Original Research Article	**Family Medicine**

Continuing Medical Education among Ministry of Health Primary Care Physicians in Bahrain: Experiences and Perceptions

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Abstract

Introduction: Continuing medical education (CME) is the process through which health professionals engage in activities designed to support their continuing professional development. It is a requirement for physician relicensing, and recredentialing. Existing literature shows that CME improves physician performance as well as patient health outcomes. It is incumbent to study the experiences and attitudes of physicians towards CME activities in view of the impact of CME on the professional development. *Purpose*: To describe experiences and perceptions of CME activities among primary care physicians in Bahrain. *Materials and Methods:* A cross-sectional study that included all registered primary health care physicians in the ministry of health in Bahrain. Data was collected using self-administered online survey distributed to 350 primary care physicians in Bahrain. The five-point Likert scale questionnaire is composed of five sections: socio-demographic data, participant`s experiences with CME, Reasons for attending CME activities, barriers to attending CME activities and benefits of CME in relation to different delivery methods. *Results*: Total responses were 210 (60% response rate). The mean age of respondents was 40.8(SD 8.9) and the majority (84.4%) were female. Most of the CMEs were in the form of lectures (88.6%), interdepartmental activities (80.5%) and conferences (78.1%). Driving forces for CME were for credentialing /licensing (92.9%), develop clinical competencies (92.9%), improve clinical services/programs (95.2%) and to introduce new technology/techniques (88.6%). Regarding barriers encountered, financial support was the most encountered (mean 4.11 (SD 0.92)), followed by lack of time (mean 4.05 (SD 1.07)). *Conclusion:* Despite the barriers encountered, Bahraini physicians had a positive experience and attitude toward undertaking CME. There is a need for financial support and protected time to attend CME activities as well as further studies to explore how best these challenges could be managed and solved.
Keywords: Continuing medical education, primary care, Bahrain, Experiences, Barriers, Perceptions.

INTRODUCTION

As medical knowledge is expanding exponentially, the need to be up to date has become of paramount importance. As result, a tool to achieve this purpose has been developed and adopted worldwide, in the form of Continuing Medical Education (CME). CME, as defined by the American Academy of Family Physicians, is the process by which family physicians and other health professionals engage in activities designed to support their continuing professional development [1]. Continuous professional development (CPD) is a broader concept covering wider domains of professionalism needed for high-quality professional performance [11].

An ideal system of CME must ensure that a clinician's knowledge, psychomotor skills, performance, and clinical outcomes are up to date for safe medical practice. These factors contribute to clinical competence and performance [4]. CME is a requirement for physician relicensing, recredentialing, and physicians often depend on CME to learn about new tests and therapies [5]. CME can be conducted in many ways, such as lectures, symposiums, workshops as well as internal activities within the healthcare facility. Other methods also include online activities [1].

In the United States, the history of CME dates back to 1932, when the Association of American

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Medical Colleges (AAMC) declared CME synonymous with good practice. In 1947, the American Academy of General Practice became the first organization to require attendance in CME activities for membership. Plans to establish standards for CME were not initiated until 1955 when a study sponsored by AAMC foresaw a need for mandatory CME and for recertification. In 1961 and 1967, voluntary programs to accredit providers were tested but it was not formalized until 1977 [3].

Lately, the CME process in Bahrain has received more consideration and recognition. When it was first implemented, the CME activities were confined to the respective departments within the Ministry of Health (MOH). The activities were not obligatory and were subject to the availability of human resources, time, materials as well as budget.

With the evolving concept of CME, a committee within MOH was formed in January 2015 to set rules and standards for CME. In May 2016, the National Health Regulatory Authority (NHRA), and following a decision by the Supreme Council of Health (SCH) adopted the GCC, CPD, and CME regulations. NHRA is the regulatory national body that approves and accredits all CMEs in Bahrain [6]. Mandatory hours for each profession have been set and became required for licensing and renewal of licenses to practice.

The attitude towards CMEs, barriers, and experiences were studied and reported in the literature [12, 14, 15]. The existing literature shows that CME improves physician performance as well as patient health outcomes [10]. Interactive small group and case-based activities have been identified as the preferred methods of delivery. The most common method of conducting CME were lectures, conferences, and journal clubs, whereas the least was E-learning [9].

Several barriers to attending CME activities have been identified such as clinical commitment, increased workload, and lack of time [12].

In the GCC, a number of studies have explored the perception and experiences of the participants of CME. The importance of CME in improving knowledge and clinical outcomes was highlighted. It also suggested policies related to sponsoring and accrediting CME should be modified. A study in Riyadh highlighted key facts about sponsoring of CME through commercial (drug) companies, and the potential conflict of interest and ethical considerations. Moreover, it found that a general CME approach rather than specialized CME focusing on practical competencies was practiced [10].

In a study that was done in Alahsa, multiple factors that impacted on practice of CME were identified. Those who practice CME frequently were those with higher medical qualifications, satisfied with available CME methods, satisfied with their medical knowledge, and have their preferred CME method available in the region. The more satisfied the physician with his career, the more CME he will uptake [12].

Regarding traditional forms of CME, it was found among GCC studies that they were the most widely practiced [10, 12]. This was also in accordance with a larger study done in Australia [9].

In view of the impact of CME on the professional development of health care practitioners and on the improvement of health care delivery, it is deemed imperative to investigate the experiences and attitudes of physicians towards CME activities with the aim of providing a better understanding on this relatively new experience and discuss ways of improvement.

The purpose of this study was to describe the experiences of ministry of health primary care physicians with CME, to identify their preferences and the driving forces to conducting CME. The study also aimed to identify the barriers in undertaking CME as well as the perceived benefits of variable delivery methods of CME.

MATERIALS AND METHODS

This was a cross-sectional type study. The accessible population included all registered primary health care physicians in the ministry of health in Bahrain. According to MOH health statistics report in 2017, the number of registered primary health care physicians was 348, 328 in primary health care centers, 19 in public health directorate, and 1 in the health promotion directorate.

Total population sampling was done. We included Bahraini and non-Bahraini primary care physicians of all ages registered in the Ministry of Health (Primary Health Care centers, Public Health Directorate, and Health Promotion Directorate). Whereas primary care physicians joining the Family Physicians Residency Program (FPRP) as tutors were excluded as they have different CME requirements.

Data were collected over two weeks using a self-administered online questionnaire. The link to the questionnaire was sent to the head of each health center via email to be shared with physicians. Three reminders were sent by email.

Our questionnaire is comprised of five sections: socio-demographic data, participant`s experiences with CME, Reasons for attending CME activities, barriers to attending CME activities, and benefits of CME regarding relation to different delivery methods.

The questionnaire was adapted from a previous study [10]. The original questionnaire contained 9 sections of around 10 questions each, and responses were on a Likert scale of 5 ranging from strongly agreeing to strongly disagreeing with a neutral option.

Score used was as follows: 1 = strongly disagree, 2 = disagree, 3= neutral, 4 = agree, 5 = strongly agree. We had 5 sub scales: conferences/symposiums, workshops, courses, inter-departmental activities, and E-learning. Each sub scale consisted of 6 items. Mean score for each sub scale was found by adding the scores of the six items and then divided by six.

The validity of the questionnaire was tested regarding language, timing, and appropriateness of the questions.

DATA ANALYSIS

Data were entered into the Statistical Package for Social Science (SPSS).

Each variable was coded in SPSS and missing values were identified by running checks.

The data management and analysis plan were discussed with a statistician. The data collected were analyzed using SPSS.

Descriptive analysis was done. The responses were displayed in frequencies and percentages. For each item, the 5-point Likert scale was ultimately grouped into three categories, "agree", "disagree" and "neutral". We merged the categories "strongly agree" with "agree" and "strongly disagree" with "disagree" because we found the responses in both the extremes only minimal and for some of the statements were with no responses at all at the categories "strongly agree" and "strongly disagree".

Reliability test for internal consistency was done for the following sections of the questionnaire:
1. Reason for participation in CME activities which comprised of 11 items which showed a Cronbach's alpha coefficient of 0.880
2. Difficulties in conducting CME comprised of 11 items showed a Cronbach's alpha coefficient of 0.897
3. Benefit of CME with regard to different methods comprised 5 sections and each section had 6 items which showed a Cronbach's alpha coefficient of 0.949. For each section was calculated separately. The values were as follow: conferences/symposiums 0.872, workshops 0.857, courses 0.854, inter-departmental activities 0.881 and E-learning 0.889.

We used Chi-square test to test the association between demographic variables and responses to questions. P-value was considered statistically significant if it is < 0.05.

RESULTS

The survey was distributed to 350 primary care physicians and 210 of them responded giving a response rate of 60%.

Table 1: Socio-demographic characteristics (n 210)

Characteristics	n (%)	Mean (SD)
Professional title		
Family Physician [a]	173 (82.4)	
General Practitioner [b]	18 (8.6)	
Family physician in other departments	19 (9)	
Gender		
Male	32 (15.2)	
Female	178 (84.8)	
Age		40.8 (8.9)
26 - 35	78 (37.1)	
36 - 45	75 (35.8)	
>45	57 (27.1)	
Nationality		
Bahraini	199 (94.8)	
Non-Bahraini	11 (5.2)	
Marital status		
Single	19 (9)	
Married	185 (88.2)	
Divorced	3 (1.4)	
Widowed	3 (1.4)	
Number of children		2.4 (1.4)
None	31 (14.8)	
1 – 2	77 (36.6)	
≥3	102 (48.6)	
Years of experience beyond the internship		14.6 (8.7)
<10	80 (38.3)	
10 - 20	77 (36.8)	
>20	52 (24.9)	

[a] Family Physician is Arab Board-Certified Physician
[b] General Practitioner is not Board certified

Table 1 shows the socio-demographic data of participants. The mean age (SD) of the respondents was 40.8 (SD 8.9). A total of 173 (82.4%) of the respondents were family physicians, 18 (8.6%) were general practitioners and 19 (9%) were family physicians working in other departments such as public health.

Among the respondents, 178 (84.4%) were female which reflects the gender distribution in the primary care sector.

All of the respondents had considerable experience in their specialty with a mean of 14.6 years of experience beyond the internship.

Most of the respondents (185, 88.2%) were married. The majority had children, 77 (36.6%) had 1 to 2 children, and 102 (48.5%) had 3 or more children.

Table 2 shows respondents' experiences with CMEs. Most of the CMEs were in the form of Lectures (88.6%), internal activities as part of the institution (80.5%), and Conferences (78.1%). Less common CME activities were publishing papers (21%), reading articles (29.5%), and external activities (31%). During the last year, the mean hours of CME attended had a mean of 35.3 hours (SD 26.8).

Table 2: Experience in Participation in CME

	n (%)	Mean (SD)
What type of CME do you normally undertake?		
Lectures	186 (88.6)	
Conferences	164 (78.1)	
Symposiums	114 (54.3)	
Workshops	152 (72.4)	
Internal activities [a]	169 (80.5)	
External Activities [b] that are NHRA accredited	121 (57.6)	
External Activities [b] approved by an accountable authority	67 (31.9)	
Online activities [c]	152 (72.4)	
Reading activities [d]	62 (29.5)	
Publishing scientific papers, book, and chapter in book	44 (21)	
Medical audit / Accreditation / Surveyor	76 (36.2)	
At what time do you undertake CME?		
Work time	103 (49)	
Spare time	107 (51)	
Total	210 (100)	
In the last year, how many CME hours have you attended?		35.3 (26.8)
<40	134 (65)	
≥40	72 (35)	
Total	206 (100)	
Who sponsored the CME hours you have attended in the past?		
Self-sponsored	74 (35.2)	
Institution / Hospital sponsoring	56 (26.7)	
Pharmaceutical companies	69 (32.9)	
Others	11 (5.2)	
Total	210 (100)	

[a] Internal activities: any intra-departmental CME activity
[b] External activities: any activity that is done outside of the health institution
[c] Online activities: activities conducted from distance over the internet (e.g. through Microsoft teams or zoom)
[d] Reading activities: self-learning activities such as reading of journals

Table 3 shows the association between CME methods and independent variables such as gender, age, number of children as well as years of experience. Males were more involved in publishing than females (*P* 0.043), whereas females were more involved in internal activities (*P* 0.021).

Physicians with 20 years of experience or more attended more workshops (86.5%), symposiums (65.4%), and reading activities (42.3%) than those with fewer years of experience, (*P* 0.035, 0.026, 0.042 respectively). Those aged 45 years or more used reading activities as a way of getting CME more than physicians in the younger age groups (*P* 0.019).

Table 4 presents the reasons for participation in CME activities. Most respondents (92.9%) agreed that they attended the CME activities to accumulate CME hours for credentialing / licensing purposes, develop staff clinical competencies (92.9%), improve specific clinical services/ programs (95.2%) as well as to introduce new technology/techniques (88.6%).

Table 5 discusses the barriers encountered by physicians when attending CME and the level of agreement with each. Financial support was the most common barrier (mean of 4.11 (SD 0.92)), followed by lack of time (mean 4.05 (SD1.07)), not enough administration or organizational support (mean 3.9 (SD 1.01) and 3.83 (SD 1.03) respectively), and unavailability of sponsor (mean 3.7 (SD 1.07)).

Table 6 demonstrates the relationship between socio-demographic data and difficulties in conducting CME. Respondents with 20 years or more of experience and aged more than 45 were less in agreement with the following factors: not enough financial support and organizational support, unavailability of sponsor, accreditation difficulties, and lack of time, all were statistically significant (*P* < 0.05).

Respondents with no children had a lower level of agreement than respondents with children in regards to the following factors: not enough administrational support, and financial support, low number of attendees, and accreditation difficulties.

Females had a higher level of agreement with lack of time and unavailability of sponsor as barriers to CMEs compared to males (*P* 0.006, 0.007) respectively.

Table 7 shows the views of participants on the value of different CME delivery methods (Conferences, symposiums, workshops, courses, interdepartmental, and E-learning) with respect to retaining of knowledge, improving academic and teaching skills, improving communication skills, improving practice behavior, improving department image. Workshops and courses

scored the highest in terms of achieving these benefits (mean 4.48 (SD 0.5) and 4.49 (SD 0.48) respectively). E-learning was the least beneficial with a mean of 3.97 (SD 0.73).

Table 8 demonstrates the association between the preferred CME delivery methods and the socio-demographic variables, age and number of children showed significant associations. Middle-aged participants (age 35-45) found courses to be the most beneficial (*P* 0.017) whereas E-learning was seen as least beneficial by younger participants (26 to 35) (*P* 0.014) Further, those with no children, found E-learning least beneficial, (*P* 0.013). Workshops were more valued by participants who had more than 3 children (*P* 0.037).

Table 3: relationship between socio-demographic data and different CME delivery methods

	Gender		Age			Number of children			Years of experience beyond the internship		
	Male	Female	26 - 35	36 - 45	>45	None	1 - 2	≥3	<10	10 - 20	>20
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Lectures	27 (84.4)	159 (89.3)	69 (88.5)	70 (93.3)	47 (82.5)	27 (87.1)	69 (89.6)	90 (88.2)	72 (90)	69 (89.6)	44 (84.6)
P- value	0.418		0.151			0.923			0.594		
Conferences	26 (81.3)	138 (77.5)	60 (76.9)	58 (77.3)	46 (80.7)	21 (67.7)	58 (75.3)	85 (83.3)	63 (78.8)	55 (71.4)	45 (86.5)
P- value	0.639		0.855			0.141			0.124		
Symposiums	20 (62.5)	94 (52.8)	43 (55.1)	37 (49.3)	34 (59.6)	14 (45.2)	41 (53.2)	59 (57.8)	47 (58.8)	33 (42.9)	34 (65.4)
P- value	0.311		0.491			0.451			**0.026**		
Workshops	25 (78.1)	127 (71.3)	53 (67.9)	52 (69.3)	47 (82.5)	20 (64.5)	52 (67.5)	80 (78.4)	55 (68.8)	52 (67.5)	45 (86.5)
P- value	0.430		0.135			0.155			**0.035**		
Internal activities	21 (65.6)	148 (83.1)	64 (82.1)	63 (84)	42 (73.7)	28 (90.3)	58 (75.3)	83 (81.4)	63 (78.8)	65 (84.4)	41 (78.8)
P- value	**0.021**		0.303			0.195			0.608		
External Activities that are NHRA accredited	18 (56.3)	103 (57.9)	40 (51.3)	44 (58.7)	37 (64.9)	16 (51.6)	44 (57.1)	61 (59.8)	40 (50)	46 (59.7)	34 (65.4)
P- value	0.865		0.278			0.717			0.190		
External Activities approved by an accountable authority	12 (37.5)	55 (30.9)	21 (26.9)	21 (28)	25 (43.9)	8 (25.8)	23 (29.9)	36 (35.3)	23 (28.7)	21 (27.3)	23 (44.2)
P- value	0.460		0.076			0.544			0.093		
Online activities	26 (81.3)	126 (70.8)	59 (75.6)	48 (64)	45 (78.9)	19 (61.3)	55 (71.4)	78 (76.5)	63 (78.8)	47 (61)	41 (78.8)
P- value	0.223		0.118			0.247			**0.022**		
Reading activities	12 (37.5)	50 (28.1)	20 (25.6)	17 (22.7)	25 (43.9)	7 (22.6)	26 (33.8)	29 (28.4)	22 (27.5)	17 (22.1)	22 (42.3)
P- value	0.283		**0.019**			0.486			**0.042**		
Publishing scientific papers, book, and chapter in book	11 (34.4)	33 (18.5)	21 (26.9)	11 (14.7)	12 (21.1)	6 (19.4)	19 (24.7)	19 (18.6)	20 (25)	12 (15.6)	12 (23.1)
P- value	**0.043**		0.177			0.599			0.322		
Medical audit / Accreditation / Surveyor	8 (25)	68 (38.2)	32 (41)	27 (36)	17 (29.8)	12 (38.7)	31 (40.3)	33 (32.4)	29 (36.3)	29 (37.7)	17 (32.7)
P- value	0.152		0.408			0.525			0.843		

Table 4: Reasons for participation in CME activities with level of agreement with each reason

	Disagree n (%)	Neutral n (%)	Agree n (%)	Mean (SD[1])
Developing staff clinical competencies	4 (1.9)	11 (5.2)	195 (92.9)	4.53 (0.75)
Introducing new technology / techniques	4 (1.9)	20 (9.5)	186 (88.6)	4.42 (0.78)
Improving specific clinical service(s)/ program(s)	4 (1.9)	6 (2.9)	200 (95.2)	4.52 (0.71)
For credentialing / licensing purposes	5 (2.4)	10 (4.8)	195 (92.9)	4.55 (0.74)
Effect in evaluating the department's performance	10 (4.8)	38 (18.1)	162 (77.1)	4.07 (0.88)
A specific direction from higher administration	16 (7.6)	46 (21.9)	148 (70.5)	3.94 (0.94)
Personal recognition in organizing such activities	16 (7.6)	42 (20)	152 (72.4)	3.96 (0.97)
Improving the department's image within the institution	18 (8.6)	43 (20.5)	149 (71)	3.94 (0.99)
Improving the department's image within the society	18 (8.6)	46 (21.9)	146 (69.5)	3.9 (0.99)
Flourishing social agenda accompanying such activities	28 (13.3)	60 (28.6)	122 (58.1)	3.68 (1.04)
Availability of financial resources	29 (13.8)	56 (26.7)	125 (59.5)	3.64 (1.05)

1. The higher mean score, the more agreement with the statement (minimum score = 1 and maximum score = 5)

Table 5: Difficulties in attending CME with level of agreement with each difficulty

	Disagree n (%)	Neutral n (%)	Agree n (%)	Mean (SD[1])
Not enough financial support	14 (6.7)	35 (16.7)	161 (76.7)	4.11 (0.92)
Not enough administration support	24 (11.4)	38 (18.1)	148 (70.5)	3.9 (1.01)
Not enough organizational support	25 (11.9)	47 (22.4)	138 (65.7)	3.83 (1.03)
Not enough collegial support	35 (16.7)	78 (37.1)	97 (46.2)	3.47 (1.05)
Poor scientific quality	91 (43.3)	73 (34.8)	46 (21.9)	2.8 (1.08)
Poor media coverage	80 (38.1)	70 (33.3)	60 (28.6)	2.98 (1.2)
Low number of attendance	81 (38.6)	75 (35.7)	54 (25.7)	2.89 (1.05)
Unavailability of sponsor	31 (14.8)	61 (29)	118 (56.2)	3.7 (1.07)
Accreditation difficulty	43 (20.5)	66 (31.4)	101 (48.1)	3.47 (1.08)
Waste of time	122 (58.1)	57 (27.1)	31 (14.8)	2.4 (1.12)
Lack of time	25 (11.9)	24 (11.4)	161 (76.7)	4.05 (1.07)

1. The higher mean score, the more agreement with the statement (minimum score = 1 and maximum score = 5)

Table 6: relationship between socio-demographic data and difficulties in conducting CME

		Gender: Male n (%)	Female n (%)	Age 26 - 35 n (%)	36 - 45 n (%)	>45 n (%)	Number of children: None n (%)	1 - 2 n (%)	≥3 n (%)	Years of experience beyond the internship: <10 n (%)	10 - 20 n (%)	>20 n (%)
Not enough financial support	Disagree	3(9.4)	11(6.2)	4(5.1)	4(5.3)	6(10.5)	1(3.2)	4(5.2)	9(8.8)	3(3.8)	5(6.5)	6(11.5)
	Neutral	5(15.6)	30(16.9)	13(16.7)	6(8)	16(28.1)	6(19.4)	11(14.3)	18(17.6)	13(16.3)	10(13)	12(23.1)
	Agree	24(75)	137(77)	61(78.2)	65(86.7)	35(61.4)	24(77.4)	62(80.5)	75(73.5)	64(80)	62(80.5)	34(65.4)
P - value		0.929		0.004			0.439			0.014		
Not enough administration support	Disagree	4(12.5)	20(11.2)	11(14.1)	5(6.7)	8(14)	6(19.4)	7(9.1)	11(10.8)	9(11.3)	7(9.1)	8(15.4)
	Neutral	5(15.6)	33(18.5)	11(14.1)	12(16)	15(26.3)	8(25.8)	13(16.9)	17(16.7)	11(13.8)	16(20.8)	11(21.2)
	Agree	23(71.9)	125(70.2)	56(71.8)	58(77.3)	34(59.6)	17(54.8)	57(74)	74(72.5)	60(75)	54(70.1)	33(63.5)
P - value		0.839		0.097			0.012			0.608		
Not enough organizational support	Disagree	5(15.6)	20(11.2)	11(14.1)	8(10.7)	6(10.5)	5(16.1)	6(7.8)	14(13.7)	10(12.5)	9(11.7)	6(11.5)
	Neutral	5(15.6)	42(23.6)	19(24.4)	12(16)	16(28.1)	8(25.8)	19(24.7)	20(19.6)	18(22.5)	16(20.8)	13(25)
	Agree	22(68.8)	116(65.2)	48(61.5)	55(73.3)	35(61.4)	18(58.1)	52(67.5)	68(66.7)	52(65)	52(67.5)	33(63.5)
P - value		0.327		0.002			0.028			0.048		
Not enough collegial support	Disagree	7(21.9)	28(15.7)	11(14.1)	16(21.3)	8(14)	7(22.6)	7(9.1)	21(20.6)	9(11.3)	18(23.4)	8(15.4)
	Neutral	9(28.1)	69(38.8)	32(41)	24(32)	22(38.6)	15(48.4)	31(40.3)	32(31.4)	31(38.8)	27(35.1)	19(36.5)
	Agree	16(50)	81(45.5)	35(44.9)	35(46.7)	27(47.4)	9(29)	39(50.6)	49(48)	40(50)	32(41.6)	25(48.1)
P - value		0.804		0.031			0.052			0.050		
Poor scientific quality	Disagree	12(37.5)	79(44.4)	26(33.3)	39(52)	26(45.6)	14(45.2)	25(32.5)	52(51)	28(35)	37(48.1)	26(50)
	Neutral	13(40.6)	60(33.7)	28(35.9)	21(28)	24(42.1)	14(45.2)	29(37.7)	30(29.4)	27(33.8)	25(32.5)	20(38.5)
	Agree	7(21.9)	39(21.9)	24(30.8)	15(20)	7(12.3)	3(9.7)	23(29.9)	20(19.6)	25(31.3)	15(19.5)	6(11.5)
P - value		0.586		0.116			0.159			0.190		
Poor media coverage	Disagree	11(34.4)	69(38.8)	21(26.9)	35(46.7)	24(42.1)	13(41.9)	19(24.7)	48(47.1)	21(26.3)	36(46.8)	23(44.2)
	Neutral	11(34.4)	59(33.1)	27(34.6)	20(26.7)	23(40.4)	13(41.9)	31(40.3)	26(25.5)	26(32.5)	24(31.2)	19(36.5)
	Agree	10(31.3)	50(28.1)	30(38.5)	20(26.7)	10(17.5)	5(16.1)	27(35.1)	28(27.5)	33(41.3)	17(22.1)	10(19.2)
P - value		0.775		0.039			0.109			0.093		
Low number of attendance	Disagree	9(28.1)	72(40.4)	25(32.1)	31(41.3)	25(43.9)	11(35.5)	26(33.8)	44(43.1)	25(31.3)	32(41.6)	24(46.2)
	Neutral	13(40.6)	62(34.8)	29(37.2)	25(33.3)	21(36.8)	18(58.1)	26(33.8)	31(30.4)	28(35)	27(35.1)	19(36.5)
	Agree	10(31.3)	44(24.7)	24(30.8)	19(25.3)	11(19.3)	2(6.5)	25(32.5)	27(26.5)	27(33.8)	18(23.4)	9(17.3)
P - value		0.247		0.362			0.043			0.112		
Unavailability of sponsor	Disagree	8(25)	23(12.9)	6(7.7)	12(16)	13(22.8)	3(9.7)	7(9.1)	21(20.6)	6(7.5)	12(15.6)	13(25)
	Neutral	8(25)	53(29.8)	23(29.5)	16(21.3)	22(38.6)	10(32.3)	21(27.3)	30(29.4)	23(28.7)	18(23.4)	20(38.5)
	Agree	16(50)	102(57.3)	49(62.8)	47(62.7)	22(38.6)	18(58.1)	49(63.6)	51(50)	51(63.7)	47(61)	19(36.5)
P - value		0.007		0.045			0.450			0.050		
Accreditation difficulty	Disagree	5(15.6)	38(21.3)	11(14.1)	14(18.7)	18(31.6)	5(16.1)	11(14.3)	27(26.5)	13(16.3)	13(16.9)	17(32.7)
	Neutral	11(34.4)	55(30.9)	24(30.8)	22(29.3)	20(35.1)	16(51.6)	16(20.8)	34(33.3)	22(27.5)	26(33.8)	17(32.7)
	Agree	16(50)	85(47.8)	43(55.1)	39(52)	19(33.3)	10(32.3)	50(64.9)	41(40.2)	45(56.3)	38(49.4)	18(34.6)
P - value		0.840		0.040			0.000			0.034		
Waste of time	Disagree	16(50)	106(59.6)	42(53.8)	44(58.7)	36(63.2)	20(64.5)	36(46.8)	66(64.7)	43(53.8)	47(61)	32(61.5)
	Neutral	10(31.3)	47(26.4)	21(26.9)	20(26.7)	16(28.1)	7(22.6)	28(36.4)	22(21.6)	20(25)	21(27.3)	15(28.8)
	Agree	6(18.8)	25(14)	15(19.2)	11(14.7)	5(8.8)	4(12.9)	13(16.9)	14(13.7)	17(21.3)	9(11.7)	5(9.6)
P - value		0.511		0.594			0.137			0.306		
Lack of time	Disagree	3(9.4)	22(12.4)	5(6.4)	7(9.3)	13(22.8)	2(6.5)	7(9.1)	16(15.7)	6(7.5)	6(7.8)	13(25)
	Neutral	9(28.1)	15(8.4)	4(5.1)	8(10.7)	12(21.1)	1(3.2)	8(10.4)	15(14.7)	3(3.8)	10(13)	11(21.2)
	Agree	20(62.5)	141(79.2)	69(88.5)	60(80)	32(56.1)	28(90.3)	62(80.5)	71(69.6)	71(88.8)	61(79.2)	28(53.8)
P - value		0.006		0.001			0.053			0.000		

Table 7: Benefits of CME with regard to different delivery methods

	Disagree	Neutral	Agree	Mean (SD)
	n (%)	n (%)	n (%)	
Conference / Symposium				4.3 (0.59)
Retention of Knowledge	2 (1)	20 (9.5)	188 (89.5)	
Improving Clinical Practice Outcome	3 (1.4)	20 (9.5)	187 (89)	
Improving Academic / Teaching Skills	2 (1)	25 (11.9)	183 (87.1)	
Improving Communication Skills	8 (3.8)	35 (16.7)	167 (79.5)	
Improving Practice Behavior	2 (1)	27 (12.9)	181 (86.2)	
Improving Department Image	3 (1.4)	37 (17.6)	170 (81)	
Workshop				4.48 (0.5)
Retention of Knowledge	0 (0)	11 (5.2)	199 (94.8)	
Improving Clinical Practice Outcome	0 (0)	4 (1.9)	206 (98.1)	
Improving Academic / Teaching Skills	1 (0.5)	11 (5.2)	198 (94.3)	
Improving Communication Skills	1 (0.5)	20 (9.5)	189 (90)	
Improving Practice Behavior	1 (0.5)	13 (6.2)	196 (93.3)	
Improving Department Image	1 (0.5)	36 (17.1)	173 (82.4)	
Courses				4.49 (0.48)
Retention of Knowledge	0 (0)	13 (6.2)	197 (93.8)	
Improving Clinical Practice Outcome	0 (0)	6 (2.9)	204 (97.1)	
Improving Academic / Teaching Skills	0 (0)	16 (7.6)	194 (92.4)	
Improving Communication Skills	0 (0)	21 (10)	189 (90)	
Improving Practice Behavior	0 (0)	9 (4.3)	201 (95.7)	
Improving Department Image	1 (0.5)	35 (16.7)	174 (82.9)	
Inter-Departmental Activities				4.27 (0.61)
Retention of Knowledge	6 (2.9)	27 (12.9)	177 (84.3)	
Improving Clinical Practice Outcome	2 (1)	18 (8.6)	190 (90.5)	
Improving Academic / Teaching Skills	2 (1)	31 (14.8)	177 (84.3)	
Improving Communication Skills	7 (3.3)	28 (13.3)	175 (83.3)	
Improving Practice Behavior	4 (1.9)	24 (11.4)	182 (86.7)	
Improving Department Image	3 (1.4)	37 (17.6)	170 (81)	
E-Learning				3.97 (0.73)
Retention of Knowledge	7 (3.3)	45 (21.4)	158 (75.2)	
Improving Clinical Practice Outcome	7 (3.3)	39 (18.6)	164 (78.1)	
Improving Academic / Teaching Skills	10 (4.8)	46 (21.9)	154 (73.3)	
Improving Communication Skills	31 (14.8)	53 (25.2)	126 (60)	
Improving Practice Behavior	9 (4.3)	39 (18.6)	162 (77.1)	
Improving Department Image	14 (6.7)	61 (29)	135 (64.3)	

Table 8: relationship between socio-demographic data and different CME delivery methods

	Conference / Symposium	workshop	Courses	interdepartmental	E-learning
	Mean (SD[1])	Mean (SD[1])	Mean (SD[1])	Mean (SD[1])	Mean (SD[1])
Gender					
Male	4.26 (0.55)	4.43 (0.53)	4.39 (0.54)	4.17 (0.75)	4.1 (0.64)
Female	4.31 (0.6)	4.48 (0.49)	4.51 (0.47)	4.29 (0.58)	3.94 (0.75)
P-value	0.668	0.751	0.334	0.633	0.266
Age					
26 - 35	4.19 (0.67)	4.41 (0.55)	4.43 (0.52)	4.2 (0.66)	3.76 (0.81)
36 - 45	4.38 (0.56)	4.56 (0.46)	4.62 (0.43)	4.37 (0.59)	4.09 (0.64)
>45	4.34 (0.5)	4.44 (0.45)	4.42 (0.47)	4.26 (0.55)	4.07 (0.69)
P-value	0.127	0.161	**0.017**	0.159	**0.013**
Number of children					
None	4.13 (0.56)	4.29 (0.55)	4.31 (0.58)	4.03 (0.67)	3.6 (0.72)
1 - 2	4.29 (0.68)	4.44 (0.55)	4.49 (0.49)	4.35 (0.59)	3.99 (0.8)
≥3	4.36 (0.53)	4.56 (0.42)	4.55 (0.43)	4.29 (0.59)	4.06 (0.66)
P-value	0.147	**0.037**	0.107	0.065	**0.014**
Years of experience					
<10	4.24 (0.68)	4.44 (0.56)	4.47 (0.52)	4.2 (0.68)	3.88 (0.82)
10 - 20	4.35 (0.5)	4.52 (0.43)	4.54 (0.44)	4.33 (0.54)	4.02 (0.66)
>20	4.29 (0.57)	4.46 (0.48)	4.45 (0.5)	4.29 (0.59)	4 (0.71)
P-value	0.731	0.856	0.562	0.516	0.490

1. The higher mean score, the more agreement with the statement (minimum score = 1 and maximum score = 5)

DISCUSSION

This study explored the experiences of primary care physicians in the Kingdom of Bahrain with CME. It explored the forms of CME activities that physicians undertook, their reasons and motivations to undertake CME, barriers faced as well as the perceived benefits of variable delivery methods of CME.

The overall response rate was 60% (210 responses out of 350), compared to a response rate of 42% in the Riyadh study, 37% in Australia. 84.4% of respondents were female. This is expected since the majority of primary care physicians in the kingdom of Bahrain are females [21]. Nonresponse was probably due to lack of time, lack of interest in participation, and the fact that many of the physicians were on leave during the data collection period which coincided with the summer holiday.

Traditional methods for CME delivery remained the most widely practiced, such as lectures, conferences, and interdepartmental activities. Online delivery of CME, has proven to be a feasible option as 72.4% of the participants indicated that they attended CME activities virtually (Table 2), compared with 61.8% in a study done in Riyadh [10].

The endorsement of online CME could be due to the low cost, ease of conducting the activities practicality in this modern fast-paced world. Not to mention the major impact of the Covid-19 pandemic and the transition toward online learning as an alternative method of face-to-face activities worldwide.[18] However, it was perceived by physicians to be the least beneficial compared to the other CME

delivery methods. One reason for that could be the lack of interaction and engagement.

Participants indicated that the most beneficial CME methods were workshops and courses. Similarly, in a study done in Oman among primary care physicians, small group learning was found to be most effective [14]. This is in agreement with the existing literature showing the impact of interactive methods on professional practice and health care outcomes [16]. Internal CME activities (those conducted at the health center) were perceived to be beneficial too perhaps due to their easy accessibility and convenience.

The least favored CME activities were those involving publishing papers and audits, with males publishing more than female physicians. This might be due to the lack of support and resources for conducting research.

This was further explored in a study conducted on primary care physicians in Bahrain and found that barriers to conducting research were insufficient allotted time, lack of financial incentives, and inadequate statistical support [13]. Literature supports our findings in that male physicians publish more research than females [18].

Regarding the barriers faced by physicians in conducting CME, lack of time and financial support were the most encountered. In a US-based study regarding barriers encountered, expenses were the biggest barriers along with travel time [19], while in an Australian study respondents had a high level of agreement with time being the biggest barrier to attending CME but were equivocal regarding clinical duties as a barrier [9]. Lack of time and work pressure

were identified as the main obstacles to professional development in primary care in Saudi Arabia [20].

These barriers were agreed the most by those who aged 45 years and more and those with more than 20 years of experience. This can be attributable to the fact that those with more years of experience will have other administrative tasks entrusted to them.

Number of children is another significant variable in the difficulties perception, as respondents with children encountered more difficulties in attending CMEs compared to respondents with no children. This is expected in view of the additional responsibilities those with children have. Gender was a significant factor as females had a higher level of agreement with lack of time as a barrier. This was a similar finding to a study in Alausa region in Saudi Arabia [12].

CONCLUSION AND RECOMMENDATIONS

Bahraini physicians had positive experience and attitude towards undertaking CME despite time constraint and work pressure.

We recommend allocating protected time for CME activities. We also recommend updating policies regarding sponsoring physicians to attend CME activities.

There is also a need for an active and resourceful CME committee in each health institution responsible for organizing CME activities.

We recommend further studies at institutional level aimed at addressing the barriers so that more quality CME is delivered in primary care settings.

LIMITATIONS

We aimed at interviewing participants face to face and getting a full response rate, but due to the Covid-19 pandemic and social distancing, we have chosen to do the survey online. This may have caused a lower response rate than anticipated. Another limitation was the data collection period which coincided with the summer school holiday during which many physicians choose to take annual leave.

PERMISSION AND ETHICAL APPROVAL

We obtained approval to use the questionnaire from the researchers of the main study. Informed consent was obtained from all participants. Data collection was confidential, anonymized, and data were stored in encrypted files.

Permission and ethical approval were granted from the Research and Ethics committee of MOH Bahrain.

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