

# Medical Laboratory Professional's Perceptions of Continuous Medical Education

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## Abstract

**Background:** Medical laboratory technologists (MLTs) are required to gain credit for continuous professional development for relicensing as well as for their own career-long learning. International studies have shown that MLTs who undertake continuing medical education (CME) have improved productivity, enhanced professional flexibility and high work fulfilment. The time spent on CME is associated with professional competency. Previous national research has shown that attendance at CME programmes in Saudi Arabia is likely affected by demographic factors. The objective of this study was to explore the perceptions of MLTs towards CME activities and to predict factors that affect attendance.

**Methods:** A self-administered questionnaire was given to 103 medical laboratory professionals from the Security Forces Hospital as part of a cross-sectional descriptive study. Data were analysed using SPSS version 21.

**Results:** The overall mean score was 3.88 for the 103 questionnaires, indicating an affirmative perception of the CME programmes. Males in the age group 25-34 years accounted for 61.2% of responses. The preferred delivery modes for CME programmes were short courses and workshops (23%) and higher education relevant courses (20%). For those who had attended CME and those who had not, no significant difference was found in gender, age, field of specialty, education categories or working experience.

**Conclusion:** Most laboratory technicians in our study reported favourable perceptions of CME programmes, feeling that they increased professional confidence and competency. We recommend that core competencies be integrated into credentialing using profession-specific CME in a workplace setting. In addition, MLTs should be involved in designing the programmes as well. Further studies in a multicentre institution are needed to analyse the difference in perception among those who have attended CME and those who have not.

**Keywords:** Attitude, continuous medical education, medical laboratory professionals, perception

## INTRODUCTION

Continuing medical education (CME) can facilitate lifelong learning by focusing on maintaining and developing knowledge, skills and relationships to ensure competent practice. Internationally, the discussion on the role of CME in healthcare systems has shifted from simple attendance or a time-based metric (credits) to a measurement that infers competence in performance and patient outcome.<sup>[1-3]</sup>

For the entire medical laboratory community and for all healthcare practitioners, continuing education leads to better achievement of goals; while for a medical laboratory technologist (MLT), the purpose of CME activities is to learn and enhance their knowledge about new equipments and to keep themselves up-to-date with current practices and recent advancements.<sup>[3-6]</sup> To respond to the international problem of

limited international study opportunities for biomedical science practitioners<sup>[7]</sup> and the growing demands of MLT for better laboratorial service, there is always a need to improve CME activities every now and then. Studies have shown that MLTs who undertake CME activities have improved productivity in their areas of specialisation, enhanced professional flexibility and high work fulfilment. Moreover, the duration that such individuals spend on CME programmes predicates the level of professional competencies that they acquire.<sup>[4,8]</sup>

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In the past, health practitioners essentially continued their learning by meeting with their peers. Nowadays, most healthcare providers are required to undergo a certain amount of continuing education in a constant manner to maintain licensure, improve their practice, update their knowledge and to ensure patient safety.<sup>[2,6,9,10]</sup> A wide-range search for previous relevant studies showed that there have been substantial researches of various aspects of CME offered to various healthcare personnel.<sup>[5,11]</sup>

In developed countries, involvement in continuous professional development (CPD) programmes is a prerequisite for salary and career advancement.<sup>[3,11-16]</sup> Health professional boards in developing countries have established and enforced CPD requirements for relicensing. Medical laboratory scientists and technicians must accumulate points as part of their career-long learning and for retaining their professional registration.<sup>[3,6,13]</sup>

In developing countries, accessing CPD is a major challenge for MLTs due to their limited availability.<sup>[3,13]</sup> However, the issue of accessing CPD and in particular CME, is not that significant in Saudi Arabia as the Saudi Commission for Health Specialties (SCFHS) is the accrediting body for CME and in 2014, more than 7,784 CME programmes were provided in different regions of Saudi Arabia, with a total of 70,059 CME hours.<sup>[14]</sup> This does not include CME provided by the private sector, which if added would result in a huge number of programmes.<sup>[9,14]</sup> However, Alkhazim and Althubaiti in their study about CME in Saudi Arabia showed that a large number of differences in the attendees' view were likely to be affected by demographic factors and reported that such programmes should promote participation of individuals with different qualifications rather than focusing on one profession or one level of qualification.<sup>[15]</sup> To study the factors that affect attendance of MLTs in such programmes we aimed to conduct this study so that their perception and attitude towards CMEs could be explored. The study findings should help the decision makers in establishing CME programmes that fills the gaps in learning needs of the healthcare personnel. This study was considered to be the first study done in Saudi Arabia to explore the perception of medical laboratory professionals towards CME activities.

## METHODS

A self-administered questionnaire was given to medical laboratory scientists and technicians in Riyadh Security Forces Hospital (SFH). Totally, 120 questionnaires were distributed and of total 103 were returned. Thus, we included 103 Saudi and non-Saudi, male and female medical laboratory professional staff who work in different disciplines.

The questionnaire of this study was designed by the main author and reviewed by academic and profession experts. The questionnaire has five main sections; MLTs profile, level of attending SCFHS-CME programmes, their attitudes towards CME programmes (20 items), their preferences towards modes of CME credits delivery (7 items) and the enabling/disabling

factors for attending CME programmes (10 items). Participants were asked to respond using the following 5 Likert scale; strongly disagree, disagree, neutral, agree and strongly agree, that best described their opinions to each statement.

The internal consistency of the study tool was tested using correlation coefficient between the degree of each item in the questionnaire and the total score of all items in each group. Correlations were found to be significant at value 0.01 and 0.05. Moreover, a pilot study was conducted to confirm the reliability of the questionnaire. Data were collected from 15 working medical laboratory professionals. Value of 0.80 and 0.78 calculated through Cronbach's alpha coefficient was obtained for perception towards CME programmes and encouragement factors for medical laboratory professionals to attend CME scale, respectively.

IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp. was used for data analyses. Inferential statistical tests were used to assess the differences in education and attending of CME activities towards study scales. Moreover, simple and complex tables were created with frequencies, percentages, mean and standard deviation (SD). *T*-test and ANOVA were used to assess the mean difference.

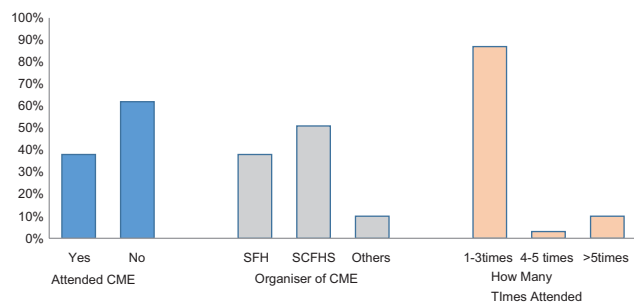
## RESULTS

Of 120 questionnaires distributed, 103 were completed and returned giving an overall response rate of 89%. The examined profile of MLTs showed that the male gender was dominating over the female gender (61.2% vs. 38.8%); they were mostly young staff (age ranged from 25 to 34 years). The representation of their subspecialty showed that blood bank laboratory personnel were (27%), chemistry MLTs (16%), microbiology MLTs (14%), haematology (13%), serology MLTs (13%), pathology MLTs (12%) and toxicology MLTs (7%). Their educational level showed that 71% of the participants held BSc degrees and only 14% had postgraduate degrees. The work experience for about 35% of MLTs ranged from 1 to 5 years and majority had more than 10 years of experience [Table 1].

Surprisingly, the study found that 62% had never attended any CME programmes in the past year. Among those who had not attended CME, 56.7% were males and 43.3% were females while those who had attended CME, 69.4% were males and rest were females. For those who had attended CME and those who had not, no significant difference was found among gender, different age groups, field of specialty, educational categories and working experience with  $P = 0.206, 0.436, 0.795, 0.384$  and  $0.225$ , respectively [Table 1]. Moreover, those who had attended any CME activities, were those most likely organised by the SCFHS, and 87% of them had attended the CME activities 1-3 times [Figure 1]. When inquired about the relevancy of these educational activities to their field, 26.2% reported that such activities were relevant, 11.7% found them as irrelevant while 62.1% did not respond to the question.

The best preferred delivery modes for CME programme was the short course and workshops (23%), followed by higher

educational courses (20%), case discussions (18%) and the scientific conferences (17%) [Table 2].



**Figure 1:** Bar graph showing percentages of continuing medical education attendees and organisers.

Table 3 provides mean and SD for the assessment of CME from the participants' perspective of the study. The overall mean score was 3.88 indicating that the participants had an affirmative perception for CME programmes. On included 20 items, participants agreed with all the included items with the exception of three items. The three items were 'I attend CME activities only to get excuse from work', 'In the department, there is an equal opportunity for all staff to enrol in the CMEs' and 'Department's Head encourage their staff for the attendance in CME activities' having mean scores as 2.51 (SD: 1.5), 2.12 (SD: 1.3) and 1.9 (SD: 1.1), respectively [Table 3]. Moreover, no statistical mean differences related to CME perception was

**Table 1: Demographics details of study participants (n = 103)**

Demographics	n = 103, n (%)	Attended CME (n = 35) (%)	P for $\chi^2$
Gender			
Male	63 (61.2)	25 (69.4)	0.206
Female	40 (38.8)	11 (30.6)	
Age groups			0.436
22<25	6 (5.8)	4 (11.4)	
25<35	49 (47.6)	15 (42.9)	
35<45	38 (36.9)	13 (37.1)	
45<55	8 (7.8)	3 (8.6)	
>55	2 (1.9)	0	
Field of specialty			0.795
Haematology	13 (14.1)	6 (19.4)	
Pathology	11 (12.0)	3 (9.7)	
Blood bank	22 (23.9)	6 (19.4)	
Chemistry	16 (17.4)	5 (16.1)	
Others (serology, toxicology and microbiology)	30 (32.6)	11 (35.5)	
<b>Demographics</b>	<b>Frequency (%)</b>	<b>Attended CME (n=35) (%)</b>	<b>P for <math>\chi^2</math></b>
Degree			0.384
Diploma	16 (16)	3 (9.1)	
Bachelor	73 (71)	25 (75.8)	
Master/PHD	14 (14)	5 (15.2)	
Work experience (years)			0.225
1-5	36 (35)	12 (33.3)	
6-10	28 (27)	14 (38.9)	
10-20	32 (31)	8 (22.2)	
>20	7 (7)	2 (5.6)	

CME: Continuing medical education

**Table 2: Opinion of the study participants on different types of continuing medical education programs (n = 103)**

Type of CME	Rank 1 (%)	Rank 2 (%)	Rank 3 (%)	Rank 4 (%)
Short courses and workshops	23	14	2	7
Journal-based CME activities	6	12	30	23
Manuscript review activities	5	13	26	32
Case discussions	18	16	8	4
Scientific conferences	17	16	10	4
Higher educational courses	20	14	8	9
Online courses from home or at work	11	14	15	23

CME: Continuing medical education

**Table 3: Assessment of continuing medical education activities from perspective of clinical laboratory professionals (n = 103)**

Statements	Mean	SD
CME activities help medical laboratory professionals to meet their educational professional needs	4.44	0.50
CME activities help to stay current with advances in medicine	4.38	0.66
CME activities aim to build a patient-centred team care	4.16	0.61
CME activities aim to improve patient safety	4.30	0.58
CME activities were requirement hours for professional accreditation	4.26	0.76
CME activities aim to ensure effective participation in global dialogue of the medical profession	4.29	0.73
CME activities are a requirement of licensure registration	4.07	0.71
I attend CME activities only to get excuses from the work	2.51	1.50
CME activities help me gain more technical skills in my job	4.35	0.64
CME is a good opportunity to enhance my work competence	4.36	0.69
CME activities help me prevent diagnostic errors	4.13	0.78
CME activities make me qualified to perform routine tests as well as more complex procedures	3.92	0.95
Attending CME activities provide opportunity to assume higher responsibilities	4.07	0.84
Medical laboratory professionals depended mainly on the CMEs to improve their knowledge and practice	3.30	1.22
In the department, there is an equal opportunity for all staff to enrol in the CMEs	2.12	1.34
Department head encourages staff to attend CME activities	1.90	1.14
The educational programmes must be designed based on identified needs of medical laboratory professional	4.49	0.76
Attending CME will increase my professional confidence	4.48	0.76
Attending CME will decrease my errors at work	4.20	0.96
Attending CME will shorten the time needed to accomplish work tasks	3.82	1.2
Overall mean		3.88

CMEs: Continuing medical educations, SD: Standard deviation

found among gender, educational levels, specialty, age and work experience among medical laboratory professionals with  $P = 0.243, 0.177, 0.488, 0.074$  and  $0.100$ , respectively.

All participants agreed or strongly agreed that the listed factors can influence participation in CME programmes. Factors that got highest mean were 'Awareness of the needs of medical laboratory professionals can help in the planning of a more effective continuing education programme', 'Awareness of the needs of medical laboratory professionals can help in implementation of a more effective continuing education programme', 'Before attending the CME activity, I should be certain that it is certified by the Saudi Commission for Health Specialties (SCFHS)', 'Attending certain CME hours can be compensated by attending international conferences', 'Attending several CME hours can be compensated by recognition letters' and 'Attending CME should be rewarded by extra days off' with mean value 4.5 (SD: 0.5), 4.35 (SD: 0.64), 4.26 (SD: 0.7), 4.24 (SD: 0.8), 4.16 (SD: 0.7) and 4.12 (SD: 0.9), respectively [Table 4].

## DISCUSSION

Healthcare is one of the most demanding fields in terms of human resources, skills and knowledge, equipment and medical research. To respond to the high skills and knowledge requirements of the profession, continuous medical education is essential for healthcare practitioners' accreditation. With the increasing demand for new medical breakthrough worldwide, apparently, there is also an increase in the demand of laboratory

technology in the current era.<sup>[5,6,17,18]</sup> This study aimed to examine the perception and attitudes of laboratory medical professionals for CME programmes. In this study, majority of those who participated in CME were males, of the age group 25-35, 35.5% were in the field of serology, toxicology and microbiology, around two-thirds had bachelor degree and more than one-third had experience of 6-10 years. Previously, a study conducted in Saudi Arabia among healthcare practitioners who attended CME reported that the majority were females, of age 20-30 years, nurses with experience <6 years who had undergraduate studies.<sup>[15]</sup> These findings were in contrast with the findings of our study.

Our study findings highlighted that the attitude of MLTs towards CME was good. Medical laboratory professionals had affirmative perception about CME programmes in terms of helping them to be up-to-date with the changes in their professional fields, enhance their work competence and patient safety. However, their behaviour in terms of attending CME programmes was very poor, only 38% attended CME activities during the past year. This conflict could be referred to some organisational and interpersonal barriers. The study showed that MLTs felt that not every individual gets equal opportunity to participate in such programmes, and that department heads usually do not encourage such participation. Using more modern technology-based forms of CME such as e-learning programmes might help overcome such organisational or location barriers.<sup>[19,20]</sup> Notably, they felt that the most important factor which could influence their participation in CME programmes was involving them in the designing and implementation of

**Table 4: Factors encouraging the participation in continuing medical education reported by study participants (n=103)**

Statements	Mean	SD
Enduring materials must include an assessment of the learner's performance	3.87	0.71
Credit may only be awarded to participants who meet a minimum performance level	3.81	0.79
Attending CME should be rewarded by extra off days	4.12	0.92
Attending several CME hours can be appreciated by promotion	3.98	0.98
Attending several CME hours can be compensated by recognition letters	4.16	0.79
Attending certain CME hours can be compensated by attending international conferences	4.24	0.87
Attending certain CME hours can be appreciated by receiving a financial incentive	3.98	0.94
Awareness of the needs of medical laboratory professionals can help in the planning of a more effective continuing education programme	4.50	0.56
Awareness of the needs of medical laboratory professionals can help in implementation of a more effective continuing education programme	4.35	0.64
Before attending the CME activity, I should be certain that it is certified by SCFHS	4.26	0.77
Overall mean		4.13

CME: Continuing medical education, SCFHS: Saudi Commission for Health Specialties, SD: Standard deviation

these programmes, which should be based on their actual need assessment. This finding may indicate that the content of the current CME activities did not meet their practical needs. This result was consistent with previous studies which highlighted the necessity of conducting educational need assessment before designing CME activities.<sup>[3,10,16,21,22]</sup> A similar local study conducted on primary healthcare physicians in Aseer region in Saudi Arabia, reported the same reason for not attending CME activities and addressed the need for involving different healthcare professionals in the designing and implementation of their CME programmes based on their disciplines.<sup>[16]</sup>

The annual CME requirements of medical laboratory professionals ensure that their knowledge and skills are relevant to the present day needs of the patients and to the medical technological tools.<sup>[8]</sup> However, in our study, only 38% of the participants had attended any CME programme in the past which may also be related to their perception that the current CMEs were not designed based on real assessment of their educational needs. Moreover, only one-third found these educational activities relevant. Engagement of the MLTs in identifying and designing their CMEs will build the sense of ownership and encourage them to have effective access of the CPD. The American Board of Medical Specialties recommends integrating core competencies into the accreditation and credentialing processes across all healthcare professions to create an outcome-based education system that prepares clinicians to meet their patients' needs and to meet the requirements of a changing healthcare system.<sup>[11]</sup> CME practice in Saudi Arabia is reported to be often not linked to practical competencies.<sup>[15]</sup> Thus, there is a need to move from general CME to more continuous, competency-linked professional development for each profession.

Several international reports conclude that medical laboratory professionals reported a perception that CME is useful in helping them keep up-to-date with the changes in their professional fields.<sup>[3,5-7,19]</sup> The changes are brought about by the improvement of medical information, and the emergence of novel technologies and tests. Likewise, laboratory technicians in our study also reported such useful impact

of CME programmes; however, this perception was not enough to encourage them to attend CME activities. The medical education leaders in Saudi Arabia have to address the concerns of different medical specialities for improving care, lifelong learning and professional development. Providing profession-specific CME in a workplace setting requires aligning interprofessional competencies with CME initiatives to facilitate patient-centric care and thereby promote optimum care.<sup>[1,7,10,15,16]</sup>

Furthermore, our study showed that among the encouraging factors for attending CME, the important factor that was highlighted by the MLTs was that CMEs should be recognised by SCFHS, and this finding could be because of the reason that CMEs are set to be a prerequisite for Saudi health professional promotion. To claim attendance for a CME course, the attendee must provide only their attendance certificate without any requirement for a proof that the course content pertains to their discipline, however, this driving force was insufficient to promote their participation into CME activities. This finding was supported by a similar local study done by Alkhazim and Althubaiti, which showed that it was not believed among healthcare professionals that the main driving force for attending CME is the accreditation or licensing system in Saudi Arabia.<sup>[15]</sup> Nonetheless, imposing regulation on the content of CME in terms of knowledge and skills that should be generally recognised and accepted by the relevant professional board and provided by accredited academic and healthcare providers.<sup>[7,19]</sup> Furthermore, setting some financial and nonfinancial incentives such as recognition letters, training abroad and extra days off were among the influential factors for their attendances.<sup>[15,16]</sup>

Moreover, our study found that workshops and short courses, higher educational courses and case discussion were the best types of CME programmes for the medical laboratory professionals. In contrast, the physicians and nurses in the Alkhazim and Althubaiti study seem to prefer journal-based CME activities.<sup>[15]</sup> However, our study's findings were consistent with the findings of several international studies that workshops, problem-based learning, teacher training and continuing education can influence the knowledge and skills of

healthcare professionals.<sup>[20,23-25]</sup> Likewise, in our study, medical laboratory professionals also reported that the best methods for improving their current practices are workshops and short courses and case discussions.

International evidences emphasised that interactive CME sessions such as meetings, conferences, courses, rounds, meetings, symposia that enhance learner 'participation through providing opportunities for practicing certain skills can create positive changes in professional practice and eventual healthcare outcomes.<sup>[10,19,24-26]</sup>

In our study, we could not find any difference among gender, age group, educational level, subspecialty and work experience with regard to those who attended CME and those who did not. Moreover, mean perception towards CME was not significantly different among these categories. Our results, are in contrast with the findings of the study conducted by Alkhozaimi and Althubaiti who reported significant difference among gender, age group and specialty.<sup>[15]</sup> This contrast might be linked to the fact that their study involves physicians, nurses and other healthcare providers while in our study we focused only on MLTs.

The results of the study were limited to the perceptions of medical laboratory professionals who do not necessarily have experience with evidence-based CME, but their responses were assumed to be professional and objective. Another limitation of the study was that the instrument provides a rated CME estimation based on perceived importance and relevance of the medical laboratory professionals without further elaboration or explanation of the rates. However, this is unavoidable with research methodologies such as interview, or focus group discussion, which were hard to conduct because of the demanding schedule of medical laboratory professionals, which would have resulted in very few participants. Nevertheless, since the aim was to gather the opinion of the medical laboratory professionals, a survey method was found to be adequate.

## CONCLUSION

CME is very important for medical laboratory professionals to improve their knowledge and professional skills. It is a tool to keep laboratory professionals updated on new developments in the medical field. The number of CME activities should be increased per year taking into consideration the content and quality of these activities. CME should be based on needs, enabling the laboratory professional to acclimatise to the changing trends in healthcare. CME in a workplace setting requires aligning interprofessional competencies with CME initiatives to facilitate patient-centric care and thereby promoting optimum care.

Although limited, this effort will help to assess the needs and combined contributions of the various aspects of CME that should be provided to medical laboratory professionals in SFH. The results should be of value in developing activities

with objective criteria that target their needs. Accordingly, CME can fulfil many of the objectives of medical laboratory professionals' recertification and revalidation. This study demonstrated that participants perceived the importance and need of CME programme positively. Thus, there is a significant need to establish CME programmes for the medical laboratory professionals at SFH, to keep with the trends of lifelong learning, which will lead to continuing practice improvement and implementation with excellent patient care.

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## Conflicts of interest

There are no conflicts of interest.

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