Research Article

Effectiveness of Systematic Reviews and Meta-analysis Webinar on Knowledge and Level of Satisfaction among Delegates across India

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A B S T R A C T

Introduction: Systematic reviews and meta-analyses are being used increasingly to summarise the literature and identify areas in which research is needed. Systematic reviews limit bias with the use of a reproducible scientific process to search the literature and to evaluate the quality of the individual studies. The primary aim of this article is to review the concept of systematic reviews and meta-analysis, outlining the importance and describing various methods to do systematic reviews with the help of webinars.

Method: The pre-experimental research with one group pre-test and post-test research design was adopted for conducting the study at the School of Nursing Science, Sharda University. A total of 220 participants attended the webinar and 159 participants met inclusion criteria. The knowledge questionnaire was made to assess the knowledge of the participants related to the systematic reviews and meta-analysis. The level of satisfaction was assessed using 5-point Likert scale.

Results: The results showed that the mean post-test knowledge score (16.90) was significantly higher than the mean pre-test knowledge score (8.10). The calculated "t" test was found to be statistically significant (p < 0.05). The participants were found to be 100% satisfied with the webinar.

Conclusion: The study concludes that systematic reviews and meta-analysis webinars have proven to be effective in increasing the knowledge as well as the satisfaction levels of the participants.

Keywords: Systematic reviews, Meta-analysis, Effectiveness, Knowledge, Satisfaction

Introduction

A systematic review is a process of collecting all the possible research studies on a given topic, and reviewing as well as analysing their results. During this process, the quality of the various studies is evaluated. A meta-analysis is a very scientific, objective method of analysing and combining different results which mainly include randomised controlled trials. These types of reviews are conducted

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in diverse medical fields with the aim of highlighting their importance to help better extract accurate and good quality data from the plethora of research being produced every day.[1] Systematic reviews also reduce bias by using explicit methods to perform a comprehensive literature search. Systematic reviews aim to facilitate the process of research synthesis of multiple studies, enabling increased and efficient access to evidence. Not all systematic reviews include meta-analysis, but all meta-analyses are found in systematic reviews.[2]

A meta-analysis is a combination of data collected from several independent primary studies with the same questions to produce a single estimate like the effectiveness of the treatment or prevalence of risk factors. The term meta-analysis is used to denote the full range of quantitative methods for research reviews. It provides a logical framework to a research review where similar measures from comparable studies are listed systematically and the effective measures are combined wherever possible. Therefore, the systematic review refers to the entire process of collecting, reviewing, and presenting all available evidence while meta-analysis is the statistical technique involved in extracting and combining data to produce a summary result.[3]

There are strengths and limitations of systematic review and meta-analysis. The specific advantages being the usage of explicit methods to limit bias, drawing of reliable and accurate conclusions, improving generalisibility and consistency of results and increasing the overall precision of the results whereas the limitations such as the location, selection of studies, heterogeneity, loss of information on important outcomes, inappropriate subgroups analyses and the conflict with the new experimental data.[4]

However, a lack of understanding about the process of systematic reviews and meta-analysis can lead to incorrect outcomes being derived from the review and analysis process. There is a possibility of producing incorrect data when the readers accept the incorrect data.[5] Therefore, having the knowledge to appraise a systematic review isa very important skill as systematic reviews as a study design are considered the highest level of study quality. It is very crucial to make the budding researchers understand the systematic reviews and meta-analysis to describe it correctly.[6]

So, a webinar on systematic reviews and meta-analysis was organised and the effectiveness is assessed with the help of knowledge questionnaires and the level of satisfaction ofthe participants is assessed among the various delegates attendees across India.

Objectives of the Study

- To determine the effectiveness of systematic reviews

and meta-analysis webinar in terms of change in knowledge among delegates across India
- To find out the level of satisfaction regarding systematic reviews and meta-analysis webinar among the delegates across India

Material and Method

A quantitative research approach with pre-experimental research design one group pre-test and post-test was adopted. The participants willing to participate in the study were included. Ethical approval was obtained from the Institutional Ethics Committee. Informed consent was taken from all the participants and confidentiality of their responses was ensured.

Webinar Development

An international webinar on systematic reviews and meta-analysis was organised by the School of Nursing Sciences, Sharda University from 26th July to 30th July 2021. A pre-test questionnaire was shared via a link on the group for the delegates to fill on day 1. The series of lectures were conducted for 5 days related to the introduction of systematic reviews and meta-analysis, development of systematic reviews protocols, formulating questions on systematic review, formulating a search strategy, selection of studies and data extraction etc. The webinar was designed to increase knowledge and to assess the levels of satisfaction of the participants on systematic reviews and meta-analysis. Topics were selected based on the required need of the research participants from different areas of nursing profession. Each day webinars began at 11 am and each session was for 60 minutes of duration. Webinar featured content experts for the selected topics and was delivered using an online meeting software platform (zoom). Demographic data were collected using the polling system, to understand the participant's prior knowledge of the topic, age, educational levels. Qualification, email address, software used for online webinar, professional designation etc.

The participants were engaged with each session with the polling, quiz and question answers reviews. The post-test was circulated using another link on the 5th day of the international webinar. The participants included those who filled both pre-test and post-test, with more than 75% attendance and a good internet connection. The knowledge questionnaire was filled out by 159 participants. The knowledge questionnaire consisted of 20 questions related to systematic reviews and meta-analysis. The levels of satisfaction were assessed using 5 - point Likert scale with the ranges of 1-5 (1 being strongly disagree and 5 being strongly agree).

Results

Out of 250 registered participants across the 5-day

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international webinar, only 159 were eligible to be included in the study as they met the inclusion criteria. Majority of the participants (65%) were nursing students and only 25% were academicians.

Table 1.Assessment of Knowledge Scores

N = 159

Knowledge Score	No. of Students (Pre-test) (f)	%	No. of Students (Post-test) (f)	%
Inadequate (0-7)	104	65	0	0
Moderately adequate (7-14)	55	35	20	13
Adequate (14-20)	0	0	139	87
Total	159	100	159	100

Table 1 shows that the majority of the participants (65%) were having inadequate knowledge and only (35%) were had moderately adequateknowledge. Whereas, after the webinar, majority (87%) of the participants were found to have adequate knowledge. The data is shown in Figure 1.
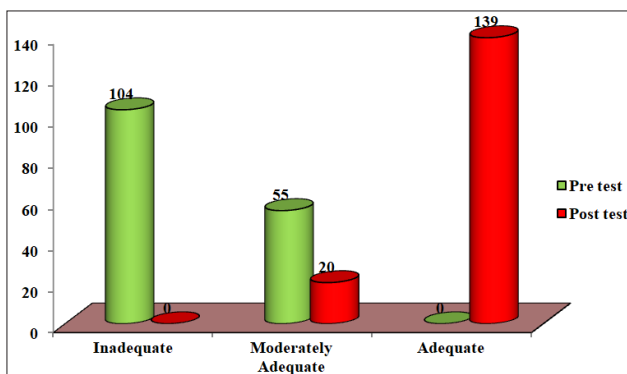

Figure 1.Assessment of Knowledge Scores in Pre-and Post-test

Table 2.Effectiveness of Webinar in Terms of Knowledge among the Participants

N = 159

Knowledge	Mean	SD	Mean Difference	t-Value	p-Value
Pre-test	8.10	3.26	8.80	27.66	0.00*
Post-test	16.90	4.09			

*significant at $p < 0.05$ df (158)

Table 2 shows that the pre-test mean knowledge score of the participants was 8.10 ± 3.26 and the post-test mean knowledge score of the participants was 16.90 ± 4.09 with the mean difference of 8.80. The calculated t value is 27.66 with the df (158), p value is 0.00 which is significant at $p < 0.05$ level.

The data indicate that systematic reviews and meta-analysis webinar were valuable for both increasing knowledge and satisfaction among research enthusiasts. On average, post-test scores revealed that the participants' mean knowledge of the webinar increased by 91% (n = 159) with the satisfaction level of 100% suggesting that webinars are a useful tool for increasing the knowledge. Additionally, all 100% of the participants would like to join us again for the next webinar.

Discussion

A systematic review is an overview of the primary studies which includes a detailed statement of objectives, materials, and methods of the variety of literature available. A meta-analysis is a mathematical synthesis of the results of two or more primary studies that address the same hypothesis in the same way. Systematic reviews and meta-analyses are high-quality syntheses of relevant studies, critically assessed research, individual studies in an unbiased manner.[7]

A systematic review aims to retrieve, synthesise, and appraise existing knowledge on a particular subject. Meta-analysis is the statistical method used to combine results from the relevant studies and the resultant larger sample size provides greater reliability of the estimates of any treatment effect.[8] Clinical discussions should be based on the totality of the best evidence and not the results of individual studies. The value and credibility of a systematic review depend on the importance of the question, the quality of the research studies, the efforts undertaken to minimise bias, and the clinical application.[9]

Implications

Systematic reviews are very useful tools for clinical decision making especially for health care workers. They objectively summarise a large amount of information, identify gaps in medical research andalso rule out the benefits or any harmful interventions used. This is highly beneficial for clinicians, researchers, and even for public and policymakers alike. The study findings can be implicated in the field of nursing research, nursing practice, nursing education, and nursing administration.

Systematic reviews have shown to produce very differential effects on learning and achievement in a number of digital learning scenarios. A quality systematic review is the most reliable source of evidence thatprovides guidance in clinical practice. It gives an idea of how to implement the research findingineveryday practice.

Limitations

The size of the participants was small as most of the

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participants were eliminated due to their in ability to fill the pre-test as well as post-test forms because of weak internet connectivity.

Recommendations

Further studies can be carried out to extend the base of primary studies that will broaden the possibilities of meta-analysis synthesis. Research can be done to estimate the extent to which different designs of interactive teaching intervention approaches can help in the increase of knowledge and skills of the participants attending the webinar. The sample size can be increased for better generalisibility of the findings.

Conclusion

Systematic reviews and meta-analyses represent a gold standard for conducting reliable and transparent reviews of the literature. These are the powerful approach that can advance the understanding of the various research literature. Systematic reviews can act as a potential method for overcoming the barriers faced by the researchers when trying to access the information from various published researches.

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