

## A horizon of medical education research approach in 21<sup>st</sup> century

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**Abstract:** The author is a reviewer of various peer reviewed journals and during the review of the medical education research manuscript was observed that many novice of the field of medical education research do not follow the scientific steps of the medical education research. Therefore, this paper is aimed to reflect the essence of medical education research approach and to help the novice medical education research investigators to design the project in scientific approach. An intensive review is made on the available printed and online resources. The resources were mainly on the social science and medical education research methodologies. Medical education research steps must follow the various steps of social science research methodology. Due to various reasons case study methodology became popular approach in medical education. The case study comprises of interview survey, questionnaire survey, participant observation and documentary analysis. To overcome the inherent weakness of the non-experimental subjective research, triangulation methodology is being used in recent years. Case study approach is the best way to explore the research issues of the medical education. The triangulation methodology must be applied to overcome the inherent subjectivity of the research approach. This paper may be used as a guide to design the various steps of case study research approach in medical education.

**Keywords:** Case-study; Interview; Questionnaire survey; Participant observation; Documentary analysis; Triangulation

### Introduction

Most commonly used research approach in medical education is non-experimental; qualitative and quantitative in nature. Narrow scope exists to do experiment in medical education due to time constraint of the students [1]. Therefore, case study method gained popularity over the years in medical education research. The case study method comprises of interviews, questionnaires, participant observation and documentary analysis to collect the data in relation to research topic [2-3].

The aim of case study method is to investigate a contemporary phenomenon within the real life activities [4-5] and allows a better and deeper understanding of the research question [6]. The most significant aspect of this method is to involve various sources and techniques in the data gathering process [1, 7]. The analysis of case study method provides an opportunity to the researcher to develop an analytical and decision making skills [1, 4, 6]. The result of case study research is made more public accessibility through written report [1, 8] and provides

democratization of the collected data. Therefore, readers are able to judge themselves about the implication of the study [8].

### Interview survey

Cannel and Khan (1968) [9] defined interview as “a two person conversation, initiated by the interviewer for the specific purpose of obtaining research relevant information and focused by him (or her) on contents specified by research objectives of systemic description, prediction or explanation”. The objective of the interview is to exchange of ideas and experiences, eliciting the information pertaining to the issue. In this process investigator needs to look into the research question from within outward or vice-versa [10-11].

According to Louis and Lawrence (1992) [12] interviews can be formal, less formal, and completely informal. Formal interview: predetermine set of questions are asked and answers recorded on a standardize schedule

[10]. Less formal interview: researcher can modify the sequences of questions, change the wording, explain them or add to them. When issues are raised in conversational style and do not follow a system, termed as completely informal or unstructured or unguided or uncontrolled or nondirective interview [10, 12]. Young and Schmid (1973) [10] has described about focused interview. In this process a group of individuals selected by the investigator to discuss the research issue from their experience and knowledge [13]. It became popular among the medical educators in recent years. Seven stages of interview are being described by Kvale Steiner, 1996 [14]: thematising, designing, interviewing, transcribing, analyzing, verifying and reporting.

*Thematising:* Thematising is the “dialectical theory building” methodology by the researcher [15]. The essence is summed by Manen (1990) [16] as “a phenomenon is never simple or one dimensional. Meaning is multidimensional and multi-layered”. In this process investigator needs to reflect the conceptual clarification to analyze the research question [14].

*Designing:* In this step of methodological procedure is planned and prepare to obtain the intended knowledge. Investigator requires deciding about what kind of interview (e.g. personal, collective, expert etc.) and number of interview to be conducted. Emphasis must be given on the interdependence of the all seven stages [10, 14].

*Transcribing:* Transcript does not mean neutral copy of the original reality. In this process one has to analyzed and interpretate the collected data from various sources. Hence, there will not be any similarity with the original data [14, 17].

*Analyzing:* Kvale, (1996) [14], described six steps to analyze the collected data. First step: interviewee narrates their real life experiences. Second step: respondent may discovers them self a new relationship during the process of interview. Third step: investigator condenses and interprets the meaning being described by the interviewee. Fourth step: transcribed interview is interpreted by the researcher. Fifth step: once analysis and interpretation done, investigator gives it back to the interviewee. Sixth step:

include the actions in which interviewee begin to act from new insights that might have gained during investigation.

*Verifying:* Young and Schmid (1973) [10] quoted the work done by the Kinsey that “the accuracy of the individual history is far greater than might have been expected, with correlation coefficients ranging above 0.7 on most of cases, and percent of identical responses ranging between 75 and 99 on particular items.” At the same time some low correlations were found but they were regarded as “highly significant because they gave some insight into the factors, which are responsible for error and falsification in reporting.”

Alexander and Leighton (1944) [18] suggested that multiple techniques should be carried over to solve the problem of subjectivity of the interview and is better to take full history by detailed cross-sectional study. Therefore, the information obtained by interview requires verifying with the other method [9]. Method of triangulation is the best approach to validate the subjective matter [19].

*Reporting of the interview:* Investigator may take brief notes during interview. Researcher is to transcribe the relevant information at the end of the day [10].

### **Participant observation**

According to Hammersley and Atkinson, 1995 [20], participant observation is one of the best ways to explore the real-life situation. In this process investigator establishes long-term relationship with the individual and group to understand the natural daily activities [21-22].

There are two types of observer: “complete participation” and “participant as observer”. In “complete participation”, observer remains concealed to study the real life situation. In social research, complete participant gained more importance [23] because this process was regarded as a more scientific way to collect the data in comparison with the participant as observer [24]. Therefore, “participant as observer” gained significance

over the years. Researcher is able to collect the significant data even when remain as a “participant as observer” without informing the group about the research question.

### Questionnaire survey

It is the most convenient methods to collect the data from a large group. Questionnaire may be sending by mail and can reach to the respondent easily. Therefore, it is being considered as easy method to collect the data in medical education research [12]. There are two types of Questionnaire: “closed and open-ended”. In open-ended: respondent answer in their own words but in close questionnaire respondent needs to answer by choosing from a fixed alternative [25-26]. In medical education research investigator needs a categorized data, therefore, close-form questionnaire is more useful [10, 26].

Kornhauser Arthur (1959) [27] suggested a useful checklist which is as follows:

#### Question content:

- Is the question necessary to understand the issue?
- Are several questions needed on the subject matter?
- Is the respondent aware about the issue to answer the question?
- Does the question need to be more concrete, more specific, and more closely related to respondent’s experience?
- Question content must be general and free from spurious concreteness and specificity.
- Questions must be unbiased and should not be loaded in one direction.

#### Question wording:

- Questions must be out of difficult or unclear phraseology which may leads to misunderstanding.
- Questions should express the proper alternative in respect to responses.
- Questions must avoid misleading by reason of unstated assumptions or unseen implications.
- Question wording must not be objectionable to the respondents.

#### Question sequence:

- Answers to the questions should not influence the content of the preceding questions
- Questions must be led up in a natural way
- Questions should be in correct psychological order.

#### Form of response:

Young and Schmid (1973) [10] mentioned that in closed questionnaire survey the responses are to be recorded in integration with the form of the questions. The responses may be dichotomous or multiple choices. In dichotomous response: question must have two responses like ‘Yes’ or ‘No’. This method may not provide sufficient information on the subject. In the multiple choices: an extension of the responses varies from one extreme to the opposite extreme e.g. ‘strongly agree’ to ‘strongly disagree’. It is better to use a central ‘neutral’, ‘undecided, or ‘no opinion’ which can help to avoid the bias [25].

### Documentary analysis

In this step researcher should find out relevant material from different sources. The relevant documents are: resource articles, various health problems, learning guides, time schedule, and curricula of different universities. The most important step is to compare these collected objective data without bias.

### Triangulation

The meaning of triangulation is an application and combination of several research methodologies in the study of the same phenomena [28-29]. It provides "more detailed and balanced picture of the situation" [30]. Multiple variables are used to overcome the weakness or intrinsic biases of any particular methodology [28]. The aim of this methodology to establish the position of a point, which can be achieved in several ways to corroborate one set of findings with another for the internal validity of the collected data [19, 28, 31-35].

## Conclusion

An effort is made to reflect the essence of the medical education research methodology, which can be used as a guide line for the novice medical

education researchers. It is very important to understand the social science research methodology before designing any medical education research project.

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