

Shaping the Evolution of CME towards better Outcomes: Proceedings of the 2018 ISSECAM Colloquium

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Abstract

Continuing medical education (CME) as part of life-long learning in medicine should focus on patient outcomes and appropriate care by increasing knowledge, competence and/or performance of clinicians. In this article, we present the views of the different stakeholders on the future of CME, presented at the ISSECAM colloquium held in December 2018. Within the framework of the colloquium, a survey was done asking health care professionals about their learning practices. We present an integrated summary of the attendees' views and survey results. Key elements for effective learning in CME and how they can be implemented have been identified. Increased interactivity and focus on real-life practice seem to have the highest likelihood to induce behavioural changes. In addition, online CME activities will steadily gain more weight in the learning curriculum of medical practitioners. CME providers should take these elements (interactivity, real-life practice, online) into consideration when designing their different activities.

Background

While participating in life-long learning is optional for most professionals, this does not hold true for medical professionals. From the day they start their medical education, until the day they lay down their stethoscope, physicians have the duty, as stated in the Oath of Hippocrates and most international regulatory guidelines, to provide the best care to their patients according to their ability and judgement. Hence, medical education is as old as the Acropolis.

More than 2,000 years have passed since Hippocrates' days, and the amount of medical information has grown incrementally during the centuries. Medical doctors throughout time were able to learn, investigate, and acquire new skills to guarantee high quality and appropriate care for the patient. A century ago physicians needed to subspecialize in order to remain up-to-date in a specific field, but during the last decades the field of medical research has produced an exponential amount of information that has become too challenging for the individual physician to command and process. It is critical to channel the explosion of information in the right direction and protect the physicians against biases. Organisations such as the Accreditation Council for Continuing Medical Education (ACCME) in the US and the European Accreditation Council for Continuing Medical Education (EACCME) in Europe provide accreditation of high quality, unbiased continuing medical education (CME) and continuing professional development (CPD). The goal of CME/CPD is to improve all aspects of a medical practitioner's performance in his/her work (1). Indeed, it is more than just knowledge; CME/CPD should focus on inducing behavioural changes in the physician's practice, leading to improved patient outcomes and reducing inappropriate care. The question is: how can this be best achieved?

Methods

In December 2018, ISSECAM (International Society for the Study and Exchange of evidence from Clinical research And Medical experience), an independent CME provider, organised a colloquium in Antwerp

(Belgium), bringing together different stakeholders such as physicians, medical managers, CME providers, and representatives from pharmaceutical industry to discuss how CME can and should be organised to achieve maximal change in the physician's practice, leading to improved patient outcomes. An internet-based survey was performed in the context of the symposium to investigate how health care professionals currently learn and how they think this will change in the future. In this report, we will integrate the views of the speakers with the results from the survey. The survey was sent out to 6,896 health care professionals who were registered at the Mirrors of Medicine Platform, a CME platform with focus on prostate cancer and lower urinary tract dysfunction.

Results

Survey results

Out of the 86 medical doctors from 33 countries filling in the questionnaire, 53.5% were urologists and 74% were male. Other specialities indicated by more than one physician were general practitioners (14.0%), radiotherapists (9.3%), oncologists (4.7%) and neurologists (4.7%). A majority (55%) reported more than 15 years of clinical and academic experience. Given the small sample size, low response rate and the bias towards male urologists, the results from the survey should be interpreted with care. The data provide a glimpse of how medical doctors (or more specifically those involved in urological care) currently learn and how they think this might change in the future, rather than a complete picture that can be generalized to the medical profession.

How can CME contribute to appropriate care?

While it is estimated that global health care expenditures will increase to \$8.7 trillion by 2020 (2) a significant share of this budget is at best ineffective, and at worst, wasteful (3). Inappropriate care has many faces. Examples are overuse of medical services, where the potential for harm exceeds the potential for benefit (4), underuse of medical services (the failure to deliver a health intervention that would have been beneficial) (5) or incorrect use of medical services, when a patient is not treated according to the evidence-based clinical guidelines or according to latest scientific insights (2). Inappropriate care does not only affect the patient physically, psychologically and/or financially, but also negatively impacts the health care system, the viability of which is threatened by increasing costs and diverting resources (4). Indeed, it is estimated that around 10% of the patients are negatively affected during treatment by preventable errors, which costs the hospital 10% of its expenditures to correct this harm (3).

What can we do to improve the quality of care? To answer this question, we need to look at the drivers and stakeholders involved in the provision of medical care. Saini et al. (6) identified 3 major drivers: money and finance; knowledge, bias and uncertainty; and power and human relationships.

In theory, CME addresses the problem of inappropriate care primarily by improving knowledge while it has a limited effect on the other drivers. CME alone cannot solve the problem of poor medical practice,

and it should be part of a broader, multidimensional approach with concerted efforts not only from health care professionals, but also policy makers and patients (6). On the other hand, focusing on knowledge as a driver does not automatically imply that CME cannot address issues related to money and finance. When financial self-interest becomes more important than the patients' interest, this can result in overuse of medical services, potentially harming patients' health outcome and draining the health care resources.

Hence, it is clear that CME can and should play an important role in the efforts to reduce (the cost of) inappropriate care by increasing the physicians' knowledge and reducing his bias and uncertainty. In that perspective, it is rather surprising that most governments do not provide a budget for CME initiatives. This gap in financing of CME activities is very often filled by funds or grants from the pharmaceutical industry, which is critically debated as it might lead to biased education and information. Although we should keep a wary eye on industry sponsoring CME events, at the same time, we should not overestimate the bias that industry sponsorship may induce. Cervero and Gaines (7) have investigated the relationship between commercial support and bias in CME activities, and "did not identify any data-based articles to support or refute the assertion that commercial support produces bias in accredited CME". Perhaps this is because the pharmaceutical industry has come to realize the importance of high quality and balanced content and has outlined quality principles that are closely aligned with criteria required by EACCME (8). In the U.S. all accredited CME providers in the ACCME system are responsible for complying with the Standard for Commercial Support (9).

Do today's CME programs serve their goal?

CME aims at bridging the gaps in medical knowledge and skills, and by doing so, seek to reduce the influence of unsupported beliefs, assumptions and biases on the clinician's decision making. However, it does not end there since the goal remains to improve patient outcomes.

CME covers a broad range of different activities. Not all are equally effective in inducing practice changes. On the other hand, physicians tend to prefer certain types of CME. How do efficiency and preference match? Figure 1 shows the results from the survey where medical doctors were asked to value different CME activities. The highest value score (extremely valuable) corresponds to a score of 100, the lowest (not valuable) to 0. The numbers shown in Figure 1 are averages of the value scores. The highest values were assigned to reading international guidelines, reading online scientific journals and attending international conferences. Unfortunately, conferences are considered to be one of the least effective CME activities when it comes to improving physician's performance (10, 11). Clinical practice guidelines are moderately effective, while scientific literature is only of very limited to no effective (12). Hence, there appears to be a gap between the activities that doctors engage in, and the effectiveness of these activities in inducing practice changes.

Despite this gap between CME preference and effectiveness, a review of the literature shows a positive impact of CME on improving physician performance and patient health outcomes (13). Furthermore,

based on 39 systematic reviews five major characteristics were identified as necessary for effective CME (14):

- interactive methods: interactivity was shown to improve physician performance and patient health outcomes
- using a variation of learning methods
- multiple exposures to the same content: clinical outcomes appeared to improve when the learner was exposed multiple times to the same content rather than a single time
- longer exposure to the content
- focus on outcomes that are considered important by physicians

Hence, we recommend that CME organizers include these 5 key elements in the design of their educational events. In the following sections, we will describe how this can be achieved.

1. Interactivity

Interactivity is perhaps the most important factor for effective CME in terms of performance and patient health outcomes. Interactive techniques such as case discussions, role-play or hands-on practice sessions appear to positively impact these parameters (10). Simulation methods, such as computer simulations, virtual reality and the use of manikins for learning physical diagnoses also appear to be effective, especially with regard to psychomotor skills (15). Physicians learn best by doing (16), hence CME providers should provide opportunities to practice and receive feedback. An example of an interactive platform, specifically targeting urologists, is the BJUI Knowledge platform (<https://www.bjuiknowledge.org/>) with over 300 accredited e-learning modules with peer reviewed content.

2. Identify the learner needs

Effective CME focuses on the learner and their needs. Organizers of CME activities should ask themselves:

- who is my learner?
- What does he/she already know?
- What is his/her professional situation?

In other words: a needs assessment should be performed before the event takes place. A needs assessment allows the physician to reflect on his own practice and to identify his own developmental needs (17). Based on this gap analysis, physicians are encouraged to take ownership of their own professional development and participate in appropriate CME activities that meets their needs (17). However, a needs assessment should go beyond the physician's perception of his learning needs for two

reasons: i) health care professionals rarely step out of their comfort zone of interests, mainly looking for learning activities that relate to their interests; ii) research has shown that the correlation between self-evaluation of physicians and their performance on objective knowledge tests was low. Therefore, CME organising institutions should try to identify objective learning needs via audits, reviewing health outcomes on practice levels and patient satisfaction surveys etc. (11). They could use the conceptual model or framework, described by Moore et al. (18) for planning and assessing learning activities.

The importance of defining objective learning needs was also shown in the survey, where almost 1 in 4 of the survey respondents with <15 years' experience expressed doubts about their educational needs (Figure 2). Perhaps younger clinicians do not experience such a need, as they can more easily fall back on the knowledge obtained through medical school? However, despite not being able to identify their educational needs, respondents were aware of the fact that education is needed. Over half of the respondents agreed with the statement "I probably spend less time on CME activities than I should". Rather surprisingly, 45% of the experienced physicians also indicated that their CME participation should increase.

3. Focus on real clinical problems

CME should be focused on real clinical problems (16). This is tightly linked to Knowles' five principles in the theory of learning for adults (19), in particular the principle of practicality: adults learn best when the information is immediately applicable to their own practice. This can be done by presenting knowledge in a real, problem-centred context, that closely resembles the setting in which the knowledge and skills will be used. An example is the use of case presentations. The effectiveness of case-based learning was shown in a study performed by Kiessling and colleagues (20) where case-based training in a primary care setting decreased mortality at ten years in patients with coronary heart disease. Case-based learning is also the basis of several online learning platforms, such as the accredited Mirrors of Medicine's PinPoint Case platform. The efficacy of this platform was shown by Michels et al. (21). Participants initially gave a correct answer in 36% of the cases, which almost doubled to 67% after reviewing the recommendations and related evidence. Users of the platform were very enthusiastic about the format, particularly because of its conciseness, comparison with peers and experts, and the summary of up-to-date evidence from clinical studies (22).

In fact, when we asked the survey participants which aspects of CME are most important to them, the direct applicability to their own patients and their clinical practice was listed number 1 (Figure 3). Time efficiency also received a very high score. Cook et al. (23) drew very similar conclusions in his U.S.-wide survey: "practicing physicians generally seem receptive to using a variety of educational technologies. They seem especially attracted to short, high-relevance, patient-focused activities...". Twenty-minute micro-seminars on "hot topics", e-mails with a "clinical question of the week" or a mobile app with case-based questions and feedback were scored very high in the physicians <45 years of age (23).

Can CME narrow the gap between research and practice?

In 2010, the doubling time of clinical knowledge was estimated to be around 3.5 years and will most likely decrease further to 73 days in 2020 (24). This high pace makes it practically impossible for clinicians to keep track of all new developments and apply these developments in their clinical practice. Systematic reviews and evidence-based clinical practice guidelines (CPGs) were introduced to standardize clinical care and help physicians to keep up to date with the latest medical advances. The idea was that if clinicians would adhere to CPGs, clinical outcomes would improve. The reality however is that non-compliance is as high as 70% and occurs across most disciplines and countries (25). And while there might be good reasons to deviate from CPGs, for instance because the patient's unique situation, the high level of non-compliance indicates that other factors are at play, such as a lack of awareness of the existence of a CPG, or a lack of familiarity with the content of the CPG (26). Importantly, physicians' knowledge of guidelines does not in itself lead to better guideline implementation (27). Further studies are needed to address how to improve guidelines adoptions. In this session, the discussions focused on how CME can improve uptake and implementation of guideline information. Not surprisingly, the same key elements of effective CME listed above, such as interactive CME activities (28) and patient-based educational interventions (29) were reported to be positively associated with better guideline implementation.

In conclusion, CME can and should facilitate the conversion of research into best practice. To be successful, the activities should be tailored to address the needs assessed by objective means (audits, review of quality indicators of health care), interactive and able to cope with the rapidly changing landscape of trial results.

The future of CME

So far, we have discussed the key elements of effective CME, which may be defined as "inducing a practice change leading to improved patient outcomes". These key elements should not remain hollow phrases. CME providers should aim to integrate interactivity and patient-based approaches into their programs. But what do the providers think? We asked the survey respondents how much time they currently spend on CME, and to indicate how they think the time spent on CME activities will change in the future. The results are shown in Figure 4 and Figure 5. Currently the survey respondents spend quite some time on reading literature (80% spend at least two hours reading articles and/or guidelines and 40% at least four hours per week). Conferences are still widely attended, with almost 50% of the respondents attending between four to seven conferences a year. For online CME, there is still room for growth, as around 40% indicated they spend one to three hours per week on online activities, and one in eight respondents never participate in online CME activities.

When asked about their anticipated future CME participation, the majority of the participants believe that they will spend more time on online CME. This will happen on top of reading the literature but slightly at the expense of live events. We can draw several conclusions from this observation. First, the results indicate that online CME is currently seen as an additional type of education, which is adding to the learning curriculum next to the more classical forms. Online CME will not replace these classical forms, it will be complementary to it. Second, it also implies that medical doctors think that in the future they will spend (even) more time on CME, as increased participation in online activities is not compensated by a decrease in other activities. Third, medical doctors tend to stick to what they know. Despite the many new formats of learning, literature and live events will remain an important source of information for most of them. Certainly, for live events, the social factor (meeting colleagues in the same area of interest) should not be underestimated. This indicates that it is going to be challenging to actively engage health care professionals to participate in CME activities that readily impact practice change. Habits die hard; active engagement requires time and energy, which are often very low at the end of a workday. Hence, CME providers should come up with creative formats that takes into account this barrier to engage in interactive education events. Mixed formats, such as conferences with an active component (for instance, discussing real patient cases) should be encouraged and become the standard format for these types of events.

Discussion

How will the future of CME look? We do not have a crystal ball, but in this case, we can rely on a substantial amount of information from the literature and surveys to make a guestimate. First, CME events should be designed to aim principally at inducing a behavioural change leading to improved patient care. A key element to achieve this is interactivity. Interactivity has many faces and can range from actively participating in discussions of real-life patient cases, to simulation-based activities or online solving case-based problems. Interactivity can also be integrated in the more classical lectures given at conferences and meetings, where the audience is asked to participate in small quizzes via apps on their mobile phone or tablet. This is particularly important in the light of congresses being ineffective at inducing practice changes, but still being widely attended and valued, as we've learned from the ISSECAM survey. The survey did not question the motivation behind this high preference for conferences, but no one doubts that conferences combine many interesting factors into a single event of a couple of days: focused on a specific topic(s) (although generally still quite broad), the latest information and updates presented in a condensed way, and the chance to meet and interact with colleagues, experts and key opinion leaders.

Second, despite the love for time-consuming conferences, time-efficiency is an important factor to keep in mind. Physicians are very busy people, who also want to enjoy some time with their family and friends. Certainly, for younger physicians, the work/life balance can be challenging. As we have learned from the ISSECAM-survey, these time-efficient activities can be a valuable addition to the more classical CME activities. Furthermore, short mobile educational programs have the advantage of flexibility, because they can be accessed wherever and whenever it suits the physician: between operations or clinics, in the

elevator, or while commuting home. Thanks to this flexibility, these types of learning do not add to the daily professional burden, but rather allow for a more efficient use of the (limited) time available.

Finally, the future of CME is digital. Even though physicians indicated that they currently spend most of their educational time reading scientific content and attending meetings, they also foresaw that their participation in online CME will increase in the future. A similar result was observed in the U.S.-survey of Cook (23). In the first instance, this increase will not happen at the expense of other (classical) CME activities, but one can wonder how long this will be the case. Why would you spend many hours of your precious time on reading guidelines and journals, when you can listen to key opinion leaders explaining the latest advances in your specialty in a podcast during your weekly run? And why fly across the world to attend an international meeting, when you can just put on your virtual reality glasses and virtually attend and interact with other attendees?

Conclusions

The development of innovative technologies and their use in education opens doors to the development of effective, creative and interactive CME. When designing such activities, the focus should lie on inducing a behavioural change in the clinical practice to improve the patients' health outcomes and reduce the cost of inappropriate care.

Abbreviations

ACCME: Accreditation Council for Continuing Medical Education

EACCME: European Accreditation Council for Continuing Medical Education

CME: continuing medical education

CPD: continuing professional development

CPG: clinical practice guidelines

ISSECAM: International Society for the Study and Exchange of evidence from Clinical research And Medical experience

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

MCM received grants/research support from Velicept, honoraria or consultation fees from Apogepha, Astellas, Boehringer Ingelheim, Ferring, Sanofi and Velicept, participated in a speaker's bureau sponsored by Apogepha and Ferring and holds Velicept stocks. JT performs contract research for Chiesi Pharmaceuticals. BT received grants/research supports or honoraria from Amgen, Astellas, Janssens, Ferring, Sanofi, Bayer Medivation. VP declared no conflicts of interest. PL declared no conflicts of interest. RMC declared no conflicts of interest. BS declared no conflicts of interest. IG declared no conflicts of interest. NRM declared no conflicts of interest. EH-T holds Johnson & Johnson stocks. JLP received grants/research support from Biogen Idec, MedDay and Novartis; and received honoraria or consultation fees from Biogen Idec, Merck, Roche, Sanofi Genzyme and Novartis. MJS received honoraria from Astellas for lectures/chairmanship.

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Authors' contributions

MCM, BT, MJS and JT have made substantial contributions to the conception of the work. All authors have revised the manuscript, approved the submitted version and have agreed both to be personally accountable for the author's own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved, and the resolution documented in the literature.

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Figures

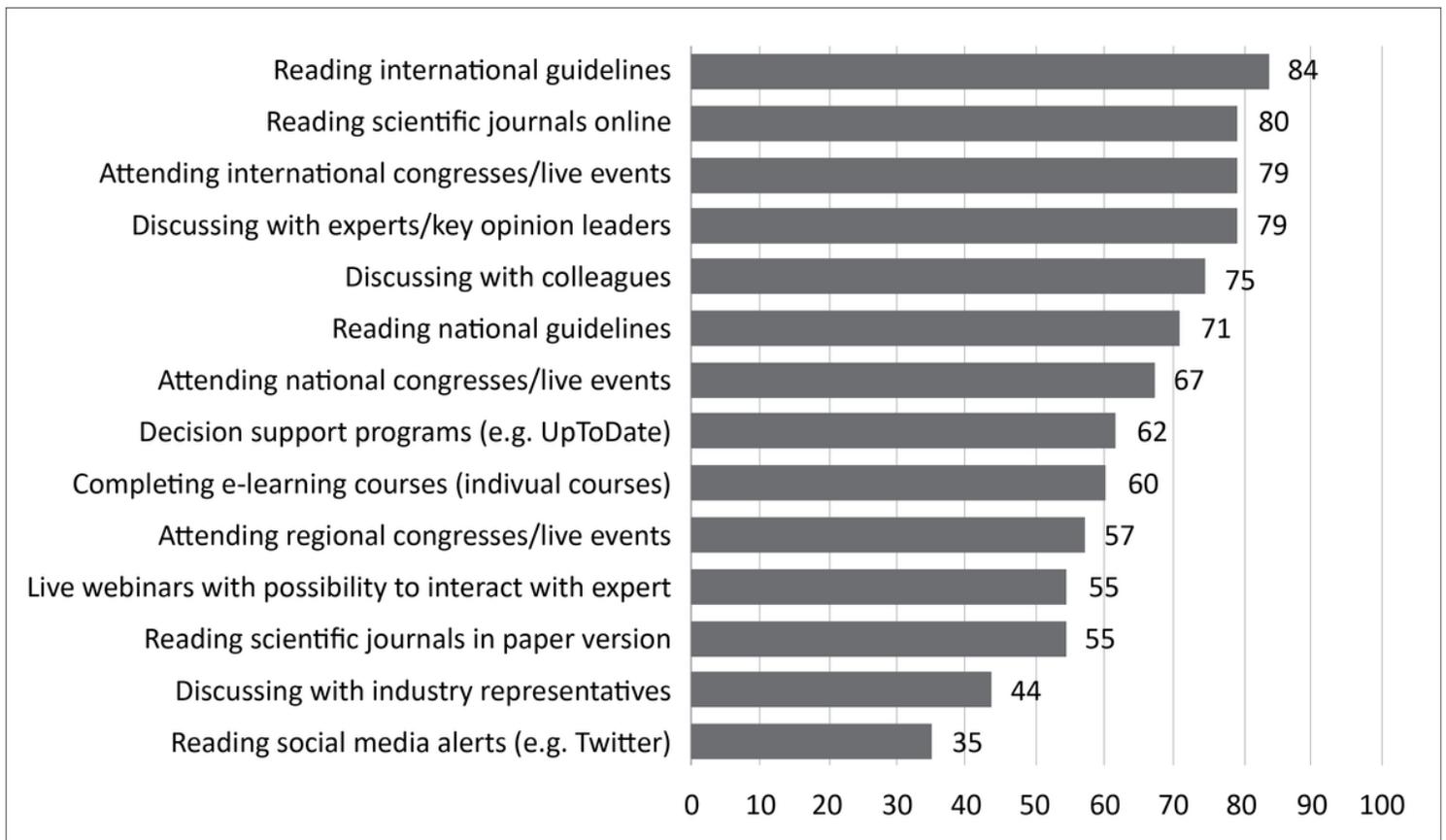


Figure 1

Value scores assigned to different CME activities by survey respondents. A score of 100 was assigned to the highest value statement (extremely valuable), a score of 0 was assigned to the lowest (not valuable). The numbers represent averages of the value scores.

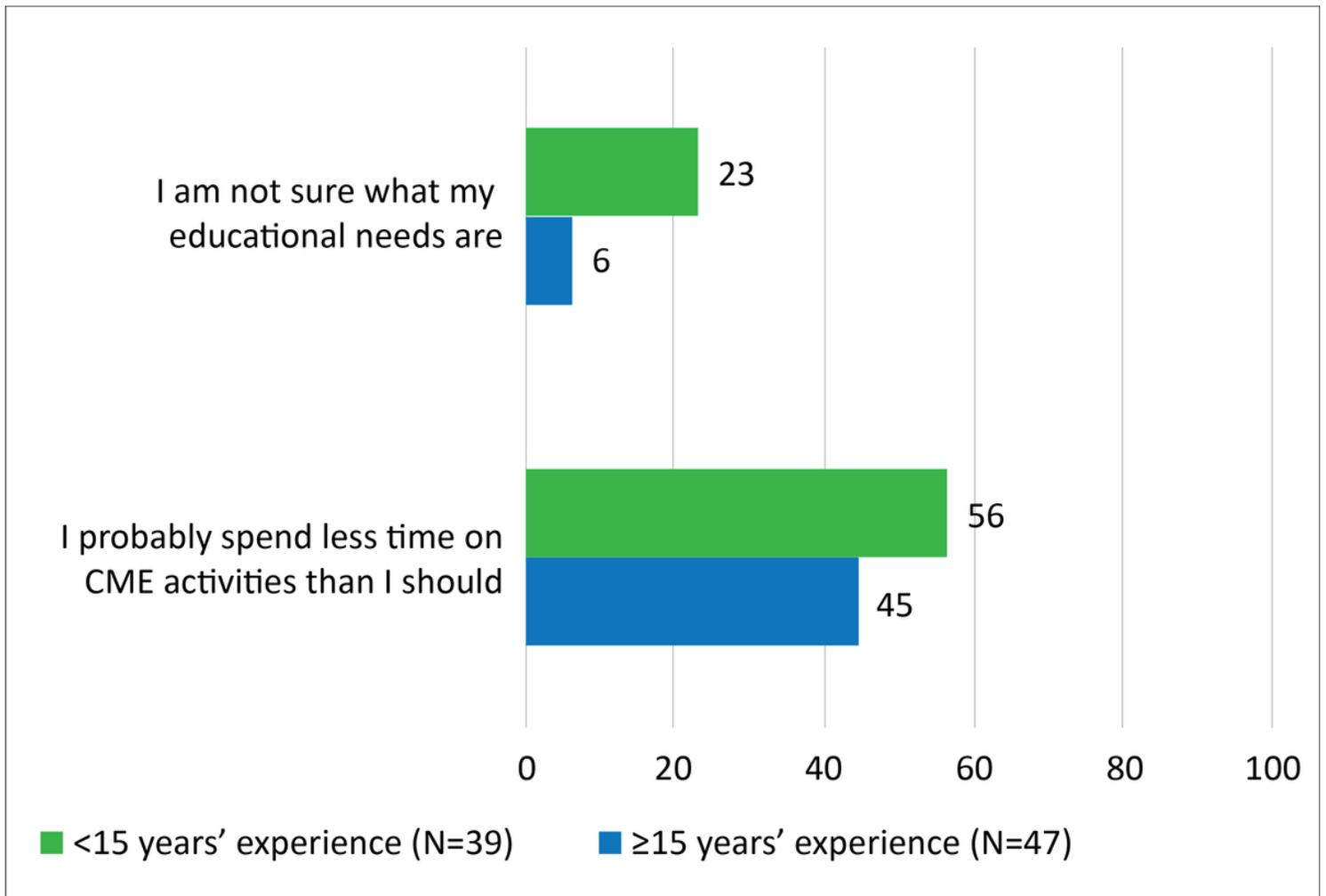


Figure 2

Identifying the learner needs. Values represent percentages of respondents agreeing with the statement.



Figure 3

Importance of different aspects of CME, according to the survey respondents. A score of 100 was assigned to the highest value statement (extremely valuable), a score of 0 was assigned to the lowest (not valuable). The numbers represent averages of the value scores.

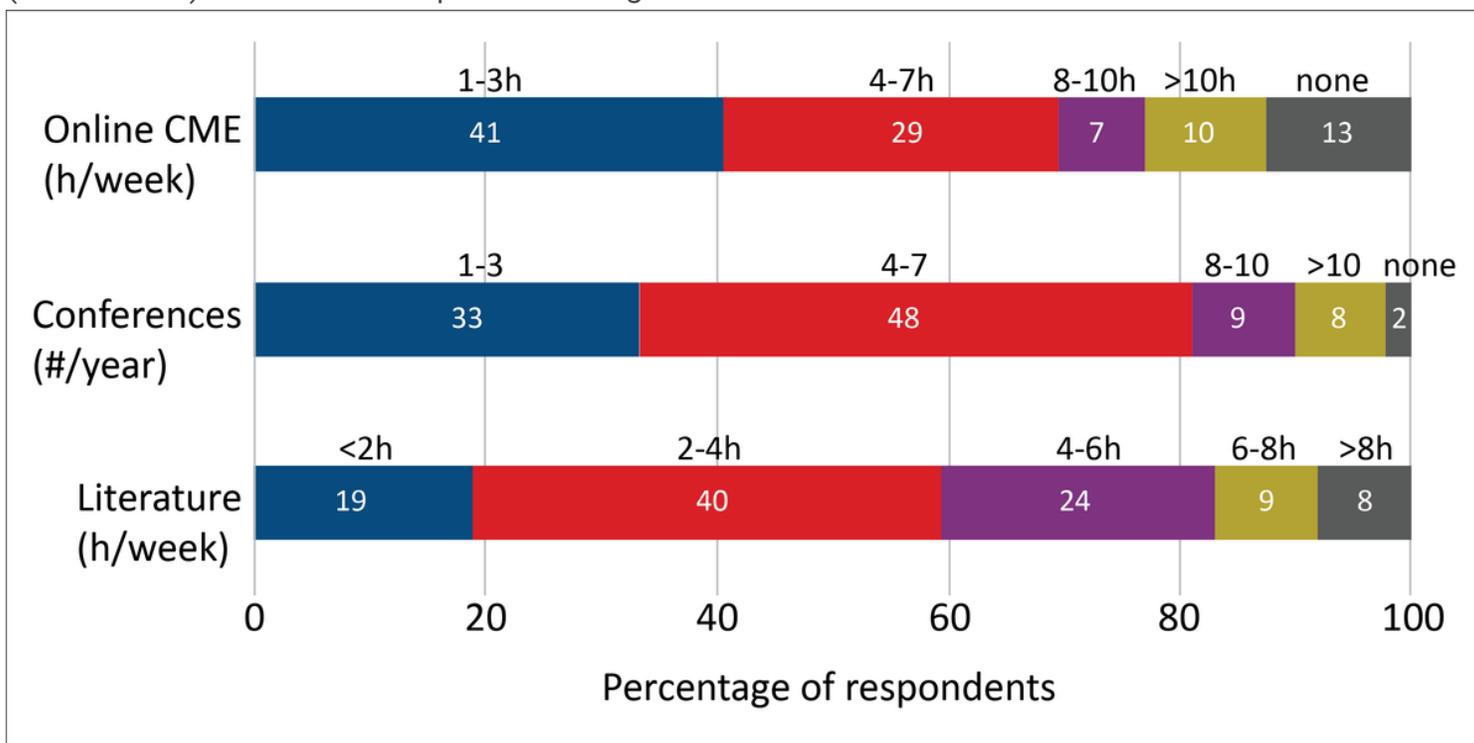


Figure 4

How much time do the survey respondents currently spend on different CME activities, such as online CME, conferences and literature.

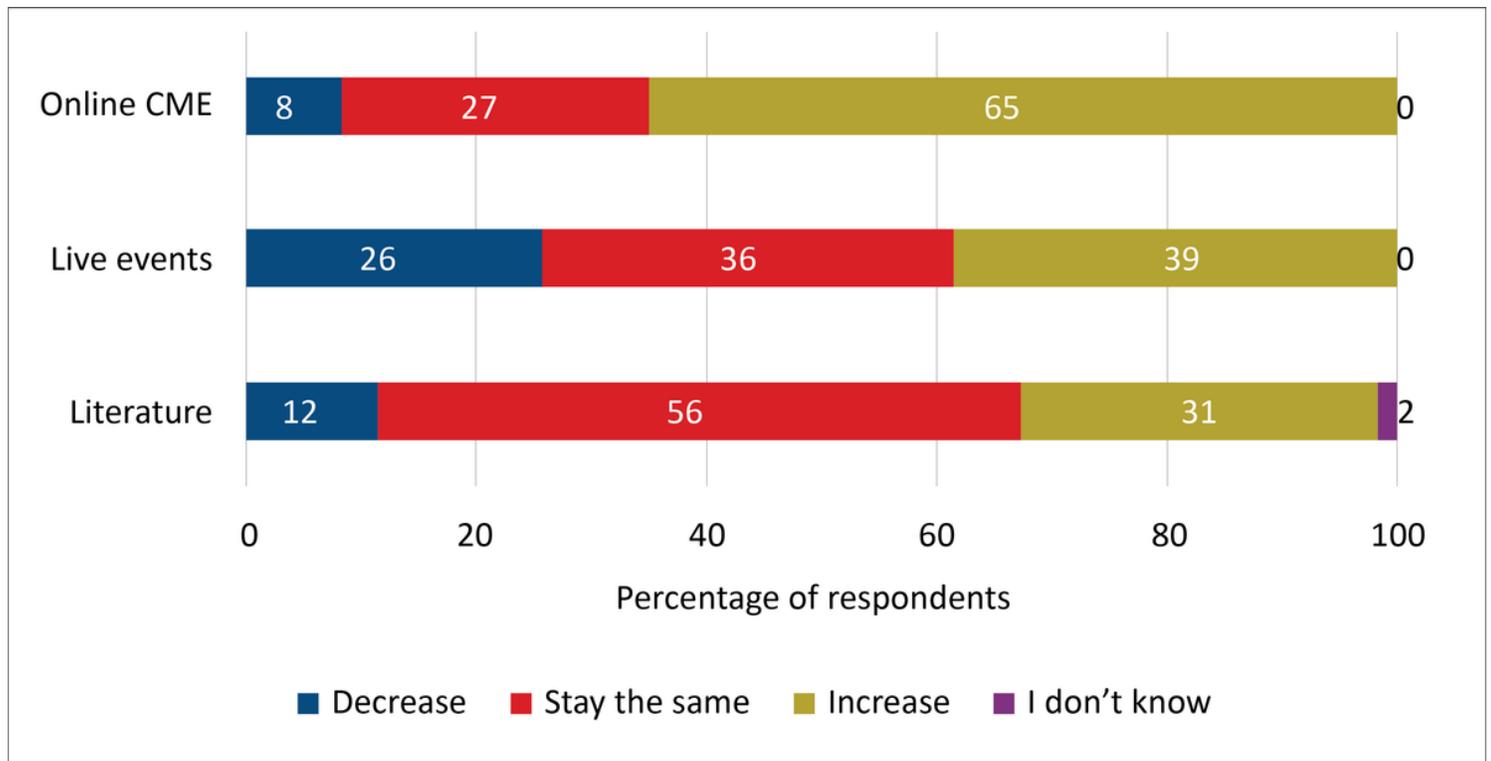


Figure 5

Results from the answer “How do you think that your future time spent on the following activities will change”? Literature includes reading medical journals and guidelines; live events includes international, national and local meetings and conferences; online CME refers to webinars, e-courses.