



Impractical CME programs: Influential parameters in Iran

Seyed Aliakbar Faghihi¹, Hamid Reza Khankeh², Seyed Jalil Hosseini^{3*}
Seyed Kamran Soltani Arabshahi⁴, Zahra Faghih⁵, Mandana Shirazi⁶

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Abstract

Background: Traditional approaches in Continuing Medical Education (CME) appear to be ineffective in any improvement of the patients' care, reducing the medical errors, and/or altering physicians' behaviors. However, they are still executed by the CME providers, and are popular among the majority of the physicians. In this study, we aimed to explore the parameters involved in the degree of effectiveness of CME program in Iran.

Methods: In this study, 31 participants, consisting of general practitioners, CME experts and providers were recruited to participate in in-depth interviews and field observations concerning experiences with CME. Application was made of the qualitative paradigm along with the qualitative content analysis, using grounded theory data analysis methodology (constant comparative analysis).

Results: Based on the participants' experiences, the insufficient consistency between the training program contents and the demands of GPs, in addition to the non-beneficiary programs for the physicians and the non-comprehensive educational designs, created a negative attitude to the continuing education among physicians. This could be defined by an unrealistic continuing education program, which is the main theme here.

Conclusion: Impracticable continuing education has created a negative attitude toward the CME programs among physicians so much that they consider these programs less important, resulting in attending the said programs without any specific aim: they dodge absenteeism just to get the credit points. Evidently, promoting CME programs to improve the performance of the physicians requires factual needs assessment over and above adaptation of the contents to the physicians' performance.

Keywords: Continuing Medical Education, General Practitioners, Qualitative Study, Content Analysis, Effectiveness

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Introduction

It is predominantly anticipated not only by the society but also by patients that GPs should be up to date and have professional skills; and this seems to be achieved by continuing medical education (CME) besides continuing professional development (1). Professional associations and accreditation centers have confirmed CME as a part of re-certification and re-licensure, compulsory for practitioners (2). CME for GPs comprises activities to maintain and develop their professional performances and skills for providing better services to the patients, the society and their professional upgrading. It appears, nonetheless, that

CME is still a far cry from its global gold standards (3). Some issues such as little tangible relationship between the programs and growing demands for healthcare services, non-compliance with the best available scientific evidence, and dependency upon advertising are deemed as the problems concerning CME (4).

Several studies (e.g. 5-9) have been able to demonstrate that CME provides minimum changes in practitioners' behaviors: CME is, yet, not up to essentially tangible practitioners' performance in the matrix of the society. Although traditional approaches are apparently ineffective in

Corresponding author: Dr Seyed Jalil Hosseini, jhosseinee@gmail.com

1. Department of Medical Education, Iran University of Medical Sciences, Tehran, Iran
2. Department of Health in Emergency & Disaster, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran, & Department of Clinical Sciences and Education, Karolinska Institute, Stockholm, Sweden.
3. Infertility & Reproductive Health Research Center, Shahid Beheshti University of Medical Sciences, Tehran, Iran
4. Department of Medical Education, Faculty of Medicine, Iran University of Medical Sciences, Tehran, Iran
5. Shiraz Institute for Cancer Research, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran
6. Research Deputy of Medical Education Department, Tehran University of Medical Sciences, Tehran, Iran, & Department of Clinical Sciences and Education, Karolinska Institute, Stockholm, Sweden

↑What is "already known" in this topic:

CME has failed to provide tangible effects in GPs' behaviors, as well as in improving patients' care, and reducing medical errors. Dissatisfaction of the physicians from CME programs has roots in non-compliance of the programs' content with their career and professional requirements.

→What this article adds:

In Iran, CME programs are designed and implemented far from GPs' practice milieu and turn out to be ineffective. Inadequate integration of educational programs with the professional requirements of the physician and ineffective implementation of the programs are rampant problematic entangling continuing medical educations.

improving patients' care, reducing medical errors, and changing the physicians' behavioral trends (10-12), they are still executed by the CME providers and are popular among most of the physicians (8). In spite of political and social pressures, efforts have been done to provide suitable programs to improve practitioners' performance. The providers face many challenges during the designing of the programs (13). In Iran, along with other countries, CME started in 1991 with the aim of spreading CME among practitioners; and it was made compulsory in 1996 through introducing GPs to medical universities to attend courses under traditional approaches like routine didactic lectures and conferences (13-15). Iranian GPs have to participate in compulsory, prescriptive, and credit-based Continuing Medical Education programs for re-licensure (16). Numerous studies (e.g. 16-21) have been conducted to evaluate the effectiveness of continuing education programs from Iranian GPs' standpoint. According to their results, the main reasons for the dissatisfaction of the physicians were non-compliance of the programs' content with their career and professional requirements in addition to lack of applicable programs to improve their professional performance. Insufficient trainers- trainees' interaction during the educational process and undifferentiated approach in designing and implementing the CME programs, have made the programs ineffective (16-21). Still, to our knowledge, no comprehensive study has explained the reasons and the parameters affecting the efficacy of CME programs for GPs. Hence, this qualitative study was conducted to explore the influential factors in continuing education program fruitfulness, contingent upon the experiences of GPs, medical education experts, and CME providers in Iran.

Methods

Study Design

A qualitative study, applying latent content analysis with grounded theory, data analysis method (constant comparative analysis) was employed to attain a comprehensive yet concise description of the experts, CME providers, and GPs' experiences in traditional CME programs (22). Latent content analysis was used to explore these important phenomena more in depth and provide a more abstract interpretation.

Setting and Participants

This study was conducted in Fars, Isfahan, Tabriz and Tehran provinces of Iran. The researcher interviewed GPs, CME providers, and experts of continuing education in Shiraz, Jahrom, Isfahan, Tabriz and Tehran. Participants were selected, using purposeful sampling method. Inclusion criterion for GPs was participation in continuing medical education programs. GPs were selected with the maximum variety in their work fields, including offices, clinics, hospitals, emergency, and health care networks. Thirty-one interviews were done with 16 GPs (2 females and 14 males, with a mean age of 43.5, and with 15 years of work experience on average, respectively) (Table 1). For CME providers and experts, the criteria were as follows: Having experience in designing and implementing the programs, possessing sufficient knowledge and experience to implement continuing medical education programs for the professionals. Seven CME providers with at least five years of experience in the exertion of the programs, and eight medical education experts with over 20 years of experience in continuing education programs were interviewed (Table 2).

Data Collection and Analysis

Data collection and analysis have been done simultaneously, and continued for three years [2013 to 2015]. At the beginning, the semi-structured in-depth, interviews and writing field notes were considered as a strategy for data collection. Data collection continued until data saturation, and no new information was obtained. The researcher, himself, had a history of participation in the programs and completing them; he closely monitored the interaction among the learners, teachers, and administrators. All interviews were conducted by the researcher in the Persian language, with an average time of 45 minutes. Then the data were carefully analyzed. Content analysis was performed based on the Persian data prior to their translation into English. Interview guide included general and open questions, some of which are as follows:

- Would you please describe your experience of participating in continuing education programs?
- What difficulties did you face while attending the programs?

Table 1. Demographic characteristic of the general practitioners

| No. | Gender | Working Field | Working History (Years) |
|-----|--------|-----------------|-------------------------|
| 1 | Male | Clinics | 28 |
| 2 | Male | Clinics | 7 |
| 3 | Male | Clinics | 26 |
| 4 | Female | Hospitals | 3 |
| 5 | Male | Clinics | 18 |
| 6 | Male | Emergency rooms | 12 |
| 7 | Male | Clinics | 8 |
| 8 | Male | Health networks | 14 |
| 9 | Male | Health networks | 11 |
| 10 | Male | Clinics | 15 |
| 11 | Male | Emergency rooms | 18 |
| 12 | Female | Clinics | 12 |
| 13 | Male | Hospitals | 18 |
| 14 | Male | Clinics | 18 |
| 15 | Male | Health networks | 12 |
| 16 | Male | Emergency rooms | 17 |

- Describe your experience of planning and implementing the continuing education programs.
- What were the strengths and weaknesses of the programs based on your own experience?

More specific questions were asked following the main questions: In some cases, the participants were required to provide even more examples to clarify some issues in the relevant field. The interviewer listened to interviews repeatedly and carefully. In addition, the interview transcript was read until the general idea was extracted. Ambiguities in the interviews were resolved by directly asking the participants. Data analysis was conducted based on Corbin and Strauss to find the similarities and the differences. The initial codes were questioned several times, and constant comparison was made until categories and sub-categories were specified.

Rigor

The proposed criteria of Lincoln and Guba were applied for trustworthiness (23). Credibility was achieved through the prolonged engagement solution during the data collection process (24). Furthermore, a specialized team checked data credibility. With respect to the dependability of the criteria, member check and peer check were run at the same time. Some parts of the data (including initial codes and generated categories) were given to the participants to have their opinions [member checking]. With respect to peer checking, data were shared with the colleagues having experience in qualitative research who had not participated in the study (25). The similarities between case analysis and their analysis were confirmed. Moreover, the research team constantly evaluated the data. Moreover, to increase the level of confirmability, the findings were compared with the results from other researchers (23). As far as transferability was concerned, a full description of all interviews' documents, including the interviews' texts, the analysis, and research limitations, were retained so that other researchers could use them if they ever wished to carry out any similar survey (24, 25).

Ethical Consideration

The Ethics Committee of Iran University of Medical

Sciences (with the ref no. 94/105/474) approved this study. Informed consent was obtained from all participants. At the launching of each interview, the interviewee was justifiably informed by the investigator about the purpose of the study, the methods, and the confidentiality of the interviewee's trust in the research. All interviews were done individually at the time and places proposed by those being interviewed (hospitals and/or their offices). Participation in the study was voluntary.

Results

In this study, the main concepts of unrealistic continuing education were explored as factors influencing the effectiveness of continuing medical education programs. Predisposing determinants of making CME programs quixotically unrealistic [and] their association(s) were expressed in conformity with experiences and perceptions of the participants (Table 3).

As demonstrated in Table 3, a main theme was found with several major categories, subcategories, and codes. The prime extracted categories were as follows: Insufficient consistency between CME programs and the professional career's needs of the physicians, non-beneficiary state of CME programs, and non-comprehensive educational design pattern.

Unrealistic CME Programs

Contingent upon experiences and perceptions of the participants, insufficient consistency of the contents of the CME programs with the career and professional demands, makes them impractical to resolve daily problems of the physicians in clinical settings. It may well lead to passive presence of physicians in the programs, and subsequently an abstract and hard-to-apply education continuum. CME providers design and implement the programs non-comprehensively; i.e., without taking into account non-educational issues such as economic, social, and cultural circumstances, leading to the dramatic loss of their effectiveness, and rejection of the program by the physicians.

Table 2. The demographic characteristics of the CME providers and experts in medical education

| No. | Gender | Position | Working Field | Working History (Years) |
|-----|--------|-----------------------|--|-------------------------|
| 1 | Male | Pediatrician | Educational development center, Shiraz | 24 |
| 2 | Male | Gastroenterologist | Research and health policy center, Shiraz | 18 |
| 3 | Male | Pediatrician | Medical education Department, Educational development center, Tabriz | 25 |
| 4 | Male | Orthopedic surgeon | Department of Medical Education, Tehran | 16 |
| 5 | Male | Breast cancer surgeon | Breast cancer surgery research center, Tehran | 24 |
| 6 | Male | Gastroenterologist | Gastroenterology Research Center Shariati Hospital, Tehran | 20 |
| 7 | Female | Pharmacologist | Medical education ward, Isfahan | 18 |
| 8 | Male | Pediatrician | Social medicine ward, Isfahan | 24 |
| 9 | Male | Neurosurgeon | Continuing Medical Education Office, Shiraz | 6 |
| 10 | Female | General Practitioner | Continuing Medical Education Office, Isfahan | 15 |
| 11 | Male | General Practitioner | Continuing Medical Education Office, Jahrom | 10 |
| 12 | Male | Psychiatrist | Continuing Medical Education Office, Tabriz | 6 |
| 13 | Male | Psychiatrist | Continuing Medical Education Office, Tabriz | 6 |
| 14 | Male | General Practitioner | Continuing Medical Education Office, Tabriz | 20 |
| 15 | Female | General Practitioner | Continuing Medical Education Office, Jahrom | 10 |

Table 3. Codes, subcategories, categories and themes extracted from raw data

| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | Concept Level 2 | Concept Level 3 | Concept Level 4 |
|--|--|--|---------------------------|
| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | Subcategory | Category | Theme |
| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | Specialization in teaching | | Un realistic CME programs |
| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | Not being a role model of educators | Insufficient consistency between CME programs and professional needs | |
| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | Protocol- based implementation of CME programs regardless of national and regional needs | | |
| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | Insufficient transparency of physicians' needs for CME teacher | | |
| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | Impractical CME to apply in clinical practice | | |
| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | The gap between physician's professional fate and continuing education | Non-beneficiary CME programs for general practitioners | |
| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | One-dimensional designing | | |
| Table 3. Codes, Subcategories, Categories and Themes Extracted from Raw Data | Disregarding education for correction public therapeutic health culture | Non-comprehensive educational design | |

Category 1: Insufficient Consistency between CME Programs and Professional Needs

The participants' experiential familiarity indicates that the design of the programs is often developed based on the national protocols, ignoring the regional and local professionals, and individual needs of the GPs. Since physicians may face a whole array of patients, these programs could generally cover some of their educational needs. The programs do not pay adequate attention to the quantity and type of physician's needs: They do not resolve their ambiguities in practice. Thus, when physicians attend the programs, their attendance could not eliminate their needs to generate a fresh vision in their mind to deal with the patients and their diseases. Appearances tell us that this phenomenon is derived from factors such as specialization of teaching, not being role models of the educators, implementing CME programs based on the national protocols, and [nearly total] insufficiency of transparency of the participants' needs for the teachers.

Specialization in Teaching

"Specialization in teaching" denotes providing specialized and sub-specialized topics. Blurred boundaries between GPs and specialists' performance causes decreased level of compatibility with real needs of GPs. In this regard, one of the participants said: *"The last retraining program that I remember was related to breast sonography and mammography. The sonography and its procedures arise from specialized perspective, but we received only the marginal scientific issues. This should be a specialized work and what the diagnosis is going to be may not necessarily be interpretable on my part as for the mammograms; for instance, since a specialist working in this field often consults with radiologists, so I am regarded as a general practitioner."*

Not Being a Role Model for the Educators

Another thorny issue with GPs was the educational context in which they are being trained. Basic medical education for GPs is without role models, meaning that they are not normally trained in the *real* situation. They receive

training in the specialized and sub-specialized divisions that are inappropriate patterns for their profession. Not being [and maintaining] a role model have resulted in more inconsistency needs, and from the participants' point of view, this would be the worst type of professional training for GPs. For instance, one of the participants commented:

"None of the fundamental and clinical sciences' specialists who have trained our general practitioners are general practitioners themselves, and this is the worst kind of professional training in which there could be found not a single role model for general practitioners."

Protocol-Based Implementation of Continuing Education Programs Regardless of the National and Regional Needs

Protocol-based implementation of CME programs, regardless of their local and regional needs where GPs are operating, was another result coming out of participants' experiences, contributing to even more mismatch between CME programs and physicians' needs. In line with this, one of the participants said:

"They should categorize common issues in every field, and discuss special cases instead of holding the same documented issues everywhere. Here, for example, Crimean-Congo fever was spreading, but we did not see even one case: we just heard a person died at hospital and others in ..., just that."

In the participants' opinion, the content of CME programs did not keep pace with careers needs' of the physicians: They did not meet the needs of the new cases, either. In a similar vein, one of the participants stated that:

"I have never liked these codified prescriptions, since they are not, as a whole, a good approach. Commonly, codified prescriptions do not bring anything new to the physicians, and types of illnesses are regularly changing all around the country. We need new contents..."

Insufficient Transparency of the Physicians' Needs for CME Teachers

The participants were of the belief that lack of interaction before implementation of the programs confuses the

teachers about what they really want to present. On the other hand, CME providers select the topics and present them to the teachers, without considering the needs of those physicians participating in the programs: This actually decreased the compliance of the program with the learners' needs.

One of the participants declared that:

"We only come to sit here; we know most of the issues. It is true that some contents may be new to us, but most of them are of no effect. We ought to bear in mind that some physicians just need clinical training. Yet, we don't understand our goals."

Regarding lack of transparency in the participants' medical need for the teachers, one of the participants, as a teacher, said:

"We don't even know whether the people who come here listen to us or they need these contents and information to deceive us. We never know what they exactly need to know. Our problem is the disconnection between the nature of learning and teaching to hold a formal meeting."

Category 2: Non-Beneficiary CME Programs for Physicians

According to participants' experiences, non-beneficiary programs refer to lack of programs' effectiveness in their clinical practice and improving their performance. These programs do not provide a new insight to the physicians to enable them to develop more appropriate measures for their patients. The physicians cannot use the presented contents, practically in their medical profession. On the other hand, they have no influence on hands-on career and professional destiny of the physicians; GPs just take part in these programs to earn points to extend their documents. This approach is described by the non-applicability of the concepts to be administered in practice, that is to say, it is a chasm between learning career and professional destiny of physicians.

Impractical CME to Apply in Clinical Practice

On the foundations laid by the experience of the participating physicians, it could be asserted that the presented contents cannot provide the physicians with an operational guideline in the medical practice. Sometimes the education contents have not even been presented according to the framework in which GPs are allowed to operate.

For instance, one of the participants implied:

"Sometimes the way of performing angiography is expressed in a seminar, but it doesn't have any application. Sometimes they speak about how to have surgery on an acute abdomen case, which isn't useful for general practitioners."

With respect to the absence of practical guidance, another participant said:

"We can say that three-quarters of the program is fundamental. Of course, something is knowledge specific, but continuing education programs never move on to this side that the prescription you will write tomorrow shall be the same. In the programs that I have attended, one of the most controversial issues was more engagement with the professional atmosphere than with the academic subject."

The Gap between Physician's Professional Fate and Continuing Education

According to doctors' experiences, there are no relations among physicians' career, professional fate, CME programs, and continuing education: The continuance of education actually plays no role in their professional promotion.

This could be apprehended in the words of the participants:

"It just had an impact on clinic license renewals and on nothing else; it has no impact on other places, not in work, nor in my vision."

Yet another participant noted:

"We understand what the problem is: Now the errors of physicians' prescription are pointed out. In case we put the formulated blocks of 10 years ago, it is an abstract. The physician feels whether he participates or not, he can just go on doing the same thing."

Category 3: Non-Comprehensive Educational Design

The physicians uttered that they did not live in a vacuum; their medical practices are influenced by environmental factors such as economic and social pressures in addition to cultural attitudes to general medical practice. This implication could be described with the associated concepts, including one-dimensional designing of the CME programs on the one hand, and ignoring GPs training and modifying the therapeutic culture on the other.

One-Dimensional Design

One-dimensional design refers to no consideration of the family, livelihood, economic, and social issues of the physicians in the CME programs.

One of the participants highlighted:

"We cannot give separate instructions when a physician is faced with family and community, economic, livelihood, cultural, social and other issues."

Disregarding Education for Correction of Public Therapeutic Health Culture

Participants thought that a successful continuing education should be bilateral, and besides the physicians, the medical culture of the clients should be corrected. One of the participants in the research, asseverated:

"Unfortunately, it is now bilateral; we cannot look unilateral. For example, now in the Social Security and Motahari hospitals, patients request physicians to write certain medications for them; people always want some special medicine and if the physicians do not do it, they think that the doctor is not a proficient one. The more the amount of prescribed drugs, the more the doctor's information is adjudicated to be. Continuing education debate is not emphasized enough just on one medical team: we should take education on the society level to raise their knowledge."

Discussion

The results demonstrated a variety of influencing factors to make continuous training for GPs unrealistic. Based on experiences and perceptions of participants in the study

(experts, GPs, specialists), three concepts, including insufficient consistency in the continuing medical education programs with the professional and career needs, the non-beneficiary side of the programs, and non-comprehensive educational design are all fundamental factors in making the CME programs unrealistic. There are, however, some previous reports pointing to the existence of this phenomenon, but most of them are non-comprehensive and does not mention the underlying cause (26-28).

Results simply indicated that the main primary reason, affecting unrealistic CME programs was insufficiency of integrity between CME programs and professional needs of the physicians, having roots in several parameters such as specialization in teaching, implementation of the programs, and insufficient transparency in learners' needs for teachers. Experts believed that if continuing education programs were designed and implemented according to the factual needs of the physicians, their effectiveness level would be improved. Wisenberg (30) found that implementing programs by professionals and overcoming their taste in teaching usually lead to creating a distance between the provided content and the needs of GPs. In addition, traditional design of CME programs and implementation of the programs just based on the protocol –and in a compulsory way– can also contribute to this discrepancy (31).

In addition to these factors, the results imply that learning how to adapt the contents with the physicians' needs could be effective. It has been proved that if the providers do not pay attention to the comments and suggestions of the learners in designing the educational contents, the programs will not be effective to them at the time of the needs assessment. Moreover, presenting the contents out of their framework will exacerbate this phenomenon. Furthermore, lack of communication between learners and teachers leads presenting contents that fail to adequately cover the audiences' needs, leading to dissatisfaction of the physicians with the programs.

Another extracted concept was non-beneficiary CME programs for GPs. Pertaining to the participants' experiences, it means that the programs are non-applicable in practice, or in other words they are not effective in the clinical practice. According to the previous studies (15,32), the applicability of the contents, in addition to the interactive implementation of the programs, is one of the important factors in the effectiveness of CME programs in changing the behavior of the physicians. However, our results suggested that the presented educational contents were not appropriate for use in the medical practice or solving future problems. Physicians believed that it could not be applied as a guideline in their daily clinical practice. Additionally, it seems that the detachment of CME programs from physicians' jobs and career destiny, reduces their active participation in the programs –it could finally make CME programs unrealistic so that they attend in the next program in an aimless manner.

In fact, if teachers and learners do not reach a mutually acceptable framework for the topics, not only the provided contents fail to solve learners' problems, but also they make the program far-fetched from its main purpose,

causing tiredness and unwillingness among the physicians. Meanwhile, GPs prefer to have the layout of training program and make specialists aware of their educational needs (30). Moreover, if the instructional design strikes a balance between clinical practices of the physicians and academic issues over and above the content design in [full] conformity with their needs, the programs will be accepted by the physicians (33).

Another important underlying factor in this field is non-comprehensive educational design of the CME programs, which represents a sectional vision in designing the programs. CME providers only design education for physicians: They believe that changing the physicians' behavior will modify their performance and improve people's health. Cultural misconceptions of people about health care and its role have been ignored –no training is, in fact, mapped out to correct it. Therefore, it leads those physicians attending such programs to believe it is an abstract training and far from the reality (16).

Conclusion

The outcome of this study implies that the CME programs for GPs is designed and implemented in such a manner far from their practice milieu, with the concomitant offshoots that the very continuance of training turns out to be non-comprehensive. Inadequate integration of educational programs with the professional requirements of the physician and ineffective implementation of the programs are rampant problematic entangling continuing medical educations. Consequently, it seems that CME providers should be, primarily and primordial, concerned with being open to participation of all stakeholders in planning and implementing programs for bringing in true requirements of a general physician's practical treatment. The students and faculty participation in program design and implementation ought to be part of CME. Applying faculty expertise, which can reflect their clinical experience in general medicine, can also be considered a way to improve the current continuing education programs. CME programs harmonization with the actual needs of stakeholders is one of the key points that should be conducted through continuous needs assessment. CME providers should consider regional and local professional needs of the physicians.

Strengths and Limitations

Qualitative research can help us understand the real meaning of the experiences of those participating in continuing education, something that is more in-depth and more trustable compared to quantitative research. Having at hand diverse samples, including GPs, educational designers, and specialists from different milieus –from small towns to capital cities– is the strength of our study. The other strong point herein is constant comparative analysis, which increases the rigor of the results.

The most important limitation was that continuing medical education is process-based: If one is going to grasp it in-depth to indicate the action/interaction between different factors, and to show the complexity of the phenomena involved, one has to conduct grounded theory study.

Therefore, we highly recommend exploring this process, applying grounded theory study.

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Conflict of Interests

The authors declare that they have no competing interests.

References

- Khan AW. Continuing Professional Development (CPD); What should we do? *Bangladesh Journal of Medical Education* 2012; 1(1):37-44.
- Filipe HP, Silva ED, Stulting AA, Golnik KC. Continuing professional development: Best practices. *Middle East African journal of ophthalmology* 2014;21(2):134.
- Tian J, Atkinson NL, Portnoy B, Lowitt NR. The development of a theory-based instrument to evaluate the effectiveness of continuing medical education. *Academic Medicine* 2010;85(9):1518-25.
- Davis DA, Prescott J, Fordis Jr CM, Greenberg SB, Dewey CM, Brigham T, et al. Rethinking CME: an imperative for academic medicine and faculty development. *Academic Medicine* 2011;86(4):468-73.
- Forsetlund L, Bjørndal A, Rashidian A, Jamtvedt G, O'Brien MA, Wolf F, et al. Continuing education meetings and workshops: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2009;2:CD003030.
- Institute IoMCoPaCHCPE. Redesigning continuing education in the health professions: National Academies Press; 2010.
- Drexel C, Merlo K, Basile JN, Watkins B, Whitfield B, Katz JM, et al. Highly Interactive Multi-Session Programs Impact Physician Behavior on Hypertension Management: Outcomes of a New CME Model. *The Journal of Clinical Hypertension* 2011;13(2):97-105.
- Shojania KG, Silver I, Levinson W. Continuing Medical Education and Quality Improvement: A Match Made in Heaven? *Annals of internal medicine* 2012;156(4):305-8.
- Goulet F, Hudon E, Gagnon R, Gauvin E, Lemire F, Arseneault I. Effects of continuing professional development on clinical performance: results of a study involving family practitioners in Quebec. *Can Fam Physician* 2013 May;59(5):518-25.
- Marinopoulos SS, Dorman T, Ratanawongsa N, Wilson LM, Ashar BH, Magaziner JL, et al. Effectiveness of continuing medical education. *Evid Rep Technol Assess (Full Rep)* 2007 Jan(149):1-69.
- Marinopoulos SS, Baumann MH. Methods and definition of terms: effectiveness of continuing medical education: American College of Chest Physicians Evidence-Based Educational Guidelines. *CHEST Journal* 2009;135(3 suppl):17S-28S.
- Salmanzadeh H. Continuing medical education based on the needs of society. *Journal of Medical Education* 2009;4(1).
- Esmaily HM. Outcome-based continuing medical education: An intervention to improve rational prescribing: Institutionen för folkhälsovetenskap/Department of Public Health Sciences; 2009.
- Wentz DK. Continuing Medical Education: Looking Back, Planning Ahead: UPNE; 2011;p350
- Shirazi M, Parikh SV, Dadgaran I, Silén C. Designing Effective CME—Potential Barriers to Practice Change in the Management of Depression: A Qualitative Study. *Psychology* 2013;4:25.
- Faghihi SA, Khankeh HR, Hosseini SJ, Soltani Arabshahi SK, Faghihi Z, Parikh SV, et al. Improving continuing medical education by enhancing interactivity: lesson from Iran." *J Adv Med Educ Prof* 2016;4(2): 54-63.
- Kousha A, Khoshnevis P, Sadeghzadeh M, Kazemi N, Nourian A, Mousavinasab N. General physicians' viewpoints on continuing education programs in Zanjan province. *Iranian Journal of Medical Education* 2011;11(2):165-6.
- Amirnia M, Mohammadi F, Vahidi RG, Mohammadzadeh M, Gojazadeh M, Hejazi SA, et al. General Practitioners' Views toward Quality of Continuing Medical Education Programs in Tabriz. *Iranian Journal of Medical Education* 2012; 12(4):231-9.
- Zeynalou A, Shirazi M, Alaeddini F, Tofighi H, Pajoumand A, Seyrafi H, et al. Determining the Topics and Content of CME Programs in Five Selected Subjects: Comparing the View Points of Experts and Target Group; a Tehran University of Medical Sciences Experience. *Iranian Journal of Medical Education* 2009;8(2):255-62.
- Shirazi M, Zeinalou AA, Alaeddini F. The View Points of General Surgeons Attending CME Programs Regarding their Educational Needs, in Tehran University of Medical Sciences. *Iranian Journal of Medical Education* 2004;4(1):31-6.
- Shakurnia A, Elhampour H, Marashi T, Heidari Soureshjani S. Concordance of length and contents of continuing medical education programs with educational demands of practicing gps in khuzestan province. *Iranian Journal of Medical Education* 2007;7(1):85-92.
- Corbin J, Strauss A. *Basics of qualitative research: Techniques and procedures for developing grounded theory*: Sage; 2008.
- Guba EG. Criteria for assessing the trustworthiness of naturalistic inquiries. *ECTJ* 1981;29(2):75-91.
- Speziale SH, Streubert HJ, Carpenter DR. *Qualitative research in nursing: advancing the humanistic imperative*. Wolters Kluwer Health/Lippincott Williams & Wilkins; 2011
- Lincoln YS. Emerging criteria for quality in qualitative and interpretive research. *Qualitative inquiry* 1995;1(3):275-89.
- Borji A, Imani M, Moradi A. The study of General practitioners' views on the content of composed programs in Zahedan. *Iranian Journal of Medical Education* 2002;2:20.
- Zobeiri M, Ataei M, Abdolmaleki P. Continuing Medical Education (CME) Programs Efficiency and Needs of General Practitioners (GPs)(Kermanshah 2003). *Journal of Kermanshah University of Medical Sciences (J Kermanshah Univ Med Sci)* 2007;11(1).
- Fazeli M, Anbari Z. The conformity of continuous educational programs' content of radiology department with needs of Continuous medical education learners, Markazi province, 2008. *Arak Medical University Journal* 2010;12(4):15-23.
- Norman GR, Shannon SI, Marrin ML. The need for needs assessment in continuing medical education. *Bmj* 2004;328(7446):999-1001.
- Winzenberg T, Higginbotham N. Factors affecting the intention of providers to deliver more effective continuing medical education to general practitioners: a pilot study %U <http://www.biomedcentral.com/1472-6920/3/11>. *BMC medical education*.
- Haghiou L, Nedjat S, Gholami J, Nili Ahmadabadi M, Ashoorkhani M, Majdzadeh R. Developing titles and contents of continuing education programs in Iran: barriers and challenges. *Journal of Isfahan Medical Sciences* 2012; 30(190):1-15.
- Garattini L, Gritti S, De Compagni P, Casadei G. Continuing Medical Education in six European countries: a comparative analysis. *Health Policy* 2010 Mar;94(3):246-54.
- Stewart GD, Khadra MH. The continuing medical education activities and attitudes of Australian doctors working in different clinical specialties and practice locations. *Australian Health Review* 2009;33(1):47-56.