a complex and multi-dimensional concept involving communication, understanding roles and responsibilities, and teamwork. Responsibility and commitment to a common goal, recognizing the roles and responsibilities of oneself and other healthcare team members, and managing ethical challenges in interpersonal and

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interprofessional conflicts are included in interprofessional cooperation (2, 3). Commitment to professionalism and team values is one of the critical factors in the success of interprofessional teams. Interprofessional values include respect for the role and expertise of other health professionals, altruism and empathy, and constructive communication (4).

The growing body of literature explained the significant challenges of developing interprofessional education and collaboration among healthcare learners and workers in the investigated context (5-7). In addition, the weakness of education systems in teaching and evaluation as crucial challenges of clinical education were explored (8, 9).

Medical education systems have been planned to develop interprofessional collaboration and professionalism as core competencies (1). The practical teaching process and assessment system support learners in adherence to professional values and interprofessional collaboration principles (4). The improvement of professionalism and collaboration as soft skills and competencies among the learners and workers need to plan longitudinal development in formal, informal, and continuous education (1). The use of formative assessment and monitoring of learners as the primary approach to the developmental process of the competencies was recommended in the educational systems. Zijlstra-Shaw classified the assessment tools into four categories: written examination and performance record, competency-based assessment in simulated environments, and observational examination. In this regard, the observational examination is recommended to assess the participants' commitment to natural environments (10). Using observational assessment in the natural environment of the operating room and surgical departments can be a good indicator of the extent to which people adhere to their professional principles (10). The present study aimed to assess the interprofessional professionalism behaviors of residents and workers in surgical units at Shahid Sadoughi University of Medical Sciences.

Method

Design

The present study was a cross-sectional type.

Setting

The study was conducted at Shahid Sadoughi hospital, affiliated with Shahid Sadoughi University of Medical Sciences, in 2019-2020.

Participants

Participants from different professions, including operating room technologists, anesthesia nurses, and surgical residents working and studying in the operational units of Shahid Sadoughi hospital, were entered by the census (n=113). Residents in various fields, including general surgery, otolaryngology, ophthalmology, and orthopedics, were included in the study (Table 1).

Assessment tool

Frost and colleagues developed the Interprofessional Professionalism Assessment (IPA) in 2018 (4). IPA assesses individual health professionals' behaviors that can be observed and evaluated during a clinical experience. IPA has 18 items in four areas: altruism (4 items), excellence (5 items), respect (4 items), and communication (5 items). Scoring of items used a five-point response format, where 1 = "Poor", 2 = "Fair", 3 = "Good", 4 = "Very Good", and 5 = "Excellent". (Appendix 1). For each participant, five scores were calculated: one means item score over each of the four domains and one grand mean score over all the items. All mean scores were between 1-5. Thus, the score of each item ranges from 1 to 5, and the total scores are classified as Poor (1-2), weak (2.1-3), moderate (3.1-4), and strong (4.1-5). Frost and colleagues reported the fit indices indicated good model fit (RMSEA = 0.064, 90% CI: 0.055 – 0.078; CFI = 0.991; SRMR = 0.027) (4). In order to use the IPA in the Iranian context, we have assessed the validation of the IPA in our study. In the first step, the questionnaire was translated into Persian by two English translators. After comparing the translated texts, a single copy of the translations was prepared. In the next step, this version was translated into English (back-translation). The translated version was compared with the original questionnaire by a fluent expert in both Persian and English, and finally, the Persian version of the tool was compiled. The face validity and content validity of the questionnaire were assessed using participants' viewpoints by the Delphi technique (three rounds) (11-13). In the first round, the Delphi consent form and guidance form were submitted to experts in different fields (medical educators and clinical specialists). The experts' opinions and suggestions were collected two weeks after the first round. The suggestions were added to the original text in a separate column and resubmitted for the second round, and experts were asked to provide additional comments. After two weeks, comments were collected,

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analyzed, and sent for the third round, but no new comment was submitted. In the phase, all suggestions for improving the clarification of items were proposed, and no items were removed. After that, a form was developed to investigate the quantitative indicators of content validity, including the content validity ratio and the content validity index by a survey. In this step, 23 experts (medical educators, clinical specialists, and professional ethicists) were requested to assess the necessity for each item of the questionnaire using a three-point scale (necessary, useful but not necessary, unnecessary) (14). According to the Lawshe table, the CVR index of items requires obtaining values greater than 0.42 as an acceptable value (14). The degree of relevance of the items by CVI was assessed using a four-point scale (poor= 1, fair= 2, good= 3, very good= 4) (15). The results showed that the content validity of the IPA was confirmed based on a consensus of experts. According to the Lawshe table, the CVR index of all items obtained values greater than 0.42. The CVI values of items greater than 0.79 and all items were retained in the questionnaire. In order to assess the reliability of IPA, 109 healthcare workers and residents in the operating room consisting of 54 men (49.54%) and 55 women (50.45%) were entered to assess the internal consistency of IPA. The reproducibility of IPA was assessed by assessing the participants in different disciplines (n=10) at twice the time points. The reliability of IPA is approved by Internal consistency (0.934) and reproducibility (ICC=0.742).

Assessment process

The assessment of interprofessional professionalism learners' performance was conducted by observing two evaluators' participants in the operating units. The evaluators introduced the assessment principles of interprofessional professionalism concepts, IPA items, and scoring in the training sessions. Evaluators evaluated the participants' professional behavior by observing at least two shifts.

Data analysis

The Kolmogorov-Smirnov normality test examined the distribution of data. The results showed that data were normally distributed (p = 0.09). The data were analyzed using descriptive (frequency, percentage, mean, and SD) and analytical tests (T-test and ANOVA). The student T-Test was used to compare the scores in the gender groups (male and female), and ANOVA was used to compare the scores in different professions (surgery, operation room nurses, and anesthesia nurses). In addition, Tukey HSD was used as a post hoc test. The significance level is considered at $p < .05$. Data were analyzed by SPSS 16.

Results

The demographic characteristics of participants are shown in Table 1. The results showed that 102 participants (90.2%) have no experience of education in the fields of interprofessional collaboration and professionalism.

Table 1: Demographic characteristics of participants

		N	%
Professions			
Surgical Technologists		47	41.59
Anesthesia Technicians		33	29.20
Residents in Surgical Specialties		33	29.20
Residency specialties	ENT	7	21.21
	Ophthalmology	7	12.21
	Orthopedics	4	12.12
	General Surgery	15	45.45
Gender	Men	48	42.5
	Woman	65	57.5

The scores of interprofessional professionalism behaviors of participants were reported as 1.39±0.27 of 5. a minimum score of 1.00 and a maximum score of 3.28. Participants' scores were lowest in excellence. (Table 2).

There was no significant difference between interprofessional professionalism scores in participants' gender (*p*-value = 0.092), and professions (*p*-value = 0.241). The mean score of residents in different specialties was reported as ENT (1.19±0.18), Ophthalmology (1.09±0.08), Orthopedics (1.07±0.08), and general surgery (1.38±0.56). In addition, no significant difference was reported between the scores of residents in different fields (*p*-value = 0.333) and years of residency (*p*-value = 0.780). The results showed that the excellence score of residents significantly higher than other professions were (*p*-value = 0.0001).

Discussion

The present results related to participants' poor behavior of interprofessional professionalism may be achieved

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due to the weakness of the education and evaluation system. In the investigated context, no formative assessment mechanisms were aimed at giving feedback on professional behaviors among learners and workers. Similarly, the findings of a review study showed that weakness in monitoring and evaluation is a primary challenge of clinical medical education in Iran (9). This review showed that different studies explained the deficiency of evaluation systems and clinical evaluation methods (9). Mehdipour and colleagues conducted a mixed-method study on ethical challenges in the clinical setting in 2019. Mehdipour's study explored inadequate support as the main challenge of clinical education (16). The lack of an evaluation system for soft skills such as teamwork, communication, and professionalism harmed learners' learning and behavior. In addition, the predominance of hierarchical approaches and discrimination across disciplines in Iranian educational systems could affect the findings. Nurses have identified interprofessional discrimination as the most critical challenge in interprofessional collaboration and teamwork in the results of the Valizadeh study in 2015 (17). Likewise, the results of Vafadar and colleagues defined the hierarchical and individualistic approaches as challenges to interprofessional collaboration (18, 19). The challenges may affect the adherence to professionalism and interprofessional values principles in the context. Establishing a formative assessment, supportive system, and feedback mechanism is recommended to help recognize and solve the explored challenges and improve the soft skills of learners and workers.

Table 2. The interprofessional professionalism scores of participants in the various disciplines

Domain	Major	Mean	SD*	F	p-value
Communication	Residents in Surgical Specialties	1.21	0.27	0.42	0.653
	Surgical Technologist	1.19	0.21		
	Anesthesia Technicians	1.24	0.25		
Total		**1.21**	**0.24**		
Respect	Residents in Surgical Specialties	1.47	1.72	0.85	0.428
	Surgical Technologist	1.33	1.01		
	Anesthesia Technicians	1.11	0.22		
Total		**1.31**	1.14		
Altruism and caring	Residents in Surgical Specialties	1.16	0.20	1.87	0.158
	Surgical Technologist	1.09	0.13		
	Anesthesia Technicians	1.11	0.17		
Total		**1.11**	0.17		
Excellence	Residents in Surgical Specialties	1.13	0.19	13.97	P<0.001**
	Surgical Technologist	1.01	0.04		
	Anesthesia Technicians	1.02	0.06		
Total		**1.04**	0.12		
Total scores	Residents in Surgical Specialties	1.15	0.23	0.24	1.440
	Surgical Technologist	1.12	0.14		
	Anesthesia Technicians	1.23	0.39		
Total		**1.16**	**0.27**		

*Standard Deviation **ANOVA, the significance level was considered to be 0.05

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Excellence is an essential component of professional behavior that plays an essential role in healthcare teams' personal and professional development. Excellence focuses on reflection, feedback seeking, and self-evaluation (20). The use of evidence and the opinion of experts in decision-making processes is required to consider the viewpoints of individuals and their professions without their hierarchical levels (4). Residents' personal and professional development is a crucial competency (21, 22).

The present results showed that the participants achieved the lowest scores in the excellence domain. Although participants' scores in all professions were reported as poor, the residents' scores were reported to be significantly higher than those of the other professions. The results may be achieved due to no formal and informal curriculum in the studied university to develop interprofessional and professional behavior in the residency and continuous educational programs. Sprung et al. showed that awareness of the attributes of excellence could help learners and junior physicians recognize the characteristics of a worthy physician and strive to achieve them. Likewise, the senior physician encourages them to be and maintain the characteristics of a good physician (20). The challenges of role modeling in the excellence domain specialty unbalanced professional and personal life among clinical teachers may affect the residents' scores in the domain. Moreover, the challenges of workloads and time constraints of workers to allocate specific time for personal and professional development programs may affect the results. In addition, the weakness of awareness, the defection of practical training, and support mechanisms for excellent activities can significantly affect the findings.

The results showed that participants' communication, respect, and altruism scores were poor and did not differ significantly across different disciplines. This may be due to a deficiency of supportive mechanisms for adherence to professional principles among learners and staff at the investigated university. Altruism is the ability to go beyond the organizational and professional frameworks and have a more holistic approach to service delivery (4). Altruism was highlighted in attention, empathy, and understanding of others' needs and values (23). The altruism domain addressed helping team members, compassion and empathy toward others, and prioritizing the patient's needs over their needs of themselves (4). Axelsson's study in 2009 mentioned that developing altruism in interprofessional collaboration is difficult. Despite high sensitivity and the need for altruistic behaviors among surgical team members, the results showed that altruistic behaviors were not desirable in the studied team (24). The prominence on hierarchy, the dominance of the individualistic approach, and the weakness in applying the principles of team-based care may lead to the achieved findings. Healthcare team members must participate in interprofessional situations, learn from each other and consider differences as an advantage for collaboration. Team leaders' attitudes can be essential in developing altruism (2, 25). It is also vital to create opportunities for communication and interaction growth among different professions and to build trust between them (25). Recognizing one's professional roles and responsibilities, holding interprofessional meetings, providing opportunities to reflect on personal roles in the team, and accepting team responsibilities can contribute to developing an altruistic attitude among team members (4). Therefore, the establishment of interprofessional opportunities aimed at developing interprofessional relationships should be considered in the surgical departments. They established the critical infrastructure and developed managerial support to enhance interprofessional professionalism.

"Respect for others" was described as one of the six core elements of professionalism and referred to as the essence of humanism (23). Mutual respect and trust are the basis of effective interprofessional collaboration (26). The present results showed that the participant's scores in the respective domain were reported poorly but were higher than those of other domains. The respect domain was assessed to understand the cultural differences among different health disciplines and their values, respect the opinions and expertise of team members, and recognize the role and responsibilities of other team members (4). Respect is an essential factor in effective communication and interprofessional collaboration. Respectful behavior, respect for the dignity and professional dignity of members, and respect for the role and abilities of others lead to effective interprofessional relationships (2). The results of Heshmati's study at Torbat Heydarieh University of Medical Sciences in 2015 showed that respectful behavior among personnel and physicians in the operating room was reported at the desirable level (27), which differs from our results. This difference could be due to the departments' atmosphere, the participants' stereotypes, and the behavior of formal and informal managers in surgical teams in the investigated context.

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Developing communication skills and establishing a value-oriented atmosphere among healthcare team members were suggested to grow team-based service.

Communication has been introduced as one of the essential capabilities of interprofessional cooperation. Communication skills are necessary for effective interprofessional collaboration in surgical situations (2). The domain addressed cooperation with other members of the health team, effective communication, active listening to other opinions, a proper response to questions and requests from other colleagues, and respectful communication (2).

In the present study, the participant's scores in the communication domain were reported at a poor level. Similarly, the findings of the Shokri et al. study in 2013 showed that half of the nurses at teaching hospitals in Ardabil believed the professional relationship between physicians and nurses was undesirable (28). Professional power, hierarchy, and doctor-centeredness approach were identified as barriers to communication between residents, nurses, and other professionals (29). It is suggested to eliminate communication barriers within and between professional groups to prevent side effects in the operating room. Weaknesses in formal and informal training and assessment of communication skills and the dominance of the doctor-centered approach may be the reasons for the low scores of participants in this domain. Effective communication and understanding of the professional role and responsibility of professionals were recognized as the two critical competencies in interprofessional collaboration (2). Difficult and stressful conditions in the surgical and operating room departments increase the need to learn practical communication skills, stress management, and adherence to the principles of professionalism among surgical team members. This requires longitudinal planning and consideration of communication challenges in interprofessional meetings.

The use of an interprofessional education strategy in planning for education in formal education and continuous education meeting in the field of professionalism and interprofessional competencies is recommended.

Limitation

The limited sample size and performance evaluation of individuals in a university can limit the generalizability of results.

Conclusion

The results indicated poor interprofessional professionalism among residents and workers in the operating room. These results confirmed the interprofessional strategy to plan formal clinical education and continuing education. Furthermore, the planning for non-technical skills, including professionalism, interprofessional collaboration, and teamwork, needed to be considered in the investigated context.

Ethical consideration

This study was approved by the Ethical committee of the National Agency for Strategic Research in Medical Education. Tehran, Iran. (IR.NASRME.REC.1400.149). The written informed consent forms were obtained from all participants. The work was conducted in accordance with the Declaration of Helsinki.

Acknowledgment

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Conflict of interest

The authors declare they have no conflict of interest.

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Appendix 1: Interprofessional professionalism assessment (IPA)

1.	Works with members of other health professions to coordinate communication with patients/clients and family members.
2.	Demonstrates active listening with members of other health professions.
3.	Communicates respectfully with members of other health professions.
4.	Communicates with members of other health professions in a way they can understand, without using profession-specific jargon.
5.	Responds to questions posed by members of other health professions in a manner that meets the needs of the requester.
6.	Recognizes that other health professions may have their distinct cultures and values, and shows respect for these.
7.	Respects the contributions and expertise of members of other health professions.
8.	Seeks to understand the roles and responsibilities of members of other health professions as related to care.
9.	Determines patient care roles and responsibilities in a respectful manner with members of other health professions.
10.	Offers help to members of other health professions while caring for patients.
11.	Demonstrates empathy for members of other health professions.
12.	Models for other health professionals in terms of showing sympathetic behavior towards patients/clients, families and caregivers.
13.	Prefers patient/client needs to those of his/her own needs and other health professionals.
14.	Coordinates with other health professions and the patient/client, family, and caregivers to produce an optimal plan of care.
15.	Reviews all relevant documentation from other health care professions prior to making recommendations to plan for care.
16.	Contributes to decisions on patient care regardless of hierarchy/profession-based boundaries.
17.	Works with members of other health professions to ensure continuity of care for patients.
18.	Seeks clarification from members of other health professions about unclear information.

* This questionnaire was developed by Frost and colleagues (4).

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