Program Evaluation of an Interdisciplinary Regional ‘Continuing Medical Education’ at a Rural Tertiary Health Care Institute of Central India

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Background- Program evaluation (PE) is the systematic assessment of the processes and/or outcomes of a program with the intent of furthering its development and improvement. Purpose of this kind of evaluation is to provide information to decision-makers who have responsibility for existing or proposed educational programs.

Methods- PE of a recently conducted interdisciplinary regional Continuing Medical Education (CME) at a rural tertiary health care institute of Central India was done as per the guidelines of Donald Kirkpatrick’s model of PE. The study design was quasi-experimental one-group pre-test/post-test study.

Result- Total 100 delegates from all over Vidarbha region of Maharashtra state participated in the CME, out of which 56 were faculty. Mean Pre-test and post test score was 2.91 ±1.59 and 10.01± 1.19 respectively and the difference between two was statistically significant (p value <0.05). Mean score of “Gain in learning” was 7.1; Absolute learning gain came out to be 59.16%, Class average normalized gain was 78% while average of single student normalized gain found to be 78.24%. The effect size was 5.09. Feedback analysis done by calculating ‘Rating average’ for each individual parameter of feedback proforma which is measured on five point Likert scale.

Conclusion- PE of CME revealed that it was successful in achieving its objectives, as depicted by the feedback and improved learning score of the participants.

Key words: Program evaluation, Continuing Medical Education, Kirkpatrick’s model, Feedback

INTRODUCTION

Evaluating educational programs is an emerging profession. The term “Program evaluation” only came into wide use in the mid-60s, when efforts at systematically assessing programs multiplied.1 Program evaluation is the systematic assessment of the processes and/or outcomes of a program with the intent of furthering its development and improvement.2 The purpose of this kind of evaluation is to provide information to decision-makers who have responsibility for existing or proposed educational programs.1 Medical Science is dynamic and it is essential for the doctor to become acquainted with the advances in medicine. This is in essence the concept of Continuing Medical Education (CME). Tremendous advances are taking place in the field of medical sciences, continuously changing the concept, approach to management and the outcome of several diseases.

The rapid pace of these advances makes it mandatory for doctors to keep themselves updated.3 As per the new Maharashtra Medical Council (MMC) guidelines3 the organization should evaluate CME to indicate the benefits accrued to participants by way of updating of knowledge, upgrading their ability and benefit to the patients. It will be the responsibility of accredited organizations to see that adequate standards of decorum are maintained and also to ensure that CME is conducted properly and as per prescribed norms. In this context, program evaluation of a recently conducted interdisciplinary regional CME at a rural tertiary health care institute of Central India was done.

Objectives

To conduct program evaluation of an interdisciplinary, regional Continuing Medical Education Program.

MATERIALS AND METHODS

A one day interdisciplinary i.e. multispeciality regional CME program was held at the Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences
(Deemed University), Wardha, Maharashtra (India) on 1st February 2014. The CME was organized by department of Community Medicine on the topic ‘Recent advances in Non Communicable diseases (NCDs)’. The CME was accredited by MMC and was being given credit points. The target audience was members of faculty- (Medicine, Ayurveda, Nursing), Postgraduate students (MD, MPH), Residents, Medical Officers, General Practitioners, Interns, undergraduate students. Being an interdisciplinary CME, the faculty for the CME program included speakers from varied disciplines like Public health, Medicine, Obstetrics & Gynecology, Dietetics, Ayurveda and Nursing. The CME also had the administrators of higher order like the Dean, Chief Medical Superintendent and Director, School of Health Professional Education & Research as panelist. The CME program included interactive sessions, structured panel discussion and group discussion. Evaluation of the program was done as per the guidelines of Donald Kirkpatrick’s model of program evaluation wherein out of four levels of evaluation, only first two levels i.e. Level 1 of Reaction and Level 2 of Learning are considered in the present study on account of feasibility.

So the program evaluation was done using a feedback questionnaire, and a pre & post-test evaluation. The feedback questionnaire consisted of both close ended and open ended questions. Likert scale from 1 to 5 was used to rate various parameters. The questionnaire involved subjective assessment of the quality of the CME program, the content, faculty, time management,…etc and invited the delegates to suggest ways of improving the program to make it more target-oriented. The pre- and post-test proforma consisted of 12 questions derived from the content covered during the program which tested knowledge on recent advances in NCDs. The pretest proforma was both internally validated and it was planned to subject it for external validation too. The data were analyzed using SPSS software, version 17.0 of the SPSS Inc. Individual pre- and post-test question responses were compared using the paired t-test for single sample group. The difference between scores was considered significant if the p value was <0.05. Thus it was a quasi-experimental one-group pre-test/post-test study.

RESULTS

Total 100 delegates from all over Vidarbha region of Maharashtra state participated in the CME program, out of which 56 were faculty. The details regarding the type of delegates are given in Table 1.

Table 1. Distribution of delegates based on their level of experience

<table>
<thead>
<tr>
<th>Parameter</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Total no of delegates/ participants</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2 Total no of faculty members</td>
<td>56</td>
<td>56</td>
</tr>
<tr>
<td>3 Level of delegates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>a) Senior &amp; highly experienced</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>b) Mid level</td>
<td>38</td>
<td>38</td>
</tr>
<tr>
<td>c) Junior level</td>
<td>36</td>
<td>36</td>
</tr>
<tr>
<td>4 Ratio of senior to mid level delegates</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>5 Ratio of Mid level to Junior level delegates</td>
<td>1.05</td>
<td></td>
</tr>
</tbody>
</table>

Pretest, post test analysis (Graph 1)

- Mean Pre-test score= 2.91± 1.59, Std error of mean=0.1626
- Mean Post test score=10.01±1.19, Std error of mean=0.1218
- t score= -41.309 , degrees of freedom =97
- p value <0.05 (Significant)
- Difference was found to be statistically significant (p< 0.05)
- Mean score of ‘Gain in learning’ = 7.1
- Absolute learning gain = 59.16%
- Relative learning gain [Learning effectiveness score (LES)]= 244%
- Class average normalized gain (g) = 78%
- Average of single student normalized gain(g_avg)= 78.24%
- Effect size = 5.09

Feedback analysis

Feedback analysis done by calculating ‘Rating average’ for each individual parameter of feedback proforma which was measured on five point Likert scale, ranging from strongly disagree (score 1) to strongly agree (score 5). In other words, the values that fall to the right of Neutral (score 3) were taken as closer to agree rating. The rating average is calculated using the formula as; the sum of the weights/sum of the number of responses. (Graph 2)

Graph 1. Bar diagram showing mean pre and post test score

Graph 2. Graph showing ‘Rating average’ of individual parameter of feedback measured on five point Likert scale

Thus the responses from the feedback questionnaires of the delegates suggested that the CME was successful in achieving its objectives, and was useful for each individual’s professional activities. Most delegates
suggested that the CME program should be held regularly (Maximum i.e. 4.85 score). For an open ended question (regarding the suggestions/other opinions for improving the CME) that was kept as the last section in feedback proforma, delegates gave the suggestions like; CME should had been more relaxed and free time should be incorporated in between the consecutive sessions (8%). Some participants (19%) felt that the CME had an adequate balance of basic as well as recent advances with regard to NCDs. The delegates also favoured panel discussion (37%) wherein the administrators of higher order took part as panelist and provided their views with regard to social engineering & NCDs, risk assessment in NCD. It was suggested by 14% of delegates that handouts and printed manuals or compact diskettes should be provided as supplements to the program.

DISCUSSION

CME is a process of continuous learning by which medical professionals keep themselves updated through acquisition of new knowledge, skills and attitudes, to maintain professional competency. Over the years the scope of CME has broadened from mere clinical updates to a wide ranging continuing professional development that includes behavioural change, social & managerial skills and multidisciplinary context of patient care. Designing good quality CME and its evaluation remains a big challenge which needs to be addressed through national mechanism. In the present study, program evaluation of an inter-disciplinary CME was done. There are several assessment tools to determine the effectiveness of learning. Some of the commonly used assessment tools are Miller’s pyramid (Knows, Knows how, Shows how and Does) and Kirkpatrick criteria of learning (Fig. 1).

![Assessment tools to determine effectiveness of learning](image)

The four level of Kirkpatrick’s evaluation model is often used to evaluate learning. Level 1 is ‘Reaction to learning’ and it measures participants satisfaction with the program. Most CME programs incorporate a post course survey to assess for satisfaction and use the data for post hoc program assessment. The problem with level 1 evaluation is that a positive reaction by the attendee does not guarantee learning and hence considered by many as an incomplete measure to determine effectiveness of training. Level 2 assesses learning and goes beyond learners satisfaction and attempts to measure the students change in skills, knowledge and attitude as a result of CME activity. Examples for this kind of activity would be a pre and post test multiple choice question (MCQ) test to determine amount of learning. Level 3 measure the change in behaviour that occurred due to the CME course and occurs after the learning event. This form of measurement is difficult due to the inherent uncertainty in determining when the change in behaviour occurred. Level 4 evaluation is a measure of outcome evaluation and is highest achievement of a learning session. A level 4 evaluation seeks to determine whether a change in behaviour of the physicians as a result to the CME session improve patient outcomes.

Though evaluation of experienced physicians is complex as most practice in dynamic environment that are influenced by many factors, recent recommendations suggest that CME course organizers construct programs that would measure learning (Level 2). Hence, CME sessions should have some form pre and post self assessment using MCQ’s or evaluation of a skill or task in their program to ensure learning. In a systematic review of ‘Evaluation in Formal Continuing Medical Education’ by Jing Tian et al at Maryland, it was found that more than half of the studies (n = 21 [66%]) evaluated 1 level of evaluation, and among these 9 (28%) evaluated additional level 2. The reason attributed for focus of most studies on level 1 evaluation was investigator interests or to time and resource constraints. Multidisciplinary multispecialty CME’s dealing comprehensively with a specific subject are given due credence for additional credit points by MMC. It is the MMC’s endeavor to promote such horizontal teaching activities which is being reflected in the present CME.

As per the MMC's, CME programs meant for graduate doctors should have a brief session on national health programs on relevant subjects along with adequate exposure to recent advances, changing modalities of treatment, adequate exposure of consumer protection and medical insurance laws. In the line with the above guidelines, in the present CME too, the very first session was on National program for control of Cancer, Diabetes, Cardiovascular diseases and Stroke along with recent advances with regard to NCDs in public health context. The second session was on changing modalities of treatment for NCDs including the newer drugs. A significant change was observed in the mean score of the respondents before and after the CME program. The mean score of 2.01 obtained on the pre-test evaluation improved significantly to 10.01 in the post-test evaluation (p <0.05). Similar findings were quoted by Vasudevaiah V & Dash M in their study of evaluation of the effectiveness of CME program on “Pediatric Emergencies and Management” at Puducherry wherein they got the pretest mean knowledge score among the health personnel as 3.15 ± 0.89 whereas the posttest mean knowledge score was 4.47 ± 1.58. The Z value was -2.555 and the p value was 0.011 (p <0.05) which was significant at 0.05 level. Another study on “Mixed methods evaluation of an international internet-based continuing medical education course for pediatric HIV providers” by Ramanathan R in Pune of Maharashtra state, India also revealed significant increase (p<0.05) in mean knowledge scores in pre and post test evaluation. Thus in the present study ‘Program evaluation’ of CME...
revealed that it was successful in achieving its objectives, as depicted by the feedback and improved learning score of the participants.

**Limitation of study**

Level 3 & 4 of evaluation i.e. of transfer or change in behaviour and result or impact of program respectively was not done due to time and manpower constraints, hence excluded though these levels represent the truest assessment of a program's effectiveness.

**Recommendation**

Each and every program or even any activity of a large program should be evaluated over a period of time which acts as a benchmark for further improvement in that program or activity.

**Conflict of interest**

The authors have no conflicts of interest.

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