Determination of Satisfaction Index as a tool in evaluation of CME Program

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ABSTRACT

Continuing Medical Education is an indispensable part of physician's learning. Well designed program based on andragogy principles can enhance learning by motivating the learner and providing platform to encourage self directed learning. The present study aimed to explore the impact of program “NAMS-AIIMS Regional Symposium on Sleep Medicine” in changing the behavior and attitude of participants using “Satisfaction Index” and descriptive analysis of responses as evaluation tools for program effectiveness. This descriptive cross sectional study captured the response of participants through a pre-tested and validated questionnaire administered at the end of symposium. The result showed almost equal sex distribution (M: F- 27: 34) with majority being UG students (86%). Reliability of data showed Cronbach's Alpha of 0.98 indicating high reliability. Satisfaction index (SI) calculated as per WHO Educational Handbook for Health Personnel showed highest satisfaction for conducive environment of symposium (87.87 %) followed by provision for time to seek clarifications (87.21%), provision of appropriate Learning Resource material (85.90 %) and handling of critical comments by organizers (85.57%). Descriptive analysis showed majority responses as highly positive to our questionnaire with suggestions for more such activity, inclusion of clinical cases and other aspects of practical relevance.

Key words: evaluation, program, satisfaction index, Kirkpatrick Model, student satisfaction, adult learning, Knowles Theory.

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INTRODUCTION

Education is a purposeful activity to bring about desired behavioural changes in knowledge, attitudes and skills among the learner with an aim to benefit the society of which learners are an integral part. Medical education is the systematic process to bring about these changes enabling the learner to practice medicine efficiently and provide need based health care to the society.

Continuing Medical Education (CME) is an integral part of a health professional's training and aims to keep him updated with newer technology and knowledge for effective and efficient clinical practice. Since these activities are a systematic way of imparting knowledge and skills, it becomes imperative that preceptor(s) are able to evaluate the program for its outcome and impact on learner.

Donald Kirkpatrick, Professor Emeritus at the University of Wisconsin, US and past president of the American Society for Training and Development (ASTD), first published his Four-Level Training Evaluation Model in 1959, in the US Training and Development Journal. Since then Kirkpatrick model has become the most common tool for evaluating a training program or educational activity (1).

The model was subsequently updated in 1975, and again in 1994, when Kirkpatrick published his best-known work, "Evaluating Training Programs." The desired levels are- Reaction, Learning, Behavior and Results (Outcomes). While reactions can be evaluated by survey questionnaire and learning can be assessed using pre-post intervention test or a similar retrospective questionnaire, behaviour and results (outcomes) are long term levels and can only be evaluated over an extended period of time. Out of these, results (outcomes) evaluation is complex, time consuming and challenging. It essentially depends on identifying outcomes, benefits, or final results which are most closely linked to the learning objectives of the training, and designing an effective way to measure these outcomes over an extended period of time. The CME program can be evaluated realistically upto level 1 with the help of a well designed survey.

As part of 53rd Annual Conference of National Academy of Medical Sciences, NAMSCON 2013, a Regional symposium on Sleep Medicine was organized on 25th October 2013. Through this paper we wish to share our experience of the Kirkpatrick's first level of evaluation through measurement of an objective index termed as Satisfaction index.

Aims of the study:

To find out the impact of program “NAMS-AIIMS Regional Symposium on Sleep Medicine” in terms of reaction of participants using “Satisfaction Index” and descriptive analysis of responses as evaluation tools for program effectiveness.

Methods:

This descriptive cross sectional study carried out during Regional Symposium on Sleep Medicine as part of
the 53rd Annual Conference of National Academy of Medical Sciences consisted of a planned educational activity with well defined learning objectives stated below:

**At the end of symposium, participants will be able to:**

1. demonstrate awareness of magnitude of problems of sleep in Indian scenario, and the association with the increasing prevalence of Obesity in adults and children.

2. comprehend the importance of changes in normal sleep physiology leading to diverse medical disorders in both young and old.

3. demonstrate a thorough understanding of specific disease states associated with sleep disorders.

4. interact with multi specialty biomedical scientists in elucidating causation and consequences of sleep disordered breathing.

5. describe screening approaches and test procedures for the diagnosis of sleep disorders and associated clinical conditions.

6. rationalize and plan the management of OSA.

7. explain the need and emerging roles of sleep labs and comprehensive sleep centers in India.

   The educational programme was delivered with the help of live presentations by renowned experts in the field of sleep medicine and was further augmented by distribution of pre-symposium Learning Resource Material (LRM), content-based well planned interactive sessions, problem triggers and facilitating participants' involvement through interaction in non-threatening environment.

Following tools were used for **program evaluation:**

**Program Evaluation Questionnaire**

a. CME committee of National Academy of Medical Sciences provided a prepared and pre tested questionnaire based on Likert scale.

b. This included following:

   i. Demographic details

   ii. Part A about symposium planning, utility of working method(s), academic content, and format of symposium

   iii. Part B concerned with Gain in knowledge, skills and some additional information needed for further improvement of such activities

c. Satisfaction Index based on data from Part A questionnaire

   Formula used for calculating Satisfaction Index is stated below (2):

   \[
   SI = \frac{(aX1)+(bX2)+(cX4)+(dX5)}{N} \times 20
   \]

   Where,

   SI is Satisfaction Index : a,b,c,d are number of total responses for the Co-efficient 1, 2, 4 and 5

   N= number of total participants
d. Qualitative evaluation based on individual responses of data from Part B. The participants were explained about the aim of the research. They were assured that all information solicited and collated was confidential and self identification entirely optional. The willingness of the participants to answer the questions was obtained. SPSS 17.0 was used for data analysis.

Results

At the start of Symposium, 103 participants registered for the program. Sixty one participants returned the pre-assessment form, attended all the sessions and were present throughout the academic programme*. They also gave consent to fill the evaluation questionnaire after being briefed about the objective of the survey, confidentiality of the data, and the protected identity of the participants, if willingly provided.

Salient data outcome includes:

1. **Demographics**
   - Majority of participants were UG students (n=53; 86 %). Males- 27, females 34

2. **Response rate (relevant to participants*) : 53/61 (86.88 %)**

3. **Satisfaction index: (Table 1)**

   Mean score of satisfaction index was 82.47 ± 5.09. Reliability analysis with Cronbach's Alpha was 0.98 showing reliability of all variables.

   The participants were requested to rate each statement in a four point rating scale : 1- strongly disagree; 2 – disagree; 4 – agree; 5 – strongly agree. A satisfaction index (SI), having a maximum possible score of 100 was calculated for each statement rated, considering the value assigned to each point in the scale and the number of participants rating the statement under reference. A total of twenty-one statements were analysed.

   It is gratifying to note that none of the twenty-one statements was rated with a satisfaction index of less than 60%, the internationally accepted norm for an unsatisfactory outcome. Therefore, arbitrary cut-off points (SI above 85% and SI below 80%) were used for further analysis.

   There were four statements with SI more than 85%. These included:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Satisfaction Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) I found the documents provided of acceptable quality</td>
<td>85.90</td>
</tr>
<tr>
<td>ii) Time was provided to seek clarification on issues included in the background documentation</td>
<td>87.21</td>
</tr>
<tr>
<td>iii) The general atmosphere of the symposium was conducive to serious work</td>
<td>87.87</td>
</tr>
<tr>
<td>iv) The organizers made use of any critical comments I made during the symposium</td>
<td>85.57</td>
</tr>
</tbody>
</table>
Table 1: Program evaluation using satisfaction Index

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Parameter</th>
<th>Response</th>
<th>Total (A)</th>
<th>Number participated/responded (B)</th>
<th>Satisfaction Index (A X 20)/B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I received precise information in advance on the aims of the Symposium.</td>
<td>0 2 172 85</td>
<td>259 61</td>
<td>84.91</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>The goals of the symposium appeared to me to be of immediate interest for my academic activities.</td>
<td>0 4 160 95</td>
<td>259 61</td>
<td>84.91</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>The content of the symposium dealt with issues I generally encounter in my academic assignments.</td>
<td>0 32 152 35</td>
<td>219 61</td>
<td>71.80</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Considering my other professional commitments, the symposium Scheduling was appropriate.</td>
<td>2 22 136 70</td>
<td>230 61</td>
<td>75.40</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>I found the documents provided of acceptable quality.</td>
<td>0 2 160 100</td>
<td>262 61</td>
<td>85.90</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Time was provided to seek clarification on issues included in the background documentation.</td>
<td>0 8 108 150</td>
<td>266 61</td>
<td>87.21</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>The working methods used during the symposium encouraged me to take an active interest in the session themes.</td>
<td>0 6 128 120</td>
<td>254 61</td>
<td>83.27</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>The pace of presentation of the subject content was appropriate.</td>
<td>0 20 124 100</td>
<td>244 61</td>
<td>80.00</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>The general atmosphere of the symposium was conducive to serious work.</td>
<td>0 2 136 130</td>
<td>268 61</td>
<td>87.87</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>The organisers gave me opportunity for critical comment.</td>
<td>2 12 156 75</td>
<td>245 61</td>
<td>80.33</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>The organizers made use of any critical comments I made during the symposium</td>
<td>2 32 192 35</td>
<td>261 61</td>
<td>85.57</td>
<td></td>
</tr>
</tbody>
</table>
These four statements reflected the quality and content of learning resource material provided to the participants; time provided to seek clarification on issues included in the background document; ambience of the symposium considered conducive to serious work; and use of any critical comments made during the symposium.

Overall, these four statements reflect the planning, conduct, and content of the workshop.

The statements with SI below 80% were:

<table>
<thead>
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<th>Statement</th>
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</tr>
</thead>
<tbody>
<tr>
<td>i) The content of the symposium dealt with issues I generally encounter in my academic assignments</td>
<td>71.80</td>
</tr>
<tr>
<td>ii) Considering my other professional commitments, the symposium scheduling was appropriate</td>
<td>75.40</td>
</tr>
</tbody>
</table>

Least satisfaction was shown for the programme content which dealt with issues related to their academic assignments (71.80 %) followed by symposium scheduling considering other professional commitments (75.4). Indeed this is obviously due to the fact that 86% of participants are under-graduate students, a fact not known at the time of designing the questionnaire.

Friedman's test did not show significant difference between parameter ($\chi^2$ of 3.487 $p=0.968$)

**Descriptive analysis of Part B is shown in Table 2:**

The table showed highly positive responses for gain in knowledge, attainment of new skills, improvement in competencies and a desire for more such symposia on the theme of Sleep Medicine. Non-responders ranged from 11% for attainment of new skills and 14 % for desire for future workshop to 73% for question pertained to post-graduates preparing for examinations. This reinforces earlier observations pertaining to 'least satisfaction' under Para A.

**Discussion:**

Evaluating any educational intervention for its effectiveness on learner is not only desirable but mandatory. The information not only provides feedback about the program but also brings forth the essential prerequisite to continuously monitor and modify the design of the academic content and process of educational programme. Curran et al have used a retrospective, pre-post evaluation study design comparing identical satisfaction, knowledge and confidence outcome measures for their internet based CME delivery format (3). While these investigators used the mean of the Likert scale score, present study was based on satisfaction index. Moreover, present study was a post symposium evaluation with descriptive responses
Table 2: Descriptive analysis of participant's response Part B

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Positive</th>
<th>Negative</th>
<th>No response</th>
<th>Salient descriptive comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain in knowledge in respect of clinical management</td>
<td>45</td>
<td>3</td>
<td>13 (21%)</td>
<td>Being a 1st year student, I gained a lot and will read more on OSA Realised the seriousness of Sleep disorders</td>
</tr>
<tr>
<td>Attainment of new skills and will you be able to utilize in your practice</td>
<td>44</td>
<td>10</td>
<td>7 (11%)</td>
<td>Developed correlations between various sleep conditions. Acquired valuable information for my future use</td>
</tr>
<tr>
<td>Improving in competencies in managing such problems</td>
<td>44</td>
<td>2</td>
<td>15 (24%)</td>
<td>Because of knowledge, broader view of pathophysiology, identifying co-morbidities. I gained foundation of sleep medicine I am new to this topic and hence can’t comment</td>
</tr>
<tr>
<td>If you are a PG student, has this helped you in preparation for your exams?</td>
<td>10</td>
<td>1</td>
<td>45 (73%)</td>
<td>I am a UG student and hence can’t say I am UG student but I think such sessions would help in my exam I am Asst professor but will help me in preparing for teaching UG and PGs</td>
</tr>
<tr>
<td>What additional topic areas should be included in a symposium in future?</td>
<td>6</td>
<td>5</td>
<td>31 (50%)</td>
<td>Practical aspects and case based approach—it was only a theoretical discussion. Elaboration of medical terms beforehand Inclusion of Indian scenarios. More prevalent disorders with scope of research</td>
</tr>
<tr>
<td>What topics/subjects to be deleted or under-emphasized if this symposium is to be repeated in future</td>
<td>24</td>
<td>5</td>
<td>32 (50%)</td>
<td>Pharmacology and Bio-molecular portion Topic which were of very high level No deletion required—all are relevant</td>
</tr>
<tr>
<td>Is one workshop on this subject sufficient?</td>
<td>21 (yes)</td>
<td>29 (No)</td>
<td>11</td>
<td>At least for motivation otherwise update always required More is required as the topic is very vast and some other sleep conditions not covered</td>
</tr>
<tr>
<td>Would you like more workshops in future on this theme</td>
<td>46</td>
<td>6</td>
<td>9 (14%)</td>
<td>Yes, but with new ideas/topics/modifications With more details and new development More workshop on different themes would be appreciated</td>
</tr>
<tr>
<td>Suggest any improvement</td>
<td>23</td>
<td>15</td>
<td>23</td>
<td>Interaction, more videos It should be 2-3 day workshop</td>
</tr>
<tr>
<td>Deficiencies in planning, conduct or any other academic/organizational aspect of workshop</td>
<td>24</td>
<td>9</td>
<td>28 (45%)</td>
<td>Everything was good Workshop was properly conducted, there were no deficiencies to draw my attention. More experts from the field should have been invited for better quality discussion</td>
</tr>
</tbody>
</table>
about gain in knowledge, skills and competencies. Participants showed highly positive responses in these areas. They also showed their eagerness to participate in such educational activities in future.

Karaman evaluated the perception of nurses toward distance CME using survey method in a quantitative study and found positive response with significant difference among nurses who used computer frequently (5). The present study showed that goals which are of immediate interest, provision of conducive environment, and time provided for the clarifications, were the parameters considered highly satisfying by the participants. Arminia also found that clarity of educational objectives and advantage of the program format yield higher score for satisfaction (6). Observations in the present study also conform to the principles of adult learning that states: 'Adults need to know why they need to learn something: Adults need to learn experientially: Adults approach learning as problem-solving, and Adults learn best when the topic is of immediate value' (7). These basic tenets of adult learning are generally endorsed by medical educationists who have elaborated these as follows:

- New facts must relate to the pre-existing knowledge-base so that these get contextually integrated.
- Learning is greatly facilitated if the cohesion between new information and its integration with already existing knowledge is purposeful and meaningful.
- Learning must be directed to, and applied for, problem solving.
- Learners are motivated to achieve a higher level of performance if they feel involved and challenged.

It is essential that feedback must be immediate and should be positive to reinforce learning, with suggestions for improving performance and for taking remedial measures to avoid or minimize errors.

A limitation of the present study was lack of comparative analysis between diverse academic status of participants since majority of participants were undergraduates students. It may be argued that further sub-classification of undergraduate students could have been made accordingly to their scholastic level. However, a small sample size of 56 students could not permit further sub-classification to provide any meaningful statistical data. Another limitation is the fact that data reflects only immediate learning as reaction and needs long term follow-up for evaluation of change in behaviour and skills over an extended period of time.

**Conclusions:**

The study shows that a well planned educational activity with defined learning objectives delivered through experts under favourable environment provides high satisfaction to participants in gaining knowledge, and in imparting skills and competencies. Such well-designed activities motivate participants
and encourage them to seek additional academic assignments for their self development, in addition to self-directed learning through internet and other electronic media.

Acknowledgement

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REFERENCES:


