Continuing medical education based on the needs of society

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ABSTRACT

Background. *One of the main reasons of inefficiency in traditional medical education is the application of disease-oriented educational system in continuing medical education, instead of a symptom-oriented approach.*
Purpose. *To determine the most common and important symptoms and complaints among Iranian nation according to the viewpoints of general parishioners.*
Method. *In this descriptive cross-sectional study, a self-administered questionnaire consisting of demographic data and 153 scaled-questions about body systems and organs, which were designed based on Likert style. A pilot study was performed. Of 26217 GPs all over the country, 5000 physicians were selected by stage randomized sampling method. Of this number, 1714 GPs answered and returned the questionnaire.*
Result. *Demographic data, the relative number of male and female GPs, and relative and absolute distribution of GPs were described and analyzed using Chi square test. The difference of GPs' opinions about the most common symptoms were analyzed according to the physicians' gender, duration of practice and their province of practice; there were significant differences found in some systems.*
Conclusion. *It seems that continuing medical education programs should be planned based on a modern evidence-based approach and according to the society's and practicing physicians' needs in order to achieve a community-oriented medical education system.*
Keywords: *DISEASE-ORIENTED MEDICAL EDUCATION, CLINICAL PROCESS, CONTINUING MEDICAL EDUCATION, GENERAL PRACTITIONERS, PERCEIVED NEEDS ASSESSMENT, EVIDENCE-BASED MEDICAL EDUCATION, COMMUNITY-ORIENTED MEDICAL EDUCATION*

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Introduction

Professional promotion of physicians is a life-long commitment and should be improved in response to the new scientific achievements, clinical innovations, and information development. An integrated part of this commitment is continuing medical education (CME). Although CME has a long history of support and advocacy among physicians as life-long learners, it has received special attention in recent 15 years because of the changes occurred in the field of medical practice, caused by educational, social and political factors.

In Iran, CME Act was legislated in 1990 with the aim of:

1- Searching for more effective educational methods in order to reduce health costs and to narrow the gap between the knowledge and practice

2- Promoting practical skills and scientific knowledge of the health society according to the most recent advances in medicine

3- Keeping achieved information and skills up-to-date

Surveys show that after several years, most physicians are complaining that CME programs cannot meet their real professional needs. In other words, these goals have not been achieved. Therefore, it s necessary to change CME programs according to the new technologies in education and medicine in order to ensure physicians' life-long learning.

The most important cause of incongruity of CME programs and physicians' needs is that in real medical situation, the doctor approaches to the patients' signs and symptoms, and sets a diagnostic and therapeutic plan in a "clinical process"; in CME programs, however, the physician has to move from disease to symptoms. Although sometimes successful in increasing physicians'

knowledge, this approach cannot often enable them to use this knowledge in clinical setting.

Clinical process has four stages:

1- Facing the patient's chief complaint (CC)
2- Clinical data collection or consultation about CC
3- Clinical reasoning to make a picture of the condition and relating the CC with other symptoms.
4- Making decision for proper diagnostic and therapeutic measures.

Self-evaluation, problem solving, and clinical judgment and practice are necessary for achieving clinical reasoning skills. The most important cause of physicians' dissatisfaction of CME programs is the inability of these programs in developing and promoting these skills, required to pass the clinical process. This inefficiency will lead to:

1- Lack of up-to-date and necessary skills for using clinical process and making proper diagnosis and treatment
2- Elongation of diagnostic and therapeutic process or incorrect diagnosis and treatment and thus, increasing health costs

The consequences necessitate the application of modern educational systems, which are complaint-oriented or evidence-based. It is therefore required to perform needs assessment and synchronize the CME programs with personal and group needs of physicians and patients.

One of the main objectives of CME programs is to help the learner determine his/her own needs (self-evaluation). Therefore the program should emphasize more on the common conditions. This self-evaluation can stimulate critical thinking and promote life-long learning –the core objective of CME.

On the other hand, the most important article of Edinburgh Compact On Medical Education – community-based medicine- emphasizes on the starting point of clinical process, i.e. chief complaint. If the method of approaching to the patients' common CCs are taught in CME programs:

1- physicians knowledge and skills will improve,
2- young doctors will be able to evaluate the clinical evidence, understand biases and reach a certain clinical decision,
3- the attitude and enthusiasm of CME programs participants will improve,
4- the quality of health care services and the society's health level will increase, and
5- the ranking of Iranian Ministry of Health will improve according to WHO standards.

In this study, the researchers tried to find and determine common and important complaints all over the country according to the practicing physicians' viewpoint. The will prepare the ground for the policy-makers and CME programmers to move CME system towards a modern and evidence-based medical education method.

Material and Method

The study group of this descriptive-analytic study were all Iranian GPs participating in CME programs. The evaluation method used in this research was "perceived needs assessment", which is based on the opinions of key respondents (GPs in this case) who have access to most or all necessary information about the subject.

Data gathering tool was a self-administered questionnaire consisting of demographic data and 153 scaled-questions about body systems and organs, which were designed based on Likert style. First, a pilot study was performed on GPS in Tehran province to determine their viewpoint about the most common complaints. After correcting the impairments of the questionnaire and analyzing the pilot study results, the main study was conducted in national level.

The main objective was to determine the prevalence of patient's complaints in 21 areas:

1- General condition
2- Skin
3- Head
4- Eye
5- Ear
6- Nose and sinuses
7- Mouth and throat
8- Neck
9- Breast
10- Lung
11- Heart
12- GI tract
13- Urinary system
14- Male Genital system
15- Female genital system
16- Psychiatry
17- Neurology system
18- Peripheral vessels
19- Musculo-skeletal system
20- Endocrine
21- Hematology

Since only the year of graduation, phone switch code (province of practice) and the duration of practice of the participants were included in the demographic part of the questionnaire and their names were not mentioned, there is no unethical problem in this research.

A questionnaire including demographic data and the symptoms of 21 organ systems was prepared for this study, based on semiology reference books. Each symptom was considered a variable and the physicians were required to classify them (into common, uncommon, or no encounter) according to their observations in practice. Reliability coefficient and face and content validity of the questionnaire was desirable according to the results of the pilot study. Moreover, in the pilot study, a place was earmarked in the questionnaire for the respondents to write down their opinions and suggestions. Taking these suggestions into account in the final questionnaire has increased its content validity.

The participants' viewpoints about the most common symptoms of each organ system were compared according to three variables: GPs' gender, the duration of practice (year), and the province of practice.

First, a complete list of all GPs was gathered from Iranian Medical Council, which showed that there are 26217 GPs working in the country. Of this number, 6127 worked in Tehran and the other 20090 were distributed in other divisions.

In the pilot study, which was performed in February 1999 in Iran University of Medical Sciences and covered about 5-10% of total samples, the response rate was 80%. Considering the total number of GPs in the country, the standard deviation was calculated to be 0.3. With an accuracy rate of 0.01 and error rate of 0.05, the required sample size was 3457 persons, and taking the response rate into account, the final study group size was determined to be 4000 GPs who participate in CME programs all over the country. One thousand additional GPs were also included in the study in order to balance possible higher non-response rate; so altogether, 5000 GPs were randomly selected from the Iranian Medical Council list, to whom the questionnaire was sent.

The survey started in March 2001, and after 6 months, 1714 forms were returned to the researchers (response rate= 34.26%).

Since one of the research objectives was to compare the viewpoints of CME program designers and those of GPs about common and uncommon symptoms in different organ systems, the questionnaire was also sent to CME managers in the Ministry of Health and Medical Education and also some randomly selected medical universities authorities. These questionnaires were completed under the supervision of researchers.

The data were computerized and sorted out according to each organ system (discipline), and analyzed with SPSS software. After extracting the demographic data of the respondents, the frequency distribution of GPs commonly encountering each symptom was compared with those who do not commonly hear these complaints, using chi square test.

Three variables were assumed to have influence on this distribution: the duration of practice, the province of practice and the GP's gender. In order to determine the effect of these factors, the respondents were separated into subpopulations (4 subgroups for the duration factor with 10-year intervals). Common and uncommon complaints were again compared within and between subpopulations using chi square test.

Results

Of 1714 GPs, 386 (22.5%) were female and the rest (77.5%) were male, whose average duration of practice and average age were 9.62 and 38.24 years, respectively. Table 1 shows the distribution of practice duration for male and female GPs. The figure shows the frequency distribution of GPs' duration of practice according to their gender.

TABLE 1. GPs' duration of practice according to their gender (years)

Duration \ Gender	< 10	10-19	20-29	>=30
Male	73.3%	13.7%	7.3%	5.7%
Female	82.3%	13.7%	3.5%	0.5%

FIGURE. The frequency distribution of GPs' duration of practice according to their gender
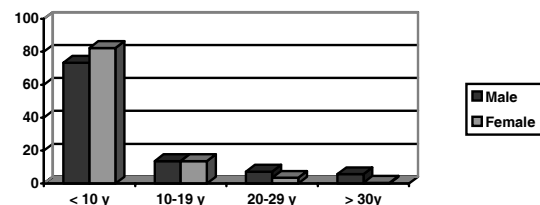
The common symptoms of each organ system have been determined separately according to the GPs' viewpoints (Table 2). It can be seen that of all 153 symptoms, GPs have encountered only 74 symptoms. Using chi square test, there was a significant difference between GPs who commonly encounter these symptoms and those who do not, except for four symptoms: extremity swelling, regurgitation, urinary urgency, and over-perspiration (Table 2).

TABLE 2. The common and uncommon symptoms and their relative frequency and statistical significance according to the GPs' viewpoints

Organ System	Common Symptoms	Relative Frequency (%)	p-Value	Uncommon Symptoms	p-Value
General condition	Fever	84	0.001	Weight loss	0.01
	Weight gain	80.7	0.000	Nocturnal sweating	0.001
	Fatigue	71.7	0.01		
	Anorexia	60.9	0.003		
Skin	Pruritus	90.6	0.000	Skin mass	0.005
	Skin lesions	83.5	0.001	Wound	0.03
	Hair problems	72.6	0.000	Skin discoloring	0.002
	Skin dryness	46.4	0.005	Nail problems	0.01
Head	Headache	98.3	0.000	Head trauma	0.000
Eye	Redness	75.8	0.000	Loss of visual acuity	0.001
				Pain	0.01
				Abnormal teardrop	0.000
				Diplopia	0.005
				Trauma	0.000
				Eyelid swelling	0.007
Ear	Infection	81.7	0.000	Hearing loss	0.000
	Trauma	76	0.001	Blustering	0.003
	Pain & pruritus	64	0.002	Exudation	0.000
Nose and sinuses	Epistaxia	90.1	0.000	Face pain	0.000
	Nasal dripping	90.0	0.01	Trauma	0.002
	Nasal obstruction	83.9	0.000		
Mouth and throat	Hoarseness	94.0	0.000	Tingling of tongue	0.01
	Gum problems	70.0	0.02	Sore throat	0.000
	Tooth problem	66.0	0.002		
	Mouth trauma	61.4	0.000		
	Gum bleeding	48.7	0.000		
Neck	Neck stiffness	67.7	0.01	Neck mass	0.005
	Neck pain	55.1	0.002	Goiter	0.01
	Trauma	46.8	0.000		
Breast	Pain or discomfort	46.5	0.000	Breast mass	0.01
				Nipple discharge	0.002
Lung	Cough	97.5	0.02	Hemoptysis	0.000
	Mucus	95.0	0.000	Trauma	0.001
	Shortness of breath	81.4	0.04		
	Wheezing	80.3	0.001		
Heart	Palpitation	91.8	0.000	Orthopnea	0.000
	Chest pain or discomfort	81.8	0.001	PND	0.01
	Extremity edema	52.0	Not significant	Trauma	0.000
GI tract	Abdominal pain	96.4	0.01	Dysphagia	0.000
	Nausea and vomiting	93.9	0.000	Hematemesis	0.001
				Abdominal trauma	0.01
	Dyspepsia	92.8	0.000	Hematochezia	0.000
	Diarrhea	92.5	0.000	Melena	0.03
	Constipation	89.4	0.001	Icter	0.000
	Belching or excessive gas passage	73.4	0.03		
	Food poisoning	63.8	0.005		
	Regurgitation	53.4	Not significant		
Urinary tract	Dysuria	90.6	0.000	Polyuria	0.001
	Frequency	86.0	0.01	Nocturia	0.000
	Nephrolithiasis	78.3	0.04	Urine force loss	0.01
	Urgency	53.1	Not significant	Hesitancy	0.02
				Urine incontinency	0.001
				Hematuria	0.000

Continue table 2.

Organ System	Common Symptoms	Relative Frequency (%)	p-Value	Uncommon Symptoms	p-Value
Female genital system	Dysmenorrhea	86.1	0.000	Early menarche	0.001
	Vaginal discharge	79.9	0.000	Late menarche	0.01
				AUB	0.000
	Menstruation irregularity	74.1	0.005	Post-coital bleeding	0.02
	Pre-menopausal symptoms	67.7	0.02	Early menopause	0.01
				Post-menopausal bleeding	0.02
	Polymenorrhea	59.9	0.02		
	Multi parity	57.9	0.000	Vaginal ulcer	0.000
	PMS	57.2	0.001	Vaginal mass	0.005
	Hypermenorrhea	47.1	0.001	Infertility	0.000
				Abortion	0.02
				Still birth	0.000
				Post partum hemorrhage	0.000
				Sexual desire disorders	0.001
				Paraphillia	0.01
				Impotence	0.000
				Orgasmic disorders	0.005
				Dyspareunia	0.000
Male genital system	Penile ulcer	45.6	0.01	Inguinal hernia	0.000
	Testis pain	43.6	0.000	Penile discharge	0.001
	Paraphillia	43.3	0.01	Testis mass	0.02
	Orgasmic disorders	42.5	0.02	Sexual desire disorders	0.01
				Impotence	0.000
				Penile trauma	0.005
Psychiatry	Depression Agitation	88.9	0.000	Euporia	0.000
		78.0	0.01	Memory disorders	0.001
Neurology	Tremor	72.4	0.03	Paraplegia	0.001
	Seizure	65.0	0.000	Paresthesia	0.01
	Transient dizziness	47.8	0.01	Abnormal movements other than tremor	0.000
	Syncope	43.5	0.01		
	Numbness	42.5	0.005		
Peripheral vessels	Muscular spasm	80.3	0.01	Intermittent claudication	0.01
	Venous varices	55.8	0.002	Venous thrombosis	0.002
Musculo-skeletal system	Low back pain	98.3	0.04		
	Joint pain	95.8	0.001		
	Muscle pain	94.8	0.03		
	Arthritis	47.7	0.007		
Endocrine	Hyperglycemia	82.5	0.01	Cold intolerability	0.003
	Thyroid dysfunction	64.0	0.02	Polydipsia	0.005
	Excessive perspiration	54.6	Not significant	Bulimia	0.01
	Heat intolerability	43.6	0.006		
Hematology	Anemia	92.1	0.01	Subdermal hemorrhage	0.001

Comparing GPs' subpopulations, it has been revealed that there are significant differences between some common symptoms, i.e. the duration of practice affects the prevalence of some symptoms; the symptoms related to general condition, skin, head, nose and sinuses, mouth and throat, respiratory system, cardiac system, GI tract, female genital system, peripheral vessels, musculoskeletal system, endocrine, and blood show almost no variability, while the symptoms of eye, ear, neck, urinary system, psychiatry, male genital system and neurologic system are different in each subgroup.

Table 3 shows the organ system symptoms that have different frequency distribution among 4 subpopulations of GPs (based on their duration of practice). No significant difference was found for other symptoms.

Table 3. Symptoms having different frequency distribution in four GP subpopulations

Symptom	p-Value	Symptom	p-Value
Fever	0.000	Anorexia	0.03
Skin lesions	0.000	Hair problems	0.05
Headache	0.001	Eye redness	0.000
Otitis	0.001	Neck pain	0.03
Ear trauma	0.001	Gum bleeding	0.002
Hoarseness	0.02	Cough	0.000
Chest pain or discomfort	0.000	Nausea and vomiting	0.05
Diarrhea	0.006	Urinary frequency	0.04
Dysuria	0.000	Dismenorrhea	0.004
Orgasm dysfunction	0.01	Convulsion	0.03
Venous varices	0.003	Muscle pain	0.05
Low back pain	0.05	Hyperglycemia	0.03
Anemia	0.008		

Table 4. Symptoms that are encountered with different frequency distribution by male and female GPs

Symptom	p-Value	Symptom	p-Value
Fever	0.000	Overweight	0.000
Anorexia	0.036	Hair problems	0.01
Skin dryness	0.000	Otitis	0.04
Ear pain & pruritus	0.000		0.000
Nasal dripping	0.02	Mouth trauma	0.01
Gum bleeding	0.004	Productive cough	0.000
Shortness of breath	0.000	Wheezing	0.000
Chest pain or discomfort	0.01	Dysuria and nephrolithiasis	0.000
Urinary urgency	0.001	Nocturia	0.01
Female genital system	0.000	Male genital system	0.000
Multi-parity	0.004	Transient dizziness	0.001
Syncope	0.000	Numbness	0.03
Arthritis	0.000		

The incidence of each symptom was also evaluated and compared according to the GP's gender. Table 4 provides the data for the symptoms that had different prevalence in the GPs' viewpoints. No significant difference was found for other symptoms shown in Table 2.

The province of practice was also believed to have an influence on the symptoms that GPs encounter. Therefore, the common complaints for each 21 organ systems were separately evaluated and compared in 28 provinces. In some provinces such as Sistan and Baluchestan, the case-mix was different and some other symptoms were also evaluated to be common.

Discussion and Recommendation

The main difference between this study and other needs assessments performed in Iranian medical universities is that those studies were more focused on diseases -i.e. they were kind of situation analysis- and useful for disease-oriented medical education. The present study is, however, consistent with the needs of evidence-based medical education. Due to the uncertainty in GPs diagnostic accuracy –because of their lack of competence in performing clinical process- it is obvious that we cannot conduct a thorough situation analysis before establishing the education of clinical process steps.

There were some differences between the common symptoms GPs encounter according to their duration of practice. This may have two reasons:

- GPs' increasing professional competence, e.g. one would not encounter or notice some symptoms in one's first years of practice, but with more experience and study, one would notice these symptoms.

- The ever-changing needs of society: the previous generation of physicians faced some needs that were certainly different with those met by the present generation of GPs.

The province of practice was also effective on the incidence of symptoms and complaints. This may be due to the lack of specialized physicians in some disadvantaged provinces (such as Sistan and Baluchestan), so that GPs have to face and are responsible to cure different complaints. This situation requires specific planning for the education of GPs in these provinces.

The researchers faced some constraints in conducting this study. First, GPs working in clinics and private offices were not distinguished from those working in hospital emergency rooms. Considering this distinction in the demographic part of the questionnaire could have revealed some other differences in the viewpoints of GPs.

Second, due to various defects in the list of GPs presented by Iranian Medical Council, sampling of GPs was not accurate in some provinces and

divisions and the researchers had to use random sampling instead of stratified method.

Since there had been a part in the questionnaire dedicated to the respondents' viewpoint about other symptoms and most GPs have expressed their opinion in that part, 750 questionnaires were randomly selected from the total of 1714, and symptoms mentioned there were separated. It is recommended to use these symptoms in future CME programs.

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