

Barriers to Practicing Continuous Medical Education among Primary Health Care Physicians in Alahsa, Kingdom of Saudi Arabia

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Abstract

Objectives: To identify barriers to the practice of continuous medical education (CME) by primary health care physicians in Alahsa region, Saudi Arabia.

Methods: In this analytic cross-sectional study, 121 participants answered a self-administered questionnaire which measures the level of practice of CME and the prevalence of a number of factors that affect CME practice. The prevalence of the factors that affect CME practice was compared between those who practice CME frequently and those who do not, using appropriate statistical methods.

Results: 93 participants (76.9%) practice CME frequently and 28 participants (23.1%) practice CME rarely/never. The factors that have impact on CME practice include the physician's qualification (p-value 0.03), medical knowledge (p-value<0.001), satisfaction with available CME methods (p-value<0.001), CME method preference (p-value 0.021), belief that group CME activities are provided with poor teaching technique (p-value 0.011), patient load (p-value<0.001) and job satisfaction (p-value 0.014).

Conclusion: The most important barriers to practicing CME include lack of post-graduate education, dissatisfaction with the medical information, dissatisfaction with available CME methods, preference for self-taught CME, group CME activities with poor teaching technique, low patient load and job dissatisfaction. The Ministry of health and the Saudi Commission for Health Specialties should work on those factors to improve the practice of continuous medical education by primary health care physicians.

Keywords: Continuous medical education (CME); Barriers; Primary Health care

Introduction

Continuous Medical Education (CME), defined as any medical educational activity undertaken by physicians after graduation from medical school [1] is essential for all physicians for many important reasons. CME increases and improves the physician's knowledge, skills, and performance which ensure the provision of high quality healthcare services for patients and the public. Moreover, CME ensures that physicians have the basic and advanced medical knowledge and skills that are recognized and accepted within medical science [2,3]. Studies have, also, shown that CME promotes more effective and efficient use of the available resources by physicians [4-9]. In addition, rapid advancements in medical science and the fast pace of change in medical technologies means CME is a necessity to keep the physician's knowledge and skills up to date [10-12]. A study that was done in the United States shows that 10% of American physicians who stopped practicing CME became professionally deficient at some point in their working life [13]. While, a recent systematic review shows that a physician's medical knowledge becomes less factual after practicing for some time, which may result in poor patient outcome [14].

While the importance of CME for physicians is well established, only a small number of studies have investigated the factors that affect CME uptake among physicians. In a cross-sectional study that investigated the CME needs and CME practice problems faced by physicians working in four different regions of Saudi Arabia, it was found that the main reasons for not attending continuing medical education activities were lack of time (59%), and pressure of work (52%) [15]. Similar results were also found in another study that examined the attitude, practice and needs for continuing medical education among primary healthcare doctors in the Asir Region of Saudi Arabia [16]. In the latter study, lack of time (42.5%) was identified as the main barrier and this was followed by family and social obligations (29.9%) and work over load (27.6%). In another study done in AL-Medina, Saudi Arabia, lack of time (37%) and non-availability of suitable CME (26%) were identified as the main factors that deter attendance of group CME activities [4].

In a more recent study conducted in Australia involving 437 pre-occupational doctors, 85% identified lack of time as the main barrier to practicing CME followed by clinical commitment (65%), workload issues (27%), teaching program inadequacies (26%), lack of protected time for education (17%), resistance from registrars (13%), resistance from consultants (10%), motivational issues (11%), and geographic remoteness [17]. Another Australian study shows that the local general practitioners' main barriers to CME were lack of time and loss of

income [18]. Mamary and Charles, on the other hand, have investigated barriers to the use of computers for continuing education [19]. Their study results show that the most frequently reported reason for not using the computer for continuous education was a lack of computer skills and a lack of knowledge about how to use the Internet.

None of the reviewed studies above has investigated barriers to practicing CME among physicians working at PHC in Alahsa Region of Saudi Arabia. In addition, none of these studies have addressed the barrier to practicing CME as the main objective, apart from one study done at hospital level [17]. Furthermore, none of them undertook an in-depth analysis. In order to identify the barriers that have a real effect on the practice of CME a comparison must be done between those who practice CME and those who do not in relation to the exposure to these barriers. The aim of this analytic cross-sectional study is to identify important factors that deter physicians working at PHC in Alahsa Region, Saudi Arabia, from practicing CME. Identifying these factors is the first crucial step in the management and elimination of these barriers so that more PHC physicians practice CME.

Study design, population and sample

The study is an analytical cross-sectional study using a self-administered questionnaire. The questionnaire was tested in a pilot study that included 26 physicians. The reliability coefficient of the questionnaire is 78.1% using Cronbach's alpha test.

The study population is defined as all physicians who were, at the time of the study working at PHC centers in Alahsa Region, Saudi Arabia, and have been working there for at least one year. According to the Public Health Employee Affaires Database, 208 physicians were eligible to participate in the study. Physicians who were included in the pilot study were excluded from the list of participants in the study. The researchers and persons who were involved in validation of the questionnaire were also excluded. Any physician who was not involved in clinical patient's care, rotating physicians, interns and those physicians who have not completed one year working in primary health care centers were excluded from the study.

The sample size was determined using the Sample Size Calculator in the Creative Research System website. The inputs to the calculator were the PHC physicians' population (208 physicians), 95% confidence level, and a sample error of 6. The result was a sample size of 117 physicians. To ensure a good response rate 23 extra participants (20% of the calculated sample) were added to the sample. The final sample size was 140 participants. A random sample of 140 physicians was selected using the Public Health Employees Affaires Database (available as Excel file).

Data was collected between December 2014 and March 2015 by the researchers from the PHC physicians using the self-administered questionnaire. All data were collected through direct contact with the physicians and before filing the questionnaire an informed consent was taken. Non-responders were approached twice at different times through phone calls, direct contact and/or e-mails. 121 out of the 140 participants responded to the questionnaire (response rate of 86.43%). The majority of those who did not respond were on annual vacation.

Statistical methods

The data were analyzed using SPSS version 21. Categorical variables were presented as frequency and proportions. Socio-demographic, physician related, CME related and work related factors were

compared among the different level of practice of CME over the last one year using Chi-square test. Finally, the adjusted association between the outcome (practicing CME over the last one year) and the risk factors that have significant association with CME practice were investigated using multiple logistic regressions. Results with P-value \leq 0.05 were considered significant.

The main study outcome (dependent factor), the level of practice of CME over the last year, have two observations: practicing CME frequently and practicing CME rarely/never. Practicing CME frequently is defined as reading medical material for at least 3 hour per week and attending lectures or workshops for at least once a month over the last year. On the other hand, practicing CME rarely/never is defined as anything less than practicing CME frequently over the last year.

Results

Table 1 presents the socio-demographic characteristics by the level of practice of CME over the last year. Of the 121 participants, 93 (76.9%) practiced CME frequently and 28 participants (23.1%) practiced CME rarely/never. The mean age for those who practice CME frequently is 37.9 (\pm 9) years and 37.6 (\pm 6.9) years for those who practice CME rarely/never. 20.0% of participants aged 26-45 years, 30.9% of those aged 36-45 years and 6.2% of those aged 46-61 years were practicing CME rarely/never (p-value 0.095). The proportion of male and female physicians who practiced CME rarely/never were 20.0% and 27.0% respectively (p-value 0.163), while the proportion of Saudis and Non-Saudis who practiced CME rarely/never were 17.0% and 27.0% respectively (p-value 0.20). Similarly, no significant difference was found in regards to having children, number of children, responsible for or supporting anyone other than children and wife, number of years since graduation, or suffering from an illness or disability. There is, however, a significant difference in the level of practice of CME among those who have MBBS qualification only and those who have higher qualifications. 29.5% of those with only MBBS were rarely/never practicing CME compared to 11.6% of those who have higher degrees (p-value 0.03).

Variable	Practicing CME Frequently (n=93)	Practicing CME Rarely (n=28)	P-value*
	n (%)	n (%)	
Age in years	40 (80.0)	10 (20.0)	0.095
26-35	38 (69.1)	17 (30.9)	
36-45 46-61	15 (93.8)	1 (6.2)	
Gender	72 (80.0)	18 (20.0)	0.163
Male Female	21 (73.0)	10 (27.0)	
Nationality	39 (83.0)	8 (17.0)	0.20
Saudi Non-Saudi	54 (73.0)	20 (27.0)	
Marital status	87 (78.4)	24 (21.6)	0.24
Married	6 (60.0)	4 (40.0)	
Not married			

Children	81 (77.1)	24 (22.9)	1.000
Yes	12 (75.0)	4 (25.0)	
No			
Number of children	55 (83.3)	11 (16.7)	0.06
0-2	38 (69.1)	17 (30.9)	
3+			
Supporting anyone other than wife and children	43 (75.4)	14 (24.6)	0.727
Yes	50 (78.1)	14 (21.9)	
No			
Number of years since graduation	41 (80.4)	10 (19.6)	0.43
<10	52 (74.3)	18 (25.7)	
>=10			
Current medical Degree	55 (70.5)	23 (29.5)	0.03
MBBS	38 (88.4)	5 (11.6)	
Higher			

Illness or disability	7 (58.3)	5 (41.7)	0.15
Yes	86 (78.9)	23 (21.1)	
No			

Table 1: Socio-demographic characteristics by the level of CME practice.

Table 2 presents the personal factors by the level of CME practice. Those who were not satisfied with their medical knowledge were likely to practice CME rarely/never (60.0%) compared to those who were satisfied with their medical knowledge (13.5%) (P-value<0.001). On the other hand, lack of time to practice CME, lack of interest to practice CME, poor computer skills, home location and social obligations did not seem to affect the level of CME practice among the participants.

Variable	Practicing CME Frequently (n=93)	Practicing CME Rarely/never (n=28)	P-value*
	n (%)	n (%)	
Medical knowledge satisfaction	83 (86.5)	13 (13.5)	<0.001
Yes	10 (40.0)	15 (60.0)	
No			
Lack of time to practice CME	74 (74.7)	25 (25.3)	0.24
Yes	19 (86.4)	3 (13.6)	
No			
Lack of interest to practice CME	18 (69.2)	8 (30.8)	0.30
Yes	75 (78.9)	20 (21.1)	
No			
Lack of good computer skills	17 (65.4)	9 (34.6)	0.12
Yes	76 (80.0)	19 (20.0)	
No			
Home location affects your CME practice	18 (75.0)	6 (25.0)	0.81
Yes	75 (77.3)	22 (22.7)	
No			
Social obligations deter you from practicing CME	26 (72.2)	10 (27.8)	0.43
Yes	67 (78.8)	18 (21.2)	
No			

Table 2: Personal factors by the level of CME practice.

Table 3 illustrates the factors related to the available CME methods by the level of practice of CME. 44.4% of the participants who were not satisfied with the available CME methods were rarely/never practicing CME compared to 14.1% of those who were satisfied (p-value<0.001). Similarly, 32.2% of those who preferred solo CME practice rarely/never practiced CME compared to 14.5% of those who preferred group CME methods (p-value 0.021). In addition, a larger proportion of those who

believe that the topic of the available lectures and workshops were irrelevant to PHC practice were practicing CME less frequently compared to those who believe that the topics were relevant (29.2% and 6.2% respectively, p-value 0.008). Moreover, 28.9% of those who believed that the available group CME methods had poor teaching techniques were practicing CME less frequently compared to 6.5% of those who were satisfied with the teaching techniques in group CME

activities (p-value 0.011). On the other hand, there was no significant difference in regards to the expense of available CME, awareness of CME lectures and workshops that are taking place in Alahsa, and lack of awareness of how to practice CME online.

Variable	Practicing CME Frequently (n=93)	Practicing CME Rarely (n=28)	P-value*
	n (%)	n (%)	
Satisfied with the available CME methods	73 (85.9)	12 (14.1)	<0.001
Yes	20 (55.6)	16 (44.4)	
Preferred CME method	40 (67.8)	19 (32.2)	0.02
Solo	53 (85.5)	9 (14.5)	
Group			
CME methods are expensive	31 (86.1)	5 (13.9)	0.12
Yes	62 (72.9)	23 (27.1)	
No			
You are unaware of CME lectures and workshops that are taking place	68 (73.1)	25 (26.9)	0.08
Yes	25 (89.1)	3 (10.7)	
No			
You lack knowledge about online CME	65 (73.0)	24 (27.0)	0.10
Yes	28 (87.5)	4 (12.5)	
No			
Irrelevant topics of CME lectures and workshops	63 (70.8)	26 (29.2)	0.008
Yes	30 (93.8)	2 (6.2)	
No			
Poor CME teaching technique	64 (71.1)	26 (28.9)	0.011
Yes	29 (93.5)	2 (6.5)	
No			

Table 3: Factors related to CME methods by the level of CME practice.

Table 4 shows work place factors that may have an effect on the practice of CME. 47.4% of those who were not satisfied with their job were practicing CME less frequently compared to 18.6% of those who were satisfied (p-value 0.014). 27.1% of those who do not have a computer at the work place were practicing CME less frequently compared to 8.0% of those who have computers (p-value 0.014). 80.0% of those who had no heavy patient load were practicing CME less frequently compared to 18.0% of those who had heavy load (p-value < 0.001), and 34.0% of those who did not have multiple work responsibilities were practicing CME rarely/never compared to 15.5% of those who had multiple work responsibilities (p-value 0.017). On the other hand, no significant difference was found in regards to lack of medical books in the workplace, lack of medical journals in the workplace, lack of internet access in the workplace, the location of the workplace, number of patients being seen per day and lack of incentives from the workplace to practice CME.

Variable	Practicing CME Frequently (n=93), n (%)	Practicing CME Rarely (n=28), n (%)	P-value*
Job satisfaction	83 (81.4)	19 (18.6)	0.014
Yes	10 (52.6)	9 (47.4)	
No			
Lack of computers in the workplace	70 (72.9)	26 (27.1)	0.014
Yes	23 (92.0)	2 (8.0)	
No			
Lack of medical books in the workplace	58 (74.4)	20 (25.6)	0.38
Yes	35 (81.4)	8 (18.6)	
No			
Lack of medical journals in the workplace	78 (75.7)	25 (24.3)	0.76
Yes	15 (83.3)	3 (16.7)	
No			
Lack of internet access in the workplace	74 (74.7)	25 (25.3)	0.24
Yes	19 (86.4)	3 (13.6)	
No			
The location of your workplace affect your CME practice	26 (78.8)	7 (21.2)	0.76
Yes	67 (76.1)	21 (23.9)	
No			
High patients load	91 (82.0)	20 (18.0)	<0.001
Yes	2 (20.0)	8 (80.0)	
No			
Number of patients you meet per day	42 (76.4)	13 (23.6)	0.91
< 60	51 (77.3)	15 (22.7)	
60+			
Multiple work responsibility	60 (84.5)	11 (15.5)	0.017
Yes	33 (66.0)	17 (34.0)	
No			
Lack of incentive to practice CME	82 (77.4)	24 (22.6)	0.75
Yes	11 (73.3)	4 (26.7)	
No			

Table 4: Factors related to the workplace by the level of CME practice.

To control for any confounder effect of the risk factors having a significant association with the practice of CME, these risk factors were introduced into a multivariate logistic regression model and the results are presented in Table 5. Two factors, which are irrelevant topics of CME, including lectures and workshops and lack of computers at work, were eliminated from the model using backward stepwise elimination. For some of the covariates the OR is very large and the OR 95% confidence interval boundaries is very wide. The cause of this

phenomenon is the relatively small sample size. The results, however, clearly show that the risk of rarely to never practicing CME is significantly higher among those who had a MBBS degree compared to higher degrees, among those who were not satisfied with their medical knowledge compared to those who were satisfied, among those who were not satisfied with the available CME methods compared to those who were satisfied, among those who preferred solo CME activities compared to those who preferred group CME activities, among those who are not satisfied with the available group CME techniques compare to those who were satisfied, among those who were not satisfied with their job compared to those who were satisfied, among those who did not have high patient load compared to those who had, and among those who did not have multiple work responsibilities compared to those who had.

Risk factor (covariate)	OR	95% CI	P-value
Highest medical degree (MBBS)	8.94	1.230-64.909	0.030
Satisfied with your medical knowledge (No)	38.4	3.920-376.836	0.002
Satisfied with available CME methods (No)	13.66	2.172-85.894	0.005
Preferred CME method (Alone)	7.64	1.346-43.301	0.022
Poor CME technique (Yes)	118.86	2.637-5357.371	0.014
Job satisfaction (No)	6.322	0.861-46.425	0.070
Patient load (No)	1081.170	15.139-77211.537	0.001
Multiple work responsibilities (No)	18.472	2.362-144.458	0.005

Table 5: Adjusted effect of risk factors on CME practice using multiple logistic regression analysis with backward stepwise elimination.

Discussion

This is the first analytic cross-sectional study that aims at identifying factors that affect CME practice among physicians working at PHC in Alahsa region, Saudi Arabia. A self-administered questionnaire was used to measure each physician's level of CME practice and the presence or absence of a relatively large number of factors that were thought to have an effect on CME practice. The overall response rate was 86.43%.

Participants were grouped according to the level of CME practice over the last one year. The first group includes those who practice CME frequently (93 physicians (76.9%)). The second group includes physicians who rarely or never practice CME (28 physicians (23.1%)). The prevalence of the factors that might have an effect on CME practice was compared between the two groups using appropriate statistical analysis.

The prevalence of 10 out of the 42 examined risk factors was found to have an association with the level of CME practice among physicians. Those factors are current medical degree, medical knowledge satisfaction, satisfaction with the available CME methods, preferred CME methods, irrelevant topics in CME lectures, poor CME teaching techniques, job satisfaction, lack of computers in the work place, high patient load, and multiple work responsibilities.

Our study shows that physicians whose current medical degree is MBBS were more likely to practice CME rarely or never compared to physicians who have higher degrees. A possible explanation is that having a specialty, that is a focus in one of the fields of medicine, may encourage physicians to read and attend group learning activities such as lectures and workshops. Another possible explanation is that those who have higher than MBBS degrees were more active and have higher interest in personal and career development, and this is why they are practicing CME more frequently compared to those who have MBBS only.

In regards to medical knowledge satisfaction, the study results show that those who were not satisfied with their medical knowledge were more likely to practice CME less frequently. While our study shows that there is a clear association between medical knowledge satisfaction and CME practice level, it is unclear exactly which precedes the other because of the study design (cross-sectional study). In other words, it is unclear whether those physicians who were not practicing CME were not satisfied with their medical knowledge or that they were not satisfied with their medical knowledge because they were not practicing CME as needed.

In addition, our study shows that some PHC physicians were not satisfied with the CME methods available in Alahsa Region, and those physicians were more likely to practice CME rarely or never compared to the group of physicians who were satisfied with the available methods. In Al-Ahsa region (and in Saudi Arabia in general), there are limited available CME methods for PHC physicians. Those methods include mainly reading medical books and attending medical lectures or workshops. The majority of the PHC physicians do not have access to electronic medical libraries and the availability of interactive computer programs and group learning activates other than lectures and workshops are very limited. Furthermore, the only way for physicians to acquire CME hours at the time of the study is through lectures and workshops that are accredited by the Saudi Commission for Health Specialties. A certain number of CME hours is required by the Commission for renewal of health clinicians' registration. Not until recently, there were no approved self-learning CME activities in the Kingdom that could provide PHC physicians with CME hours, whereas, as shown by this study, a group of physicians prefer self-learning CME activities over lectures and workshops. Moreover, those who preferred self-learning activities, such as reading and interactive computer programs, were more likely to practice CME rarely to never.

Our study shows that a larger proportion of those who were not satisfied with the teaching technique of the available CME lectures and workshops or those who believed that those lectures and workshops were irrelevant to their practice at PHC centers were practicing CME rarely/never. This can explain their preference for self-learning activities. Self-learning activities, such as reading medical books and journals and interactive computer programs either as CDs or through the internet might satisfy some physicians' needs for medical knowledge over lectures and workshops. That is because in self-learning CME activities, physicians can have more freedom in choosing the medical topics they feel they need more knowledge of. Moreover, physicians have more freedom and control in regards to the time and period of learning with self-learning CME activities compared to lectures and workshops.

In regards to job satisfaction, our study have found that those who are not satisfied with their job in PHC centers were more likely to practice CME rarely or never compared to those who are satisfied. It is expected that the more employees are happy and satisfied with their

careers, the more interested they will be in acquiring more knowledge and skills to improve their performance at work. In contrast, those who are not satisfied with their jobs are less interested in acquiring knowledge or skills to improve their performance at work.

Computers are very important part of peoples' lives and are the preferred source of knowledge and skills in any profession. That is because computers provide the most up to date information in a relatively short time compared to other sources. As shown by this study, there is an association between the availability of computers at work and CME practice among physicians. Physicians who have no access to computers at work were less likely to frequently practice CME.

While we projected that high patient load and multiple work responsibilities lower the level of CME practice among physicians, this study shows that the actual relationship is different. Results shows that physicians who had a high patient load and/or those who had multiple work responsibilities at work were more likely to practice CME frequently compared to those who did not have. This can be explained in different ways. Having a large number of patients every day with different complaints and diseases might engender greater responsibility and he/she might practice more CME to manage their patients' diseases in the best way. Similarly, having multiple responsibilities at work, such as being the medical director of the PHC center or the coordinator of one of the PHC health programs, might encourage the physician to practice more CME to gain the necessary knowledge and skills to perform his/her responsibilities in the best way. Another possible explanation is the other way around. That is, because the physician practices CME more frequently, he/she becomes more knowledgeable and skilled, which will be recognized by both the patients who will be more satisfied with his/her services and the physician's managers. Consequently, the physician will have more patients requesting his/her consultation, and the physician's managers will give him/her more duties and responsibilities. It is difficult to identify which of those explanations is correct because there is no temporality with cross-sectional studies. That is, the risk factors and the outcomes are measured at the same point of time, so it is difficult to be certain which caused which.

We thought that a number of the other examined factors in this study would have an association with lower CME practice. These factors include age, gender, number of children, number of years since graduation. It was projected that there is an increase in social responsibilities with increased age and a decrease in interest in gaining new medical knowledge and new medical skills. In regards to gender, it was projected that female physicians may face difficulties in attending lectures and workshops because of transportation issues, as they do not drive cars in Saudi Arabia. We also thought that the increase in the number of children that physicians have might lead to less free time to spend practicing CME. In regard to the number of years since graduation, we thought that the less experienced physicians who have recently graduated from medical school would practice CME more often compared to those who have more experience and have been practicing for many years. The study results, however, shows that age, gender, number of children, and number of years since graduation has no association with the level of CME practice.

In order to remove any confounder effect of the 10 factors found to have a significant association with CME practice; those 10 factors were introduced in a multivariate logistic regression model with the outcome (dependent factor) of practicing CME rarely/never. After adjustment, the effect of two factors which are irrelevant CME lectures

and workshop topics and lack of computers in the work place, became insignificant and were removed from the model. The effect of the other 8 factors remained significant after adjustment, which indicates that those 8 factors have an independent effect on the practice of CME.

This study has a number of strength points and some weaknesses. The coverage of a relatively large sample of PHC physicians in Alahsa region and the examination of a large number of factors that might have an effect on the practice of CME among physicians working in PHC centers are the main strengths. Another important strength point is the analytical design which is distinct from previous mentioned studies. The control for confounder effects using logistic regression analysis also added strength to this study. Cross-sectional studies, however, have the limitation of measuring both risk factors and outcome at the same time (no temporality).

To conclude, this study shows that the most important barriers to practice CME are not acquiring post-graduate degrees, dissatisfaction with the medical information the doctor has, dissatisfaction with the available CME methods, preference for self-learning CME activates, lectures and workshops that have poor teaching technique and job dissatisfaction. Because of the importance of continuous medical education for physicians, the Ministry of Health and the Saudi Commission of Health Specialties should make plans to address these barriers. Further research should focus on studying the barriers of CME practice among nurses and other health care professionals.

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