



# A Systematic Search and Analysis on Impact of Delphi Technique in Health Care

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## Abstract

The Delphi technique has made a significant impact in various fields, including health care. Originally developed by the RAND Corporation to forecast future events or arrive at a consensus among experts, and applied in health care range of purposes. The aim of the study is to evaluate the impact of Delphi technique in health care by performing a systematic search and analysis. The research was done in assessing the Delphi meeting conducted in various health sectors. The data was collected by recruiting articles from various electronic databases includes Google scholar, Scopus, PubMed, Wiley Online Library by using keywords “Delphi”, “Health care”, “Health education”, Health sector”, “Experts”, etc. The collected data were tabulated accordingly to identify the exact outcome. Totally seven number of articles were chosen from various sources based on the eligibility criteria. None of the articles fulfils the entire eligibility criteria. This systematic evaluation of Delphi studies in medical fields highlights the variations in the research methodology used. However, Delphi is the best technique in identifying the research constraints; proper guidelines to be followed in future to provide better knowledge. Continuous quality improvement is a cornerstone of modern healthcare delivery. The Delphi technique supports quality improvement initiatives by engaging stakeholders in identifying areas for improvement, setting performance targets, and developing strategies to enhance patient safety, satisfaction, and outcomes. Overall, the Delphi technique serves as a valuable tool in healthcare by facilitating collaboration, consensus-building, and evidence-based decision-making across a wide range of applications, ultimately contributing to improved patient health care.

**Keywords:** Health care, Research, Delphi method, Impact, Health education

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## 1. Introduction

Delphi is the most frequently used technique in health sector, which helps in the systematic collection and implication of knowledge from various experts with sound background on practical and research in particular with the aim of attaining the group consensus [1]. The consensus findings and maintaining the standards are crucial for exchanging ideas and knowledge on multidisciplinary basis and for incorporating exact therapeutic and diagnostic procedures in health care [2]. Health education is the coordination of learning experiences, which is designed for possible voluntary actions in promoting health to the society. The health education not only improves the behavior and positive attitudes on people but also enlighten the government

in building the health care policy. The use of appropriate technique is essential for the achieving the maximum benefits in promoting health [3]. Hence, health education is subjective, the utilization Delphi technique is essential in attaining the results [4]. Currently, no proper standards had been formatted for the implementation of Delphi method [6]. Previous studies [1,2,4,5] had performed Delphi method in various health sectors including health education, psychiatry, dentistry, radiology, etc. To overcome the challenges faced for identifying experts to implement Delphi and to evaluate the proper standards and criteria in implementing Delphi method; the current study focused to assess the selection of experts used in Delphi by systematic search and analysis.

## 2. Materials and Methods

A systematic search and analysis done on Delphi meeting conducted in various health sectors. The data was collected by recruiting articles from various electronic databases includes Google scholar, Scopus, PubMed, Wiley Online Library by using keywords “Delphi”, “Health care”, “Health education”, Health sector”, “Experts”, etc. The collected data were tabulated accordingly to identify the exact outcome.

### 2.1. Inclusion criteria

Only articles with full text were recruited. Articles related to Delphi technique were chosen. Only original articles were chosen. Articles published from the year 2010 to 2023 were recruited.

### 2.2. Exclusion criteria

No free access articles were excluded. Other than English language, articles were excluded.

## 3. Results and discussion

Delphi is the crucial and effective method and it involves the three phases: preparing, conducting and analysing phase. The preparing phase consists of initial conceptualization, creative workshops, Desk research, initial expert reviews, formulation sessions and pretest projection. The conducting phase includes selection of software tools, programming the survey, expert selection and invitation, survey conduction and expert follow up whereas the

analysing phase includes descriptive form of statistical analysis-quantitative and qualitative type of analysis, distent analysis- bias analysis, Outlier analysis, bipolarity analysis and stakeholder group analysis, Sentiment analysis and Scenario analysis [13]. The study done by Michiels et al [7] reported that consensus in the developing the international diagnostic criteria for ST was effective in providing the guidelines to followed with the help of Delphi method. There are certain limitations like insufficient expert participants, multi-factorial causation may affect the appropriate outcome in identifying the condition. Another study done by Fackrell et al [8] stated Core Outcome Domain set was the most crucial method in deciding the effective treatment for subjective Tinnitus condition. Various studies [9-14] had conducted during COVID-19 pandemic in various disciplines like rehabilitation, health education, dentistry, etc by the use of Delphi method. This systematic evaluation of Delphi studies in medical fields highlights the variations in the research methodology used. There was no single study that could score in all the nine evaluation points.

### 3.1. Limitations and Strength

The research uses the effective methods of Delphi in clarifying the concerns. The selection of experts plays a pivotal role in attaining the appropriate results. However, there are certain limitations in this research occurs due to unavailability of adequate data; many articles published in other languages, paid access are excluded which affect the study results. Further research should be conducted in future with more relevant information helps to give the better conclusion.

**Table 1.** Studies based on delphi technique in health care

Author name and year	Geographical distribution	Speciality	Method
Michiels et al; 2018 [7]	UK	ENT	Modified Delphi method
Fackrell et al; 2017 [8]	International	ENT	Pre-Delphi, modified three-round Delphi survey and final consensus meetings
Vitacca et al; 2020 [9]	Italy	Rehabilitation	RAND Delphi method
Mikuls et al; 2020 [10]	USA	Rheumatology	Modified Delphi method
Alarcon et al; 2021 [11]	Latin America	Dentistry	Delphi method by open ended questionnaire
Dashash et al; 2020 [12]	Syria	Health care education	Delphi method
Reina Ortiz et al; 2020 [13]	Ecuador	Public Health	Single negotiation text and Delphi method

**Table 2.** Purpose and outcome of systematic search and analysis on delphi method in health care

Author name; year of publication	Purpose	Experts	Duration of meeting	Outcome
Michiels et al; 2018 [7]	Diagnostic tool for Somatosensory Tinnitus	3 clinicians- (one-Audiologist, Two- ENT) 3 Scientists- (one-Neurologist, One-ENT One- Physical Therapist)	3 hours	Very effective
Fackrell et al; 2017 [8]	Management of Chronic subjective Tinnitus	1.Health care users with Tinnitus problem for 3 months or more 2.Health care practitioners 3.Clinical researchers 4.commercial representatives	4-5 weeks	
Vitacca et al; 2020 [9]	Pulmonary rehabilitation in COVID-19 patients after discharge from acute conditions	3physiotherapists, 11 respiratory physiotherapists, 12pulmonologists, 2 psychologist and 2 methodologists	2 rounds	The evidence-based suggestions provide the clinicians with current evidence and clinical experts opinion
Mikuls et al; 2020 [10]	Management of adult rheumatoid diseases during COVID-19	10 Rheumatologists and 4 infectious disease specialists	2 rounds	Draft guidance statements approved by the task force have been combined to form final guidance.
Alarcon et al; 2021 [11]	Knowledge and practice on implants in dentistry during COVID-19	Prosthodontists and general dentist with more 10 years clinical experience in implantology	Two rounds with an interval of 45 days between each round	The Delphi methodology in LA has provided insightful and useful information in regard to the practice of Implant Dentistry
Dashash et al; 2020 [12]	Health education in identifying competencies required for COVID-19 patients	Students in Medical Education Programs were participated	3 rounds	12 knowledge competencies, 20 skills competencies, and 20 competencies related to attitudes.
Reina Ortiz et al; 2020 [13]	Development of biosafety measures during COVID-19	Biosafety measures, epidemiology, public health, and ID prevention	Not specified	A flyer, created from the final protocol, was professionally designed and initially distributed via social media and institutional websites/emails

#### 4. Conclusions

Implementation of proper adequate standards and criteria in conducting Delphi meeting helps to improve the health care in future. Majority of the studies had utilized the modified Delphi method and the concerns regarding the experts and consensus were unclear.

#### *Clinical significance*

Delphi method is one of the most effective method in assessing the appropriate standards for provision of health care. However, the measures to evaluate the quality of Delphi reports have a variation in its significance and it was unclear.

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