

## Family medicine training in Saudi Arabia: Are there any variations among different regions?

Ammar R. Abu Zuhairah, Kasim M. Al-Dawood, Amar H. Khamis

Department of Family and Community Medicine, University of Damman, Damman, Kingdom of Saudi Arabia

**Address for correspondence:** Dr. Ammar Radi Abu Zuhairah, Qatif, Abu Bashir Al-Zubaidi Street, PO Box 1518, Qatif 31911, Kingdom of Saudi Arabia. E-mail: abuzuhairah@yahoo.com

ABSTRACT

**Aims:** The aim was to compare Eastern, Makkah, and Asir regions in term of residents' perception of the achievement of training objectives, and to assess various rotations based on residents' perception. **Settings and Design:** This cross-sectional study was done among family medicine residents in the Eastern, Makkah, and Asir regions. **Methodology:** A questionnaire was developed by the investigator and validated by two experts. All residents, except R1 residents, were included. All data were collected by the investigator by direct contact with the residents. **Statistical Analysis Used:** Cronbach's alpha, analysis of variance, t-test, and univariate regression model as appropriate, were used. **Results:** Reliability of the questionnaire was found to be 75.4%. One hundred and seven (response rate: 83.6%) residents completed the questionnaire. There were 51 (47.7%), 27 (25.2%), and 29 (27.1%) residents in the program in the Eastern region, Makkah, and Asir, respectively. The mean age was  $29.1 \pm 2.5$  years; half of the residents were male, most of (83.2%) were married, and more than half (54.2%) of had worked in primary health care before joining the program. Overall, 45% of the residents perceived that they had achieved the training objectives. The highest rotations as perceived by the residents were psychiatry and otolaryngology while the lowest were orthopedics and ophthalmology. There were significant differences among the study regions with regard to the rotations in family medicine, internal medicine, orthopedics, general surgery, and emergency medicine. **Conclusions:** Overall, a good percentage of the residents perceived that they had achieved the training objectives. The rotations differed in the studied regions. Psychiatry and otolaryngology had the highest percentage of family medicine residents who perceived that they had achieved the training objectives while lowest was in internal medicine and obstetrics and gynecology. The highest rotations as perceived by the family medicine residents were psychiatry and otolaryngology while lowest were orthopedics and ophthalmology. Sharing of experience and further studies are needed to improve the program rotations.

**Key words:** Clinical training, family medicine, postgraduate training

### INTRODUCTION

The specialty of family medicine is a demanding one that requires a wide range of experience and knowledge.<sup>[1]</sup> Residents should be exposed to common health problems seen in the setting of ambulatory care.<sup>[2,3]</sup> However, the training of residents varies in the different training centers. This could be the result of the variation in the number of

patients encountered and their diagnoses, age and sex, the communities they serve, and other factors. In order to meet the demands of the community, it might be necessary to constantly evaluate residents' training.<sup>[2,4-6]</sup>

Saudi Arabia is in dire need of family physicians. During the 4 years family medicine residency program, residents are exposed to 13 specialties. The residents spend most of that period rotating in different hospitals (training centers).<sup>[7]</sup>

To the best of the authors knowledge, only a few studies have addressed residents training in Saudi Arabia; one of them evaluated Saudi Diploma of Family Medicine.<sup>[8]</sup> Another study addressed the residents' perception of the characteristics of effective clinical trainers.<sup>[9]</sup> A third study assessed only two of the program rotations.<sup>[10]</sup> Still another

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addressed the perceived competencies of the residents and graduates.<sup>[11]</sup> The aim of this study was to evaluate various rotations through which family medicine residents go during the program in Saudi Arabia. Specifically, the objectives were to compare Eastern, Makkah, and Asir regions in terms of residents' perception of the achievement of training objectives (PATO) as per Saudi Commission for Health Specialties,<sup>[7]</sup> and to assess various rotations based on residents' PATO.

## METHODOLOGY

The Eastern, Makkah, and Asir regions were selected for the conduct of the study. The Eastern region was the primary region because the principal investigator was trained in this region and was located there during the study period. Makkah and Asir were included for comparison. These two regions were chosen because the health sectors were similar to the primary region. Furthermore, the number of residents in these regions was comparable.

A nine-page, English-based, questionnaire was developed by the investigator and validated by two experts. A pilot study was then done on five recently graduated family medicine specialists. The outcome, PATO, was measured using 5-points Likert's Scale.

All residents being trained in the family medicine program in the three regions were eligible to participate in the study. R<sub>1</sub> residents were excluded since they had only finished one rotation. Residents who started the program in a region other than the study regions were excluded since the training they had may not have matched the training in the selected regions.

All data were collected by the principal investigator through direct contact with the residents. Instructions were given, as were any clarifications required. Nonrespondents in the Eastern region were contacted. Data were collected over 5 weeks. All participants were invited to participate in the study if they so desired. As the questionnaire was anonymous, willingness to interview was considered as consent. Furthermore, all data collected were used only for research purpose. Approval was obtained from the concerned authorities before conducting the study.

Statistical analysis was performed using SPSS program 16<sup>th</sup> version (SPSS for Windows, Version 16.0. Chicago, SPSS Inc). Reliability of the questionnaire was tested by Cronbach's alpha. A total score was calculated for each resident by summing up his/her PATO. A normality test (Kolmogrov–Smirnov) was performed for the score of PATO. Analysis of variance (ANOVA) and *t*-test were

used to test the significance between continuous variables. In this study, a *P* < 0.05 was considered significant in all the tests.

Univariate regression model was used to explain PATO by explanatory variables. Variables with significant association on ANOVA testing, namely age group, work experience in primary care, and region of the program were entered in the analysis. PATO was coded from 1 (strongly disagree) to 5 (strongly agree). Age was categorized into 3 age groups, ≤28 (coded as 1), 29–32 (coded as 2), and ≥33 (coded as 3). Work experience in primary care was categorized into those who had worked for <6 months (coded as 1), 6–24 months (coded as 2), and those who had worked for >24 months (coded as 3). With regard to the region of the program, the Eastern province was coded as 1, Makkah as 2, and Asir as 3.

## RESULTS

Reliability of the questionnaire was found to be 75.4%. A total of 107 (response rate: 83.6%) residents completed the questionnaire. Of 21 nonrespondents, 13 (61.9%) were male, and the majority (66.7%) were in the Eastern region.

The mean age of participating residents was 29.1 ± 2.5 years. Residents aged between 29 and 32 years and those who had worked for 6–24 months had better PATO (*P* < 0.007

**Table 1: Demographic characteristics of the residents from R<sub>2</sub> to R<sub>4</sub>**

Characteristics	Region		
	Eastern (n=65) N(%)	Makkah (n=31) N(%)	Asir (n=32) N(%)
Participating residents	51 (78.5)	27 (87.0)	29 (90.6)
Current level			
R <sub>2</sub>	20 (39.2)	11 (40.8)	11 (37.9)
R <sub>3</sub>	20 (39.2)	10 (37.0)	8 (27.6)
R <sub>4</sub>	11 (21.6)	6 (22.2)	10 (34.5)
Age			
≤28	31 (60.8)	13 (48.1)	7 (24.1)
29-32	16 (31.4)	10 (37.0)	18 (62.0)
≥33	4 (7.8)	4 (14.9)	4 (13.9)
Sex			
Male	17 (33.3)	10 (37.0)	27 (93.1)
Female	34 (66.7)	17 (63.0)	2 (6.9)
Marital status			
Married	39 (76.5)	23 (85.2)	27 (93.1)
Unmarried	12 (23.5)	4 (14.8)	2 (6.9)
Work experience in PHC			
Yes	19 (37.3)	17 (63.0)	22 (75.9)
No	32 (62.7)	10 (37.0)	7 (24.1)

PHC: Primary health care

and  $P < 0.012$ , respectively). Makkah residents had better PATO, followed by Asir and Eastern region residents ( $P < 0.021$ ) [Table 1].

Regression model was performed for the demographic characteristics with significant association with the PATO, which included the age group, work experience in primary health care (PHC), and region of the program. The result of the regression revealed that 17.7% of the PATO was explained by the variables in the model [Table 2]. The significant association shown previously with the age, work experience in PHC, and region of the program was preserved in the univariate analysis. However, after combining these factors, their effect has almost disappeared.

Overall, approximately 45% of the residents in the study perceived that they had achieved the objectives. There were variations in the percentage of residents who had achieved the objectives in the three regions.  $R_2$  and  $R_4$  residents in Makkah were better than the Eastern region and Asir ( $P < 0.017$  and  $0.046$ , respectively). However, there was no difference at  $R_3$  among these regions.

Residents who perceived that they had achieved the objectives in different program rotations ranged from 29.2% in general surgery to 70.2% in psychiatry [Table 3]. The highest PATO was in psychiatry, otolaryngology, and dermatology rotations while lowest PATO were in internal medicine, obstetrics and gynecology, and general surgery rotations.

In the Eastern region, the highest PATO was there in rotations in pediatrics, psychiatry, and otolaryngology. On the other hand, the lowest PATO was in the rotations in family medicine, obstetrics and gynecology, and general surgery. In Makkah, rotations with the lowest PATO included internal medicine, obstetrics and gynecology and general surgery while rotations with the highest PATO were emergency medicine, psychiatry, and dermatology. In

Asir, the highest PATO was in psychiatry, otolaryngology, ophthalmology and family medicine 2 rotations. However, internal medicine, obstetrics and gynecology, general surgery, and emergency medicine rotations were the lowest in PATO.

Overall, psychiatry and otolaryngology were the highest rotation as perceived by residents while orthopedics and ophthalmology were the lowest [Table 4]. There were significant differences among the study regions in family medicine, internal medicine, orthopedics, general surgery and emergency medicine 1 rotations. Training in these rotations was better perceived in Makkah than in the Eastern region and Asir. Training in internal medicine, orthopedics and emergency medicine 1 in the Eastern region was better perceived than in Asir. However, training in family medicine 1 and 2 in Asir was perceived better than in the Eastern region.

In the Eastern region, compared with all other rotations, training in family medicine, orthopedics, obstetrics and gynecology, general surgery and ophthalmology rotations was not perceived as good. In Makkah, family medicine and emergency medicine 2 rotations were highly rated. In Asir, psychiatry and family medicine 2 rotations were highly perceived while internal medicine, orthopedics, general surgery, emergency medicine, and ophthalmology rotations were not perceived as good compared with other rotations.

## DISCUSSION

The overall response rate was good, considering the brevity of the period of study and the long distances between Makkah and Asir and the Eastern region. This response rate was representative of the program residents in the studied regions, which was higher than other studies.<sup>[10-12]</sup>

The mean age of the residents was slightly lower than in other studies from Saudi Arabia.<sup>[11]</sup> This was because about half of the residents joined the program immediately after graduation from the medical school. Almost half of the residents were female. This is higher than in previous studies in Saudi Arabia.<sup>[10,11]</sup> This could provide a positive impact since half of the Saudi population is female,<sup>[13]</sup> and Muslim women prefer to be seen by a female doctor. It was evident from this study that those residents who had worked in primary care before joining the program had better achievement. Other studies also support this finding.<sup>[14,15]</sup> Residents who had worked in primary care before starting hospital rotations were more likely to report training received as relevant to their practice. This could be because they were better able to direct the training toward their needs, or they appreciated its actual relevance.<sup>[15]</sup>

**Table 2: Regression model of the demographic characteristics**

Source	Mean square	F	P value
Corrected model	192.6	2.3	0.007
Intercept	37514.8	438.8	<0.0001
Age	265.8	3.1	0.050
Region of program	460.2	5.4	0.006
Work experience in PHC	415.6	4.9	0.010
Age*Region	196.6	2.3	0.065
Age*Experience	41.0	0.479	0.697
Region*Experience	8.8	0.103	0.981
Age*Region*Experience	1.6	0.19	0.891

$R^2=0.318$  (adjusted  $R^2=0.177$ ). PHC: Primary health care

**Table 3: Levels of PATO in different program rotations in the study regions**

Rotation	Residents who achieved the objectives n (%)				P value
	All	Eastern	Makkah	Asir	
Family medicine 1	46 (43.8)	14 (27.5)	17 (68.0)	15 (51.7)	0.002
Internal medicine	44 (41.5)	25 (49.0)	13 (50.0)	6 (20.7)	0.028
Orthopedics	65 (61.3)	32 (62.7)	17 (65.4)	16 (55.2)	0.709
Pediatric	64 (63.4)	29 (64.4)	19 (70.4)	16 (55.2)	0.489
Obstetrics and gynecology	34 (35.1)	12 (27.9)	12 (48.0)	10 (34.5)	0.245
General surgery	31 (29.2)	9 (17.6)	13 (50.0)	9 (31.0)	0.012
Emergency medicine 1	40 (47.6)	18 (40.0)	18 (72.0)	6 (31.6)	0.012
Emergency medicine 2	19 (54.3)	9 (47.4)	5 (83.3)	5 (50.0)	0.289
Psychiatry	40 (70.2)	17 (68.0)	10 (71.4)	13 (72.2)	0.950
Otolaryngology	27 (65.9)	11 (68.8)	9 (60.0)	7 (70.0)	0.833
Ophthalmology	26 (59.1)	8 (44.4)	11 (68.8)	7 (70.0)	0.258
Dermatology	32 (66.7)	19 (64.0)	10 (76.9)	6 (60.0)	0.639
Family medicine 2	13 (48.1)	2 (18.2)	4 (66.7)	7 (70.0)	0.004

PATO: Perception of the achievement of training objectives

**Table 4: Assessment of different rotations in study regions based on the level of PATO**

Rotation	Region								P value
	All		Eastern		Makkah		Asir		
	n	Rank %	n	Rank %	n	Rank %	n	Rank %	
Family medicine 1	105	66	51	56	25	82	29	72	<0.0001
Internal medicine	106	64	51	66	26	70	29	56	0.031
Orthopedics	106	58	51	56	26	66	29	50	0.032
Pediatrics	101	72	45	70	27	74	29	74	0.666
Obstetrics and gynecology	97	62	43	56	25	68	29	62	0.108
General surgery	106	62	51	58	26	74	29	58	0.010
Emergency medicine 1	84	66	40	66	25	76	19	56	0.028
Emergency medicine 2	35	68	19	68	6	80	10	62	0.281
Psychiatry	57	76	25	74	14	72	18	80	0.484
Otolaryngology	41	74	16	76	15	76	10	70	0.591
Ophthalmology	44	56	18	48	16	66	10	56	0.095
Dermatology	48	72	25	72	13	78	10	68	0.335
Family medicine 2	24	70	11	54	4	90	9	82	<0.0001

PATO: Perception of the achievement of training objectives

Overall, a good percentage of residents perceived that they had achieved the objectives. Residents might be asked to give possible reasons for their low PATO in some rotations. However, it might be worthwhile to discern the factors that make the perception of other rotations better. This might help to improve the curriculum of the family medicine program.

Rotations with low and high levels of PATO in each one of the study regions were identified. Further studies are needed to explore the reasons behind these differences. It might be helpful for the program directors to share experiences.

**Limitations**

This study was conducted in three regions of Saudi Arabia. Therefore, any generalization of results to other regions or other countries might not be appropriate. Some rotations

were completed 1 or 2 years before data collection. Therefore, bias of recall cannot be excluded. The outcome was the resident's PATO. However, its effect on competence and exam performance is unknown. There were difficulties of constraints of time and resources since this was self-funded.

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