

# Compatibility of the Curricula of Public Medicine Internship and Apprenticeship Programs with General Practitioners' Roles and Responsibilities

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## Abstract

**Background and Objectives:** The aim of the present study is to investigate the compatibility of public medicine internship and apprenticeship curricula with roles and responsibilities of general practitioners (GPs) from their personal perspectives at health centers, affiliated to Tabriz University of Medical Sciences, Tabriz, Iran.

**Methods:** This cross sectional analytical survey was performed on 80 GPs in East Azerbaijan province, Iran in 2014 via simple random sampling. The data collection tool included a researcher-made questionnaire, based on the curricula of community medicine internship and apprenticeship programs and a focus group discussion about GPs' responsibilities. The content validity and reliability of the questionnaire were confirmed by professionals and experts of public health education. For data analysis, descriptive statistics (mean, standard deviation, frequency, and percentage) and one-sample t test were performed, using SPSS.

**Results:** On average, more than 83% of GPs in this study believed that subjects presented in public medicine internship and apprenticeship programs should remain in the curricula. More than 60% of GPs demanded the integration of subjects, including professional ethics and approaches towards preventive medicine and disease risk factors, in the internship program. In addition, more than 50% of GPs asked for the integration of accurate drug prescription and test administration in the internship program. Generally, the respondents reported a moderate to high level of compatibility between the educational content of internship (mean,  $3.3 \pm 0.74$ ; minimum, 1.1; maximum, 5) and apprenticeship (mean,  $3.13 \pm 0.77$ ; minimum, 1; maximum, 4.92) programs.

**Conclusions:** According to the results, GPs reported a medium to high level of compatibility between the curricula of internship and apprenticeship programs, as stated by GPs. They also asked for the integration of certain subjects in their curricula. Therefore, it is essential to coordinate the educational syllabus with the actual medical education needs of students in order to improve GPs' efficiency and promote a community-based approach in medical education.

**Keywords:** Coordination, Curricula, Internship, Apprenticeship, Responsibility, General Practitioners

## 1. Background

Health is a primary, fundamental right and most valuable asset of every individual. The world health organization (WHO) describes good health as a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity. Health research systems, health system planning, resource coordination, monitoring, and management, and health research activities strive to achieve global health in accordance with this fundamental human right.

General practitioners (GPs), as the frontline members of healthcare systems, play a significant role in achieving the goals of health care and treatment. GPs are nor-

mally the first point of contact for patients and are responsible for primary care and disease prevention. They provide health support for community members and direct patients towards the available resources in the healthcare system in the most efficient way. In addition, they facilitate unlimited access to health resources and are familiar with different areas of medicine regardless of their age, gender, or any other characteristics (1, 2).

Global advances in medical education first began in an international conference in Almaty in 1978, which introduced primary health care as a key to achieving community health goals before 2000. In addition, principles and policies introduced at the Edinburgh world congress

in 1988 highlighted the necessity for changes in medical education curricula in accordance with the community's needs and underlined the important status of medical sciences in the future. Accordingly, major changes have occurred in medical education programs, improving the graduates' ability to identify community health problems, providing care for patients, and maintaining community health.

Such meetings triggered changes in the educational programs of public medicine. In addition, community-oriented medical education (COME) has been introduced as the most suitable training strategy in this area. In general, one of the major policies of WHO is to train medical students in actual healthcare environments (especially in rural communities) in order to meet the needs of the general population (3).

Since its establishment in Iran, the ministry of health, treatment, and medical education has been entrusted with the task of human resource management in the health and treatment sectors. This objective has been manifested by the synergistic partnership between education and service, as one of the main solutions for the improvement of medical education programs. Accordingly, since 1985, a 1-month course of medical internship and apprenticeship has been applied for medical students, to complement their theoretical health subjects (subjects 1-5), with the aim of familiarizing them with the healthcare system, health-related problems, and management of health facilities (4).

In this regard, the results of a study by Shiri et al. in 2010 indicated that the most important educational needs of physicians are respectively mental health, family and population health, health education, oral health, network development, and rehabilitation (5). Another study reported the average compatibility of public health undergraduate courses with actual work conditions (< 20%). The participants showed only relative satisfaction with the content of public health curricula and programs and found it to be inconsistent with the occupational needs of students. This study recommended modifications and reforms to improve the quality of educational programs and ensure the future of medical graduates (6).

According to the results of a study by Mohammadpour and Matlabi, the presented theoretical and clinical courses at universities only meet 31.6% and 38.7% of students' educational needs, respectively. This study did not find the courses to be compatible with the students' educational or professional needs (7). In addition, another study in Karachi, Pakistan, showed that 38.2% to 85% of students were dissatisfied with clinical and public health education (8).

The literature review showed that most studies in this

area have focused on educational need assessment and satisfaction surveys, while there is no comprehensive research on the compatibility of educational programs with GPs' responsibilities. On the other hand, since medical education is based on human resource training and the integration of comprehensive and compatible curricula, every educational program should be designed and rearranged in accordance with the community's needs.

For training human resources, including GPs, who play an important role in the health system of every community, development of a comprehensive program is necessary to meet the changing needs of society and to train skilled human resources for the sake of the health system. As a result, schools of medical sciences are responsible for developing educational programs that are in accordance with these objectives (9).

With this background in mind, the main objective of the present study is to evaluate the compatibility of internship and apprenticeship programs with GPs' responsibilities. The results of such studies can be applied to refine, review, and enrich the content of public medicine educational programs.

## 2. Methods

This descriptive, analytical, cross-sectional survey was performed at healthcare centers affiliated with the Tabriz University of Medical University, Tabriz, Iran. The study population consisted of GPs working at the healthcare centers. The study sample was calculated at 132, based on the Cochran's formula considering a total population of 200 at 95% confidence interval (CI, 1.96; t, 5%; d, 0.5; P = 0.5 - 1). However, since the ratio of the estimated sample size to the total population exceeded 0.05, Yates correction formula was applied, and the sample size was calculated at 80.

The samples were recruited into the study via random sampling. For data collection, a 4-section researcher-designed questionnaire was employed. The first section included demographic information, including: sex, year of entrance in public medicine studies, year of graduation, current organizational role, place of work, and duration of employment.

The second section of the questionnaire included the content of internship and apprenticeship programs in public health, which was designed with respect to the established curricula (approved in the fourth meeting of general medicine education council of the ministry of health and medical education). In this section, the respondent were required to comment on the extent of compatibility between the curricula and GPs' roles and responsibilities, using a multiple-choice Likert scale (very high, high,

moderate, low, and very low). In addition, in the third section, for a more precise analysis, GPs were asked if the introduced subjects in the first section of the questionnaire should remain in the curricula or be removed.

Finally, the fourth part of the questionnaire included the neglected content, which should be presented during apprenticeship or internship programs. To determine these subjects, a focus group discussion was held in the presence of 12 deputies of health departments and networks in the East Azerbaijan province, Iran. The experts commented on the community's expectations of GPs, minimum skill and knowledge requirements for GPs, and, finally, the subjects which should be presented for medical students in schools of public health.

Finally, the educational content, which was deemed necessary by the participants for internship or apprenticeship programs, as well as subjects presented in the established curricula, were extracted and integrated in the questionnaire. To determine the validity of the questionnaire, face and content validity were assessed. For this purpose, the questionnaire was presented to several experts of public medicine education, and their comments and suggestions were used to revise the questionnaire.

In addition, Cronbach's alpha coefficient was used to measure the reliability and internal consistency of the questionnaire; the internal consistency of all subscales was higher than average (0.7). Finally, for statistical analysis, descriptive statistics (mean, standard deviation, frequency, and percentage) were calculated and one-sample t test was performed using SPSS.

### 3. Results

Analysis of the demographic characteristics of 80 GPs who completed the questionnaires showed that the majority were women (78.8%). In total, 48.8% of GPs were from Tabriz, while 52.2% were from other major cities including Bostanabad, Osko, Heris, Sarab, Maragheh and Shabestar. Regarding the responsibilities of public medicine interns, the findings attributed the highest average score to "family planning care at health homes" (3.9), while the lowest score was related to "oral health care at health homes" (2.86). In addition, regarding the responsibilities of apprentices, the highest mean score was related to "monitoring and evaluation of mother and child care", while the lowest score was attributed to "introduction to SPSS".

Considering the importance of the content of internship curricula, the highest score was related to "pregnancy care at health homes" (93.8), while the lowest score was attributed to "oral health care at health homes" (66.2). In addition, regarding apprenticeship programs, the highest scores were related to "introduction to the generalities of

family medicine and its principles" and "national tuberculosis control programs", while the lowest score was attributed to "introduction to SPSS". On average, more than 83% of GPs believed that the subjects presented in internship and apprenticeship programs should remain in the curricula (Table 1).

**Table 1.** Frequency Distribution of GPs' Opinions about the Redundancy or Integration of Subjects in Internship and Apprenticeship Curricula of Public Medicine<sup>a</sup>

Program	Subject	Integral	Redundant
Internship	Pregnancy care	75 (93.75)	5 (6.25)
	Healthy child care	71 (88.75)	9 (11.25)
	Family planning care	73 (91.25)	7 (8.75)
	Environmental health measures	57 (71.25)	23 (28.75)
	Oral health care	53 (66.25)	27 (33.75)
	Pediatric disease care	66 (82.50)	14 (17.5)
	Introduction to different aspects of health networks	72 (90)	8 (10)
	Introduction to communicable disease care	70 (87.50)	10 (12.5)
	Introduction to non-communicable disease care	72 (90)	8 (10)
Apprenticeship	Introduction to patient referral systems	71 (88.75)	9 (11.25)
	Vital sign analysis	69 (86.25)	11 (13.75)
	Monitoring and evaluation of health services	71 (88.75)	9 (11.25)
	Monitoring and evaluation of mother and child care	75 (93.75)	5 (6.25)
	Monitoring and evaluation of environmental health measures	55 (68.75)	25 (31.25)
	Introduction to classification of social health groups	65 (81.25)	15 (18.75)
	Introduction to the generalities of family medicine and its principles	75 (93.75)	5 (6.25)
	Introduction to the national tuberculosis control programs	75 (93.75)	5 (6.25)
	Proposal analysis (HSR)	60 (75)	20 (25)
	Introduction to SPSS	55 (68.75)	25 (31.25)
	Introduction to the generalities of insurance	66 (82.50)	14 (17.5)
	Monitoring and evaluation of communicable diseases care	69 (86.25)	11 (13.75)
	Need assessment and problem-solving approaches in health care	63 (78.75)	17 (21.25)

<sup>a</sup>Values are expressed as No. (%).

Table 2 presents the results of the analysis of neglected subjects, which were considered necessary by GPs in the apprenticeship and internship curricula of public medicine.

In the inferential analysis, one-sample t test was used ( $\alpha$ , 0.05) to assess the compatibility between the content of internship and apprenticeship programs and the roles and responsibilities of GPs. In the GPs' point of view, the content of the internship program was compatible with their skill requirements, as the mean score of each subject in the internship program was higher than the average (except for environmental health measures at health houses and oral hygiene at health houses) and t-value ex-

**Table 2.** GPs' Opinions About the Integration or Redundancy of Educational Content in Public Medicine Internships and Apprenticeship Curricula<sup>a</sup>

	Redundant	Integral to the Internship Program	Integral to the Apprenticeship Program	Integral to Other Programs
Accurate drug prescription	5 (6.2)	27 (33.8)	47 (58.8)	1 (1.2)
Accurate test administration	6 (7.5)	30 (37.5)	43 (53.8)	1 (1.2)
Approaches towards preventive medicine and disease risk factors	8 (10)	41 (51.2)	29 (36.2)	2 (2.5)
Doctor-patient communication	810 (10)	48 (60)	24 (30)	-
Professional ethics	10 (12.5)	49 (61.2)	21 (26.2)	-
Social analysis methods	24 (30)	37 (46.2)	16 (20)	3 (3.8)
Advocacy	22 (27.5)	31 (38.8)	25 (31.2)	2 (2.5)
Encouragement of public participation	19 (23.8)	34 (42.5)	24 (30)	3 (3.8)
Elderly health	11 (13.8)	36 (45)	29 (36.2)	4 (5)
Administrative correspondence and executive management	12 (15)	34 (42.5)	31 (38.8)	3 (3.8)
Patient education	8 (10)	46 (57.5)	24 (30)	2 (2.5)
Adolescence and youth care	11 (13.8)	45 (56.2)	21 (26.2)	3 (3.8)
Mental care	6 (7.5)	42 (52.5)	31 (38.8)	1 (1.2)
Human resource management (employee performance analysis and motivational strategies)	13 (16.2)	28 (35)	34 (42.5)	5 (6.2)
Principles of health economics (cost-effectiveness and cost-benefit)	16 (20)	31 (38.8)	27 (33.8)	6 (7.5)

<sup>a</sup> Values are expressed as No. (%).

ceeded the critical level. However, considering the mean total score ( $3.28 \pm 1$ ), this computability was at a moderate level.

Regarding the subjects of “environmental health measures at health homes” ( $2.71 \pm 1.60$ ) and “oral health care at health homes” ( $2.63 \pm 0.98$ ), one-sample t test results were significant; however, the mean scores were below the average. It can be concluded that the educational content of these courses is incompatible with GPs' responsibilities, and less attention has been paid to these subjects (Table 3).

Furthermore, in the apprenticeship program, there was no compatibility between GPs' responsibilities and subjects of “monitoring and evaluation of environmental health measures”, “introduction to classification of public health groups”, “introduction to the generalities of family medicine and its principles”, “proposal analysis”, “introduction to the generalities of insurance”, “need assessment”, and “problem-solving approaches in health care”.

Conversely, subjects of “vital sign analysis”, “monitoring and evaluation of health services”, “mother and child care”, “national control programs for tuberculosis” and “introduction to contagious diseases” were compatible with the actual responsibilities of GPs. However, GPs indicated low compliance between their responsibilities and subjects including “introduction to SPSS”, “proposal analysis”, and “introduction to the generalities of insurance” (Table 3).

#### 4. Discussion and Conclusion

In this study, the main goal is to determine the level of compatibility between GPs' responsibilities and the curricula of public medicine internship and apprenticeship programs. Accordingly, GPs were asked to determine which subjects should remain in or be removed from the educational curricula. For a more precise analysis, the participants were consulted about the necessity of integrating certain subjects that are not included in the curricula. Finally, GPs' views regarding the level of compliance between responsibilities and presented courses were directly examined.

Based on the participants' views about the redundancy or importance of subjects in the internship curriculum, all subjects were found to be integral to the program (score, 80%), with the exception of 2 subjects (“environmental health measures” and “oral health care”), which were considered redundant, as stated by one-third of the participants. In fact, GPs reported low compliance between these subjects and their responsibilities. This finding might be attributed to GPs' lack of knowledge about the importance of these subjects in public health, as well as the role of dentists and environmental health experts in providing care in these areas; therefore, further evaluations are required in this area.

In this regard, in a study by Hamdi et al. environmental health workers proposed new subjects related to environmental health. Some of the proposed subjects in this study, such as “computing and its application”, “professional language”, “health care management”, and “research method-

**Table 3.** The Mean Level of Compatibility Between the Content of Presented Courses and GPs' Occupational Needs from the Viewpoint of the Respondents

Course	Subject	Mean $\pm$ SD	t-Value	Sig.
Internship	Pregnancy care	3.70 $\pm$ 0.98	6.35	0.000
	Healthy child care	3.61 $\pm$ 0.96	5.70	0.000
	Family planning care	3.68 $\pm$ 0.86	7.10	0.000
	Environmental health measures	2.71 $\pm$ 1.06	2.40	0.019
	Oral health	2.63 $\pm$ 0.98	3.29	0.001
	Pediatric disease care	3.33 $\pm$ 1.07	2.79	0.006
	Introduction to different aspects of health networks	3.28 $\pm$ 1.05	2.43	0.017
	Introduction to communicable diseases care	3.28 $\pm$ 0.99	2.58	0.012
	Introduction to non-communicable diseases care	3.32 $\pm$ 0.97	2.97	0.004
	Introduction to patient referral systems	3.27 $\pm$ 1.12	2.18	0.032
Apprenticeship	Vital sign analysis	3.55 $\pm$ 0.87	5.65	0.000
	Monitoring and evaluation of health services	3.63 $\pm$ 0.87	3.70	0.000
	Monitoring and evaluation of mother and child care	3.60 $\pm$ 0.90	5.90	0.000
	Monitoring and evaluation of environmental health measures	3.15 $\pm$ 0.88	1.51	0.135
	Introduction to classification of social health groups	3.02 $\pm$ 0.92	0.241	0.81
	Introduction to the generalities of family medicine and its principles	3.11 $\pm$ 1.11	0.903	0.369
	Introduction to the national tuberculosis programs	3.56 $\pm$ 0.89	5.60	0.000
	Proposal analysis (HSR)	2.96 $\pm$ 1.07	0.623	0.535
	Introduction to SPSS	2.86 $\pm$ 1.14	2.44	0.017
	Introduction to the generalities of insurance	2.95 $\pm$ 1.12	0.398	0.692
	Monitoring and evaluation of communicable diseases care	3.28 $\pm$ 1.02	2.51	0.014
	Need assessment and problem-solving approaches in health care	3.05 $\pm$ 1.14	0.39	0.697

ology” are consistent with those proposed in the present study (10). Furthermore, Shirjangi et al. proposed special courses, tailored to the actual needs of students with direct effects on their work performance and realization of health objectives. However, they reported disagreements among experts with respect to work-related responsibilities, which might be attributed to differences in the specific needs of each medical field (6).

In the present study, GPs emphasized the importance of the following subjects in public medicine internship: “approaches towards disease prevention and risk factors”, “doctor-patient communication”, “professional ethics”, “encouragement of public participation”, “elderly health”, “administrative correspondence and executive management”, “patient education”, “adolescence and youth care”, “health and mental care”, and “principles of health economics”. On the other hand, subjects including “accurate drug prescription and test administration”, as well as “human resource management” were highlighted in the apprenticeship program, which can be related to the contact of GPs, as the primary care providers, with more people in healthcare networks.

The present findings showed moderate (unfavorable) compatibility between GPs' responsibilities and the curricula of public health internship and apprenticeship programs. Therefore, further research is necessary under the

supervision of the ministry of health and medical education and specialists. Also, a review of the educational content of internship and apprenticeship programs and an analysis of GPs' responsibilities, along with revisions in these programs, can help improve the quality of curricula, increase the compatibility and efficiency of programs, and promote the level of public health.

In addition, Shirjangi et al. reported similar results from the viewpoint of public health experts after studying the compliance of undergraduate curricula with the job requirements and responsibilities of public health workers in the healthcare system. They proposed revisions in specialized courses and recommended reforms in the main subjects of public health programs in order to improve the compatibility of subjects with health workers' responsibilities (6). Moreover, Saboori et al. highlighted the importance of need assessment in effective training and education in order to prioritize subjects in the order of importance (11). In addition, Hansberger et al. emphasized the importance of training courses, which can improve students' efficiency and practical skills (12).

The present findings showed the unsatisfactory level of compatibility between GPs' actual responsibilities and the curricula of public health internship and apprenticeship programs. Therefore, further studies in this area are necessary under the supervision of the ministry of health

and medical education and specialists. Also, a review of the content of internship and apprenticeship programs and an analysis of GPs' responsibilities, along with revisions in the content of these courses, can help improve the quality of curricula, increase the compatibility and efficiency of these programs, and finally promote the level of public health.

Through effective planning, we can meet the skill requirements of future GPs and improve the public view about community health and treatment. Therefore, changes are necessary in the components of apprenticeship and internship programs. Based on the findings, these changes should focus on subjects related to oral health care, environmental health at health houses, and introduction to SPSS. These subjects should underline accurate prescription of drugs, accurate test administration, and human resource management in the apprenticeship program. In addition, in internship programs, attitudes towards preventative medicine, doctor-patient communication, professional ethics, encouragement of public participation, and elderly health should be highlighted.

### Supplementary Material

Supplementary material(s) is available [here](#).

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