

Primary health care physicians' knowledge, use, and attitude towards online continuous medical education in Saudi Arabia

Abdulrhman M. Al-Sughayr, MD, MSc, Bander M. Al-Abdulwabbab, MSc, SBARD, Mohammed R. Al-Yemeni, MSc, PhD.

ABSTRACT

الأهداف: تحديد مدى معرفة، وموقف، واستخدام أطباء الرعاية الصحية الأولية للتعليم الطبي المستمر عبر الإنترنت (OCME) في مدينة الرياض وضواحيها.

الطريقة: تم إجراء تحليل مقطعي باستخدام الاستفتاء الذاتي خلال الفترة من إبريل إلى مايو 2007م، حيث تم اختيار الأطباء من مدينة الرياض وقراها وكذلك المدن خارج الرياض. حُللت البيانات باستخدام برنامج التحليل الإحصائي SPSS.

النتائج: لقد حصلنا على 483 استبيان من أصل 613، وتبين أن لدى ثلثي المشاركين معرفة كافية بالتعليم الطبي المستمر عبر الإنترنت، وكان جميع المشاركين تقريباً مهتمين بمعرفة المزيد عنه. أظهرت الدراسة بأن 80% من المشاركين يستخدمون الإنترنت حالياً للحصول على المعلومات الطبية، بينما يستخدم ثلث الأطباء فقط التعليم الطبي المستمر عبر الإنترنت بانتظام. واعتقد 90% من الأطباء الذين يستخدمون التعليم الطبي المستمر عبر الإنترنت بأن ذلك سينعكس إيجاباً على عملهم. لقد ارتبط استخدام التعليم الطبي المستمر عبر الإنترنت كثيراً بالمهارات التي يتمتع بها الطبيب عند التعامل مع الكمبيوتر والإنترنت. في حين لم يكن هناك علاقة إحصائية واضحة بين استخدام الأطباء لهذه الوسيلة وعوامل العمر والجنس ومستوى التعليم وسنوات الخبرة والمكان.

خاتمة: لقد كان موقف الأطباء تجاه التعليم الطبي المستمر عبر الإنترنت إيجابياً، غير أن استعمالهم لهذه الوسيلة يعد ضعيفاً. ولهذا علينا تشجيع الأطباء للاستفادة من هذا الأسلوب الواعد للتعليم المستمر وكذلك شرح العواقب المترتبة من عدم استخدامه.

Objectives: To determine the knowledge, attitude, and use of primary health care (PHC) physicians of online continuous medical education (OCME) in the regions of Riyadh, Kingdom of Saudi Arabia.

Method: This is a cross-sectional analysis using a self administered questionnaire. The physician sample was selected to cover all Riyadh regions (city of Riyadh, and all accessible clinics in the villages, and cities outside of Riyadh). The study was conducted from April until May 2007. The data were analyzed using the Statistical Package for Social Sciences software version 12.

Results: Out of the 613 questionnaires distributed, 483 was completed and returned. Approximately two-thirds of the participants are aware of OCME. Almost all were interested to learn more regarding OCME. Although 80% of the participants are currently using the internet to obtain medical knowledge, only one-third are using OCME. Ninety percent of those who are using OCME think that it will improve their patient's care. The use of OCME is significantly related to the level of computer skills the physicians have. There was no statistical significant difference on the use of OCME on one hand, and age, gender, level of education, years of experience, and location on the other hand.

Conclusion: The PHC physicians have favorable attitude towards OCME, however, their use is quite minimal. More effort is needed to encourage our physicians to utilize this promising method of continuous education, and to understand the challenges and obstacles against using it.

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From the Department of Family and Community Medicine (Al-Sughayr), King Abdulaziz Medical City, and Restorative Dentistry Department, Royals Clinics (Al-Abdulwabbab), and Ministry of Health (Al-Yemeni), Riyadh, Kingdom of Saudi Arabia.

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Address correspondence and reprint request to: Dr. Bander M. Al-Abdulwabbab, Dental Department, Royal Clinics of the Custodian of the Holy Mosques, Riyadh, Kingdom of Saudi Arabia. Tel. +966 (1) 4939515. Ext. 4027. Fax. +966 (1) 2520088. Ext. 46508. E-mail: Dr.bandaru@gmail.com

Since the 1960's, the internet has been available to link universities, and selected government organizations. The 1990's saw the emergence of the world-wide-web (WWW), an interface for the user, which provides easier access, and encourages people to obtain the advantages, and benefits of internet specifically enhancing communications, and providing more accessible, updated, and reliable informations.¹ Health professionals needs to update their knowledge to keep up with the changes in knowledge through many ways of communication, and the internet is one of these.² The process of keeping the professional knowledge update is called continuing professional development, or continuing medical education (CME) when specifically addressing medical needs.³ In addition, increasing demands on CME are taking place at a time of significant developments in educational thinking, and new learning technologies. Today, with the utilization of internet, CME providers have met the crisis criteria for successful continuing education: convenience, relevance, individualization, self-assessment, independent learning, and a systematic approach.⁴ Obtaining CME seemed to be an easy way through WWW, which provides us with a new concept to learn CME courses. It is accessible 24 hours a day, 7 days a week from the comforts of your home, or office. You can view courses at your own speed, stop, and start as you like, go back to view, or listen as often as you wish. The online CME (OCME) courses fee is either free, or cost less than \$15 per credit hour with more than 11,000 online courses available offering more than 19,000 hours of CME. Several formats are available.⁵⁻⁷ In this study, we aimed to investigate and analyze the use of OCME among primary healthcare (PHC) physicians in Riyadh regions, and focused in determining the level of awareness of physicians in OCME, and attempted to explore the factors associated with the use of OCME.

Methods. This study was carried out between April and May 2007, and was conducted in the Ministry of Health (MOH) PHC physicians in the regions of Riyadh, Kingdom of Saudi Arabia, through a cross-sectional approach investigating the knowledge, attitude, and use of OCME. The study population was the PHC physicians working at MOH PHCs in Riyadh regions. The total number of participants was 613 physicians; 55% of them inside Riyadh city, and the rest were distributed in the suburbs of Riyadh regions. The study population has several unique characteristics; they are mostly non-Saudis from other Arab countries, mainly Egyptians and Sudanese. They work one long shift for 8 hours a day and 5.5 days a week. There are no available computers, and internet connections in the centers.

Data collection tool. A self-administered questionnaire was used for data collection that was developed after an extensive literature review utilizing the PubMed database with keywords (OCME, internet based CME, internet medical education, computer skills, continuing medical education, CPD, knowledge, attitude, and use) for experts' discussion, and opinion. In addition, a pilot study was conducted on 40 PHC physicians to examine the validity, and reliability of the questionnaire. The questionnaire was handed out to all centers. The questionnaire consists of 4 main sections; socio-demographic characteristics (for example, age, gender, and education level), and inquiries on knowledge, use, and attitude regarding OCME.

The sample. All PHC physicians working in Riyadh were invited to participate in the study. The questionnaires were distributed with the assistance and support of the Education and Research Division in the central region PHC administration of MOH. A coordinator from MOH helped in the distribution and review, and assists in the completion of the questionnaire. For the purpose of data collection inside Riyadh city, the clinics were divided into 5 main sectors; east, west, north, south, and central. The questionnaires were distributed to all sectors equally, and for physicians outside of Riyadh; as the cities, and villages are different in sizes, number of clinics, and physicians working in these clinics, the questionnaires were distributed to all accessible clinics.

Quality control. A random number of participants were checked by telephone and e-mail. The study coordinator checked the number of questionnaires received for each clinic individually.

Data management. Data were checked for competence and consistency. The Statistical Package for Social Sciences version 12 (SPSS Inc, Chicago, IL, USA) was used for data presentation and analysis. Chi-square was used to test significance between categorical variables. Independent t-test was used to test significance between parametric variables. All tests were performed at 5% significance level.

Ethical Statement. We obtained permission from the Department of Research and Development, MOH, Central Region, prior to distribution of the questionnaires. The participation was voluntary, and there were no need for consent to be obtained from the participants. All data were maintained in a secure fashion (an anonymous questionnaire was used). At the end of the study, a generalized abstract of the result was sent to the MOH Research and Improvement Department. All records, results, and progress both electronic, and written will be maintained by the researcher for a minimum period of 3 years in case of review.

Results. Out of 613 distributed questionnaires, the total response rate was approximately 78%. The response rate was higher among Riyadh city residents (86%), and (71%) for non-Riyadh residents.

Demographic characteristics. Two-fifths of the studied population were 40-50 years old, approximately 6% were less than 30 years, and the mean was 41.5 ± 7.6 years. Approximately two-thirds of the participant were males, and most were non-Saudi (94%). Fifty-five percent of participants were inside Riyadh City, and the rest were in suburban areas. Three-fourths of the participants have bachelor degree only, while the rest have other degrees beside Bachelor in Medicine (Diploma, Master, Board, or Doctor of Philosophy). Approximately 74% of the participants have work experience more than 10 years. (Table 1)

Knowledge. Although approximately two-thirds of the participants were aware of OCME, however, most of them (85%) are not familiar with the local regulations of the Saudi Council for Health Specialties concerning OCME.

Use. Four-fifths of the participants are using the internet to obtain medical information, even though not in a regular basis. However, when it comes to using the internet as a source of CME, only a third of the participants said yes, and just 20% of those, who uses

OCME are taking the evaluation test at the end of the session, and are frequently registering this activity for CME credits hours (Table 1).

Attitude. Almost all participants want to know more regarding OCME, and they believe it is important. Approximately 90% of physicians using OCME thought that it will improve their patient's care and make their practice more evidence-based, and they would recommend it to others. Our data show that the association between computer skills, and knowledge is highly significant ($p=0.0001$), in other words; those who have better computer skills (moderate to good) in word processing, and WWW have more knowledge in OCME. The same thing is true on the use of OCME. However, this is not the case between computer skills, and the attitude towards OCME ($p=0.46$) (Tables 2-4). Finally, our study did not show any statistical significant differences in the use of OCME in one hand, and each of the age, gender, level of education, years of experience, and region on the other hand. (Table 1)

Discussion. From our results, we find that although the internet is an important source of medical information for most of our physicians, however, their use for the internet as a tool for CME is quite low (28%), and it is even lower when it comes to obtaining

Table 1 - Demographic characteristics of studied physicians, and its association with the use of online CME (n=483).

Characteristics	n (%)	Use		P-value
		Yes	No	
		n (%)		
<i>Age in years</i>				
<30	27 (5.6)			
30-39	169 (35.5)			
40-49	190 (39.9)			
50-60	90 (18.9)			
Mean \pm SD	41.5 \pm 7.6	(41.45)	(41.55)	0.896
<i>Gender</i>				0.825
Male	299 (61.9)	90 (30.1)	209 (69.9)	
Female	184 (38.1)	52 (28.3)	132 (71.7)	
<i>Nationality</i>				0.825
Saudi	29 (6.0)	8 (27.6)	21 (72.4)	
Non-Saudi	454 (94.0)	134 (29.5)	320 (70.5)	
<i>Location</i>				0.781
Riyadh city	264 (54.7)	79 (29.9)	185 (70.1)	
Suburban	219 (45.3)	63 (28.8)	156 (71.2)	
<i>Highest education level</i>				0.315
Board (PhD)	6 (1.2)	2 (33.3)	4 (66.7)	
Master	68 (14.1)	14 (20.6)	54 (79.4)	
Diploma	51 (10.6)	18 (35.3)	33 (64.7)	
Bachelor	358 (74.1)	108 (30.2)	250 (69.8)	
<i>Experience duration in years</i>				
<10	124 (25.8)			
10-19	208 (43.2)			
20-29	124 (25.8)			
30-34	25 (5.2)			
Mean \pm SD	14.86 \pm 7.43			

CME - continuing medical education, PhD - Doctor of Philosophy, SD - standard deviation

Table 2 - Computer skills and knowledge in online continuing medical education among physicians.

Computer skill	No	Knowledge		Total	P-value
		Yes n (%)	Not sure		
<i>Word processing</i>					
None	29 (14.8)	13 (5.8)	5 (7.9)	47 (9.7)	0.000
Poor	36 (18.4)	24 (10.7)	11 (17.5)	71 (14.7)	
Moderate	100 (51.0)	11 (49.6)	29 (46.0)	240 (49.7)	
Good	31 (15.8)	76 (33.9)	18 (28.6)	125 (25.9)	
<i>World Wide Web</i>					
None	29 (14.8)	15 (6.7)	6 (9.5)	50 (10.4)	0.000
Poor	41 (20.9)	24 (10.7)	13 (20.6)	78 (16.1)	
Moderate	88 (44.9)	98 (43.8)	26 (41.3)	212 (43.9)	
Good	38 (19.4)	87 (38.8)	18 (28.6)	143 (29.6)	

Table 3 - Computer skills and attitude toward online continuing medical education among physicians.

Computer skill	No	Attitude		Total	P-value
		Yes n (%)	Total		
<i>Word processing</i>					
None	5 (7.0)	1 (1.6)	6 (46.7)	0.461	
Poor	4 (5.6)	5 (7.8)	9 (42.2)		
Moderate	33 (46.5)	30 (46.9)	63		
Good	29 (40.8)	28 (43.8)	57		
<i>World wide web</i>					
None	6 (8.5)	1 (1.6)	7 (5.2)	0.456	
Poor	6 (8.5)	5 (7.8)	11 (8.1)		
Moderate	31 (43.7)	28 (43.75)	59 (43.7)		
Good	28 (39.4)	30 (46.87)	58 (42.9)		

Table 4 - Computer skills and use of online CME among physicians.

Computer skill	No	Use		Total	P-value
		Yes n (%)	Total		
<i>Word processing</i>					
None	40 (11.7)	7 (4.9)	47 (9.7)	0.000	
Poor	61 (17.9)	10 (7.0)	71 (14.7)		
Moderate	172 (50.4)	68 (47.9)	240 (49.7)		
Good	68 (19.9)	57 (40.14)	125 (25.9)		
<i>World wide web</i>					
None	42 (12.3)	8 (5.6)	50 (10.4)	0.000	
Poor	66 (19.4)	12 (8.5)	78 (16.1)		
Moderate	157 (46.0)	55 (38.7)	212 (43.9)		
Good	76 (22.3)	67 (47.2)	143 (29.6)		

CME - continuing medical education

and registering credited hours through this activity. Nevertheless, the literature illustrates quite similar figures. The usage of OCME has increased from 1% of all CME credits earned in 1998 to the current level of almost 31%, and these figures are growing over time.⁸ The literature have also indicated that; when compared to primary care physicians, specialists were more likely to use the internet, with medical specialists more likely to be users than surgical specialists. Urban physicians were slightly more likely than rural physicians to use the internet.⁹ As there were significant association between online use and the level of computer and internet skills, we believe that the main reason was the lack of sufficient levels of such skills, or what Mamary and Charles¹⁰ called not knowing how, which he considered one of the main barriers that inhibits OCME use. Other possible causes are unawareness of the existence of such thing, or unawareness of the local regulation for the Saudi Council for Health Specialties concerning the acceptance of OCME (85% of participants). The nature of OCME, which requires a specific time to complete, including taking a small quiz at the end, is also a likely cause. The final reason that was identified in our study was that; most participants believe that OCME is not as effective as the conventional CME activities.

This has been identified by Wutoh et al⁷ in their review of internet-based CME. Almost all participants would like to know more regarding OCME, and they believe that it is an important tool to improve and update their medical knowledge. However, not like the knowledge and use, this positive attitude is not related to the level of computer and internet skills the physicians have. Furthermore, once the physicians had started to use OCME, they become more interested in it. This has been found in other studies, which indicate that distance learning courses compares favorably with classroom instruction, and on-line participants express high satisfaction,¹¹ or at least users start to believe that online courses is as effective as face to face teaching.¹² In addition, many physicians claimed a positive impact in their practice after using OCME, and these claims were reported in other surveys,¹³⁻¹⁵ however, most studies indicate that despite increases in knowledge as evidenced by testing before and after CME activities (traditional way of CME), most CME courses fail to change physician practices.¹⁶⁻¹⁸ A randomized control trial comparing the effect of traditional CME against OCME concluded that appropriately designed, evidence-based OCME can produce objectively measured changes in behavior, as well as sustained gains in knowledge that is

comparable, or superior to those realized from effective live CME traditional activities.¹⁹

In this study, we expect to find differences in gender regarding the use of OCME (females use this tool more than males as it is more convenient for them), but that was not the case. The same thing could be said on age, education level, and location (being in Riyadh, or at the suburb). Such findings were described in other studies investigating the impact of gender, age, and graduate level on web based learning.^{7,20} However, other studies show significant differences between males and females, with males using OCME more than females, and physicians in urban locations more than those in rural locations.^{9,12}

This study has some limitations such as, 1) the sample did not include all PHC clinics in Riyadh suburbs, due to the difficulties in accessing these clinics. However, the Department of Research and Development in the Ministry of Health, Central Region confirmed that the sample was representative of other clinics, 2) the small number of some of the groups within the sample might have contributed to the fact that we could not find a statistically significant difference between these groups, and 3) the study was conducted at PHC clinic level, and we are not sure if the results could be generalized to other physicians in a different environment.

In conclusion, there are many advantages to accessing internet-based CME programs. Although OCME had been around for 10 years their use is still suboptimal. Aggressive marketing needs to be initiated to encourage more health professionals to overcome barriers to technology, and provide them with the required level of skills. Moreover, more studies are needed to investigate the obstacles against its use, and their effect on practice, and physician's behavior compared with traditional CME method.

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