

## An Experimental Study On Evidence Based Education System: An Innovative And Advance Teaching Method

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**Abstract: Background & Objectives:** Sumandeep Vidyapeeth incorporated a new teaching method in medical education probably 1<sup>st</sup> time in India. It was a move towards evidence based education system (EBES), which requires utilizing of existing evidences and establishing new evidences, where current evidences are insufficient. **Method:** 15 EBES learning sessions were conducted by trained and professional teachers for first year MBBS students in 2011. EBES was not only included in curriculum but also, evaluated to see student's attitude towards this new teaching method. 50 students were given a project related to Physiology. This project was about the use of basic science knowledge in various clinical conditions. **Results:** Evaluation of project showed satisfactory results. Project submission was followed by the written evaluation in the form of examination of 150 students. Written exam syllabus included the prior EBES learning. Theory exam evaluation showed that about 46% students got more than 80% marks, while about 34% students got 60-80% marks. **Interpretation & Conclusion:** 1<sup>st</sup> time incorporation of this new system on medical undergraduates showed outperformed results. This educational setting paving a new way for development of a successful international teaching methodology in Indian medical education

**Keywords:** Evidence Based Education System, E-learning, MBBS

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**Introduction:** Evidence is information used to establish facts or it is a proof that certain treatment works for certain conditions. The term evidence based education was first used by Hargreaves in 1996<sup>1</sup> in a lecture given at a teacher training agency. US institute of education sciences defines evidence based education as: "The integration of professional wisdom with the best available empirical evidence in making decision about how to deliver instructions"<sup>2</sup>.

This definition values the insight of both researcher and practitioners in determining how best to provide educational services. This paper will expand on this definition, and described a process that is adapted to the adult medical education context.

Innovation in medical education is required because many students view college as nothing more than the place for job preparation. One other factor is having a negative impact on Indian higher education is the continued use of ineffective teaching method.<sup>2</sup> What certain, however that most colleges instructions used lecture is based teaching methods<sup>3</sup>. Numerous studies found that alternative teaching methods tend to be more effective than lectures at improving a wide range of student learning outcome<sup>4</sup>.

Sumandeep Vidyapeeth might be the first Indian medical university start to use this innovative teaching method as one of the part of the curriculum. Kept all these in mind, this study was conducted to evaluate the impact of evidence based education system an extremely new innovation, on first year MBBS students of SBKS Medical Institute & Research Centre.

The aim of this study was to evaluate the effect of EBES, an innovative teaching technique on first year MBBS students. This evaluation was followed by feedback, to see the students view towards the new teaching technique. Project evaluation and theory examination were the main objective of this study.

**Material & Method:** We have conducted a follow up study of one year in first year MBBS students based on the prior implementation of EBES in the curriculum. The implementations were as follows:

Pre-Requisites:

- Teaching Materials for understanding of EBES to first year MBBS students
- We have conducted 15 lectures in 2010-11 batches on EBES teaching.
- We have also conducted E-learning sessions to give them an idea about the searching of evidences. The sessions focused on acquisition, applications and implementation of evidence into real clinical situations.

- Wi-Fi facility was given to all students to incorporate the searching during their lectures.
- All the lectures and E-learning sessions (computer assisted) were conducted by the trained faculty (Trained in International conference on EBES held at Sumandeep Vidyapeeth on dated 28 and 29 March 2010).
- The session training was also given to the faculty in international work shop on EBES held at Sumandeep Vidyapeeth on dated 31 March 2010)
- Departmental workshops were also conducted. Other regular lectures were also incorporated with the EBM.

After all these preparations, we define explicit learning objectives about knowledge and skills for different clinical projects based on EBM. 150 students divided into three different batches of 50 students in each and allotted to the subject projects. Batch C was given a Physiology project. 50 students were given two clinical problems in the form of a project in two different batches. The project formation covers the following steps;

- Form a clinical question in PICO format (P= Patient, I= Intervention, C= Comparison, O=outcome)
- Searching the evidences on the basis of prior teaching and E- learning sessions.
- Critical appraisal of systematic reviews.
- Applicability of the evidences to the patient or model.
- How to implement this knowledge into practice.

Each model was a combination of teaching and learning methods. It was a standard format for EBES to evaluate the skills and learning<sup>5</sup>. All projects were evaluated on the basis of their reliability, validity and standardization of evidences. The best available evidence in projects decided the evaluation. The decision was as; to which studies produced the best available evidence is based on the number of studies that support the same findings.

Similarly all students were asked to fill in a short questionnaire about the usefulness of the present curriculum and their views about the EBES in general. We used a previously validated

questionnaire<sup>6</sup> to assess the attitude of students towards this new teaching innovation.

Outcome Measures Or Assessment: All students were assessed for the evidence based learning. For this assessment we made the EBES, a separate part of final examination for first year MBBS students. The question paper contains 15 questions, about the principles of EBES. Out of 150 students about 140 students were given the examination and they assessed by external professionals.

Data Analysis: Evaluation marks were considered as data for analysis. Marks were given for projects out of 20 by trained faculty. Project evaluation marks were analyzed in the form of Mean  $\pm$  SD. Theory evaluation was analyzed by number of subjects within a percentage range. Percentage range was denoted by pie chart.

**Results:** This study was conducted to evaluate the effect of the change in curriculum on the students and their views about this new education method.

All the students were of same age group and all were computer literate. All students were treated with the same teaching pattern. Low psychological skills were not considered for exclusion criteria. Project evaluation showed mean marks obtained were  $14 \pm 4$  (Out of 20). Out of 50, 40 students got 70-80% marks. This result itself showed students interest towards new methodology of teaching. 5 students got more than 80% marks and they prepared the project with most valid and recent evidences. Other 5 student's projects were rejected due to insufficient Material.

Final assessment of EBES theory exam showed that out of 150 students 140 had been appeared in the examination. Out of 140 about 60 students got 81-100% marks, 47 students got 60-80% marks, while remaining were in range of 40-60% marks.

After completing the study students felt more confident that they can assess research evidence. The qualitative feedback, we received from students indicated that most found course useful, the Material to be of good quality and the difficulty level of content was adequate. Overall this study showed that EBES leads to knowledge

and attitudinal gain. Almost all students welcomed the development of further course.

**Discussion:** As mentioned above, typical Indian medical education system has still not adopted the new approach of evidence based education system. Sumandeep Vidyapeeth not only incorporate this into the curriculum but also make it a assessment tool. Project evaluation has a hierarchy of EBES, and provide the information about the stronger evidences than one lower down.

The effective practice of evidence based medicine requires the application of 'current best evidence' to individual patient care. While there is consensus that it is critical to include patients' individual preferences in medical decision-making the best way to involve patients in the process is unclear<sup>7</sup>.

Our findings showed that the students are not only positive towards the new educational measures but also they are able to incorporate the latest evidences in clinical problems. The general impression is that teacher-student relationships in the problem based learning curriculum are far more interactive than they used to be in the old curriculum<sup>8</sup>. The integration of professional wisdom with the best available empirical evidence in making decision about how to deliver the instructions will be very helpful.

Well designed evidence based curriculum can guide students by including direction to keep pace with the concept of ever evolving scientific research<sup>9</sup>. Studies reported that largest education studies conducted, project follow through showed that evidence based studies were more effective than others methods<sup>10</sup>. Studies also reported that evidence based model studies are significantly outperformed than the students centered models<sup>11</sup>.

Study states that the case studied as models are valued over statistical data in education because educational events are governed not by universal laws of causes and effect but, instead by human interaction and by multiple concurrent and interacting influences. At some extent evidence based education face criticism also, states that advocate of evidence education tend to treat practices as an application of research based knowledge, neglecting the extent to which it necessarily involves uncertain judgment.<sup>12</sup>

Limitations of study: However, our study was conducted in a more supervised and controlled environment, absence of a control group can be seen as a short coming of this study. The overall dropouts were very few, assuring that EBES is a feasible and acceptable method for learning in undergraduate medical education

**Conclusion:** Based on our findings we can conclude such combined evidence based medical education with an effective method to incorporate new evidences in future patient care. Quality education cannot be achieved by relying on a single theoretical view alone. Our findings also demonstrate that E-learning sessions in EBES can be harmonized for effective medical teaching and learning across India. If evidence based education would be used for medical students, the similarities and differences between medicine and education need to be considered. We cannot give conclusion about the effect of the course on behavioral changes or long term educational changes.

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