Overview of Occupational Medicine Training Among US Family Medicine Residency Programs

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Background and Objectives: *Family physicians deliver a significant proportion of occupational medicine (OM) services. In 1984, the American Academy of Family Physicians (AAFP) endorsed recommended curriculum guidelines in OM for family medicine residency programs. This study's purpose was to determine (1) whether family medicine residency programs have met the AAFP recommendations by providing residents with exposure to OM, (2) what methods and resources are used by programs that incorporate OM into their curricula, and (3) what barriers exist for programs that do not provide OM training.* Methods: *A survey questionnaire was mailed to all family medicine residency program directors (n=449).* Results: *A total of 290 questionnaires were received, for a response rate of 64.5%. The majority (91.7%) believed there was a need for OM training. However, only 68.2% offered specific training. Approximately half the programs had faculty with OM experience. Most programs included OM in their curricula through a series of lectures and/or as part of a community medicine rotation. Barriers to providing OM training included lack of faculty with clinical OM expertise, time, interest among faculty and residents, and perceived need.* Conclusions: *The results demonstrated that approximately two thirds of the responding family medicine resideny programs currently offer OM training and that several barriers exist to providing that training.*

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Occupational medicine (OM) is the branch of medicine that deals with the study, prevention, and treatment of work-related injuries, illnesses, and disability. In addition, OM addresses the promotion of optimal health and safety in the workplace.

OM has been a recognized medical specialty by the American Board of Preventive Medicine (ABPM) since 1955. However, it is one of the smallest specialties, with approximately 130 board-eligible physicians produced annually in the United States.[1] According to data obtained from the ABPM, since certification began, only 3,609 physicians have obtained board certification in OM.[2] With so few OM specialists, many patients with occupational and environmental health problems often present to primary care physicians.[3-9] For example, a study of family physicians in Louisiana found that 73% care for patients with occupational- or environmental-related illness.[10] Another study of family physicians in Oregon reported that OM constitutes approximately 14% of their practices.[11] Similarly, physicians in Connecticut indicated that increasing numbers of patients were asking about environmental health risks popularized by the media.[12]

Occupational injuries and illnesses are not rare. According to a 2004 report from the Bureau of Labor Statistics, approximately 4.3 million nonfatal and 5,764 fatal injuries and illnesses were reported among private industry workplaces in the United States.[13] In addition, studies have found that 75% of hospitalized and ambulatory primary care patients reported hazardous exposures, while 17% suspected that their illness was linked to their job.[14,15] Despite the prevalence of industrial injuries and illnesses, training in OM has traditionally received limited emphasis in the medical school curriculum.[16-21]

In light of the shortage of board-certified specialists in OM, training primary care physicians to care for patients with occupational injuries and illnesses has become a necessity. The Institute of Medicine and

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the American College of Physicians have stated that physicians should be able to recognize and manage conditions related to occupational and environmental factors.[22,23] In addition, the Accreditation Council for Graduate Medical Education (ACGME) has specified that family medicine residencies must provide instruction and clinical experiences in OM.[24] Further, the AAFP has endorsed recommended curriculum guidelines in OM for family medicine residencies since 1984.[25] Nonetheless, a recent review of the literature revealed only a handful of articles on occupational and environmental medicine training among family medicine or primary care residency programs.[26-31] In addition, the literature search did not reveal any studies similar to the one presented here.

The purpose of this study was threefold. The first objective was to determine whether family medicine residency programs in the United States provide residents with exposure to the field of OM as recommended by the AAFP. The second was to determine what methods and resources are used by programs that incorporate OM training into their curricula. The third was to identify barriers that make it difficult for programs that do not include OM in their curricula to do so.

Methods

Participants

The participants in this study consisted of all 449 US family medicine residency program directors that were listed by the AAFP.[32] This project was approved by the Institutional Review Board of the University of Texas Health Sciences Center, Houston.

Survey Instrument

A 14-item questionnaire was developed and initially tested among faculty at a community-based residency program in Houston. The purpose of the testing was to ascertain face validity. Questionnaire items were developed for the content domains of demographics and program specifics.

Program demographics items included family medicine program structure, current status of OM (included/excluded), perceived need for OM, number of residents enrolled, and program affiliation (medical school, community based, military, etc).

Program specifics items included types of OM teaching methods (rotation, lecture series, OM elective, etc); when, how often, and what OM topics are taught; characteristics of the teaching faculty (OM specialist, family medicine teaching OM, full time, volunteer, etc); reasons for not teaching OM (lack of faculty, time, interest, etc).

Item formats were categorical (yes/no and check off). Six items made allowance for voluntary narrative elaboration. The approximate completion time was between 10 and 20 minutes. Finally, the surveys were coded with regard to geographic location.

Procedure

The final survey instrument was distributed by mail to the study participants, along with a cover letter explaining the purpose of the study and assuring confidentiality of the responses. Each questionnaire was coded for the purpose of follow-up mailings. A stamped, self-addressed return envelope was also included. The survey was initially distributed in March 2003, with four follow-up mailings through June 2005.

Data Analysis

Descriptive data were analyzed to show percent occurrence and, where appropriate, means, standard deviations, medians, and ranges. Chi square (X^2) analyses for independence were calculated to examine the relationship between presence or absence of OM training and program affiliation and geographic region.

Results

Completed surveys were received from directors of 290 programs, for a response rate of 64.5%. Respondents represented programs from 45 different states. Of the responding programs, 31% were located in the South, 28% in the Midwest, 21% in the West, and 19% in the Northeast.

The majority of the programs that responded to the survey were community hospital-based programs affiliated with a medical school (Table 1). The total number of approved resident positions for these programs ranged from 6 to 72 residents (median=24).

A large majority of the respondents (91.3%) believed that there was a need to teach OM. A few (3.4%) program directors did not perceive a need, and some (4.5%) had no opinion. Although the majority perceived a need, only 67.9% actually offered specific training in OM.

Programs Offering Occupational Medicine Training

Of the programs offering OM training as part of their curriculum, the majority were community hospital based, affiliated with a medical school, and located in the south (Table 1). OM had been included as part of the curriculum on average for 9.8 years (range: 6 months to 35 years). Most of the teaching took place during postgraduate year (PGY)-3 (40%) or longitudinally (35%) throughout all 3 years of residency. The total number of approved resident positions for these programs ranged from 12 to 54 residents (median=24).

The methods used to integrate OM into the curriculum are shown in Table 2. A majority of the programs offered the training through a series of lectures. Thirty percent provided the training as part of a community medicine rotation, and 29% provided the training as part of a family medicine rotation. Only 21% of the programs had a specific and required OM rotation, while 18% offered an OM elective.

For most programs, OM training was provided primarily by a volunteer OM specialist (60.9%). Only a

few programs (10.2%) had paid OM faculty on staff, while the remainder (34%) used paid family medicine faculty. The OM topics being taught in these family medicine residency programs are presented in Table 3.

Of the 42 programs that required an OM rotation, 69% were community hospital based and affiliated with a medical school, 19% community hospital based and not affiliated with a medical school, 7.1% community hospital based administered by a medical school, 7.1% medical school based, and 4.7% military programs. The majority of programs with required OM rotations used volunteer OM faculty to teach OM. Finally, of the programs offering OM training, 56% stated that they were not interested in collaborating and sharing information with their colleagues from other programs.

Programs Not Offering Occupational Medicine Training

Thirty-two percent of the program directors indicated that OM was not currently included in their curriculum

Table 1

Affiliation, Geographical, and Size Comparisons of Surveyed Programs That Offered Occupational Medicine (OM) Training and Those That Did Not

OM Programs	*OM Training Offered (n=197)*		*OM Training Not Offered (n=93)*	
	n	*%*	*n*	*%*
Affiliation*				
Community hospital, medical school affiliated	111	56.3	61	65.6
Community hospital, medical school administered	28	14.2	14	15.1
Medical school	26	13.2	10	10.8
Community hospital, no medical school relationship	22	11.1	5	05.4
Military	9	04.6	1	01.1
No response	1	0.51		
Geographic region*				
Northeast	42	21.3	15	16.1
South	55	27.9	35	37.6
Midwest	61	31.0	21	22.5
West	39	19.7	13	23.7

* There were no significant differences between programs with and without OM training in terms of program affiliation or geographic location.

Table 2

Methods of Integrating Occupational Medicine Into the Curriculum

Method	*n**	*%*	*Mean (SD)*	*Range*
Lecture series	113	57.4		
Number of lectures			6.4 (4.8)	1–36
Part of community-based rotation	60	30.4		
Number of weeks			2.61 (1.54)	<1–6 weeks
Part of required family medicine rotation	58	29.4		
Number of weeks			3.16 (1.52)	<1–6 weeks
Worksite visits	45	22.8		
Number of visits			3.30 (3.30)	1–12 weeks
Part of required occupational medicine rotation	42	21.0		
Number of weeks			2.63 (1.11)	<1–4 weeks
Part of occupational medicine elective	37	18.8		
Number of weeks			3.5 (1.10)	2–8 weeks
Written/reading materials	40	20.3		
Consultation with occupational medicine specialist	24	12.2		
Journal Club	8	04.1		
Number of meetings			4.5 (3.10)	2–9

* Not mutually exclusive categories

Table 3

Occupational Medicine (OM) Training Topics (n=197)

Occupational Medicine Topics	*n**	*%*
Occupational History and Physical	170	86.3
Treatment of Common Occupational Injuries and Illnesses	167	84.8
Fitness for Return to Work	155	78.7
Disability Determination and Guidelines	137	69.5
Workplace Safety	125	63.5
Legal Issues in OM	123	62.4
Occupational Hazards	117	59.4
Drug Testing	103	52.3
Pre-placement Testing and Examinations	104	52.8
Rehabilitation	92	46.7
Regulatory Agencies	96	48.7
Ethical Issues in OM	82	41.6
Evaluation of Patient With Chemical Exposure	64	32.5
Ergonomics	61	31.0

* Not mutually exclusive categories

Table 4

Programs Without Occupational Medicine (OM) Training (n=93)

Reasons for Not Providing OM Training	*n**	*%*
Lack of faculty with clinical OM expertise	55	61.1
Lack of time in program for teaching OM	53	58.9
Lack of interest among faculty and residents	34	37.8
Lack of both faculty and time	31	34.4
Lack of perceived need for OM	16	17.8

* Not mutually exclusive categories

for reasons listed in Table 4. The majority of these programs (37.7%) were located in the South. Most of the programs were community based and affiliated with a medical school (Table 1). The total number of approved positions in these programs ranged from six to 24 residents (median=23). Chi-square analysis (test of independence) revealed that the presence or absence of OM training was not related to either program affiliation (X^2=5.39; df=4; *P*>.05), or geographic region (X^2=3.96, df=3; *P*>.05).

Discussion

The results of this study demonstrated that even though more than 20 years have passed since AAFP's OM training recommendations appeared, many programs still do not offer any specific training in OM. Of programs that did offer OM, most incorporated the teaching through a short series of lectures or as part of another required residency rotation, such as community medicine. Few programs actually offered a required OM rotation or an elective in OM, and when such experiences were available they were typically taught by volunteer OM faculty for an average of 2 to 4 weeks. Thus, even when specific OM training is offered in a family medicine residency program, at best only 2% of the curriculum time is devoted to OM. This suggests that OM continues to receive limited emphasis in the education of family physicians.

When considering program characteristics, such as size, structure, and geographic location, our results showed no major differences between programs that offered OM and those that did not. However, the likelihood of whether OM was taught appears to be related to the availability of clinical faculty with OM experience. Most programs without OM training stated that they did not offer OM because of lack of clinical faculty with OM experience, while most programs that did teach OM did so through volunteer OM faculty and/or paid family physician faculty. Few programs (10.2%) actually had full-time OM specialists on staff. Therefore, having faculty with clinical OM experience is important, regardless of whether the faculty are family medicine or occupational medicine specialists.

Barriers for not offering OM included lack of interest, lack of perceived need, and lack of available time for teaching OM. Concerning the lack of interest and lack of perceived need, these barriers may be due to program directors not being aware of the AAFP recommendations (as one survey respondent admitted) and/or lack of readily available faculty with OM experience. In addition, providing training in OM may be perceived as low in priority because of lack of time for teaching in an already packed 3-year residency program. With the current ACGME rule limiting resident work hours, it is likely that the time barriers will continue.

In spite of the barriers for teaching OM in a family medicine residency program, given the fact that millions of work-related injuries and illnesses occur in the United States each year and that patients with work-related conditions are often seen by primary care physicians, if family medicine specialists are expected to help care for patients with OM concerns, then residency programs will need to improve their OM training beyond the current levels.

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