

Use of Telephone Interviews for Oral Health Surveys in Iran: A Literature Review

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Objectives The use of telephone surveys to explore people's oral health and its determinants is gaining popularity around the world. In Iran, several oral health surveys have been carried out using telephone interviews, each providing unique perspectives on the subject. This study aimed to examine the context, methodology, and findings of these surveys.

Methods A comprehensive search was conducted on online databases, such as PubMed, Google Scholar, MagIran, and IranMedex, supplemented by a free online lookup, to find available oral health studies in Iran involving telephone interviews up to June 2023. The literature was investigated with respect to the background setting, study design, outcomes, and other pertinent content.

Results Thirteen papers, both published and unpublished, from eight studies were identified, spanning from 2006 to 2023. The primary target groups were predominantly the entire adult population of the respective cities. All studies that mentioned their call settings used fixed telephone lines. The calculated sample sizes ranged from 368 to 1475, with the number of participants varying from 302 to 1475. The ratio of completed interviews to answered calls fluctuated between 41% and 100%. A significant disparity was noted in the reporting of sample size calculations and response rates among the studies included.

Conclusion A relatively small number of oral health surveys have been conducted via telephone in Iran. The reported benefits and disadvantages of using phone calls for interviews suggest that the advantages outweigh the drawbacks, thus garnering interest in using this method in the country. It is recommended that the design of these studies follow a clear and comprehensive approach, thereby facilitating easier interpretation, comparison, and decision-making.

Keywords Oral health; Health survey; Telephone interview; Iran

Introduction

The introduction of telephone lines as an affordable and readily available communication tool has led to a rapid rise in the popularity of conducting studies, polls, and surveys via telephone interviews among researchers and public opinion centers. Since the inception of the first phone survey in the United States approximately a century ago, the benefits of telephone interviews, such as low cost, convenience, versatility, and speed, have established them as one of the most prevalent methods for conducting surveys.^{1,2}

The use of telephone surveys to gather information about people's oral health, quality of life, background characteristics, and other related factors is gaining increasing global popularity. This type of survey has been recognized as a cost-effective, accessible, and reliable method in the field of oral health. It mitigates the inherent challenges associated with conducting health surveys, such as workforce recruitment, respondent selection, and data collection.³⁻⁵ Many developed countries have long included regular local or national oral health telephone surveys for monitoring, assessment, and appropriate policymaking.^{6,7}

Iran, a country undergoing rapid changes, faces significant socioeconomic challenges. These challenges extend to healthcare services and oral health status, necessitating continuous monitoring and appropriate responses to emerging issues. In line with global trends,

Iranian researchers have demonstrated an interest in telephone-based health surveys over the past two decades.⁸⁻¹⁰ A limited number of oral health surveys have been carried out through telephone interviews in Iran, each offering unique perspectives on the subject.¹¹⁻¹⁶ Over the past twenty years, conducting oral health surveys via telephone has followed an upward trend in Iran. However, it appears that there is a lack of structured document detailing their background, methodology, and results.

The objective of this review was to compile a structured repository of experiences gathered from the use of telephone interviews for oral health studies in Iran. This paper delves into the history, essential elements of study design, improvements, and limitations of the oral health telephone surveys to provide a convenient and useful compilation of information for further community-based studies.

Materials and Methods

Online databases were explored to gather all available studies related to oral health in Iran that incorporated phone interviews in any part of the research until June 2023. The literature review was conducted using indexing databases, such as PubMed and Google Scholar, national databases, such as MagIran and IranMedex, and a free online search in search engines and local online databases, including university libraries, to find any other

available research in either English or Persian language. An electronic spreadsheet was prepared to extract and categorize information from the studies. The literature was first inspected based on the date, location, target population, and the aim of the study. The method of sample size determination, the call setting (whether landline or mobile phone), the random selection of numbers, and the treatment of each number were evaluated. In the case of landline phone calls, the inclusion of within-household random selection in the study protocol was also examined. The study results were scrutinized for response rates, key outcome measures, and the strengths and weaknesses of the studies as noted by the authors.

Results

The literature search identified 14 published and unpublished papers from nine distinct original studies that incorporated phone calls in their methodology. These studies, which pertained to people's oral health, oral healthcare, or oral health-related quality of life, and included phone-based interviews, were included in the review. One study was excluded because the phone calls did not involve an interview, resulting in 13 papers from eight studies, spanning from 2006 to 2023, being included in the review (Table 1). Four of the studies originated from the city of Mashhad, followed by two from Tehran and one each from the cities of Yazd, Kerman, and Ramsar. For studies that had more than one published article, references were made to their earliest paper.

The majority of the studies targeted the entire adult population of the respective cities they were conducted in.¹¹⁻²¹ all studies describing their call settings used fixed telephone lines. Random selection of the household members was observed in only two studies.^{12, 16} Stratified random sampling method was used in six studies^{11, 12, 14-16, 22}, followed by mixed stratified clustering¹³ and simple random sampling.²³ The methods for calculating the sample size varied among the studies, and not all of them provided detailed information about the formulas used. Additionally, if outcome rates were reported, they were calculated according to the individual preferences of each researcher.

With the exception of the paper published by Yaghoubi et al. in 2017, which was a report of their questionnaire validation and thus required a relatively small sample, the studies calculated a sample size ranging from 368 to 1475, ultimately reaching between 302 to 1475 participants. An assessment of the ratio of attempted numbers to the reached sample revealed the lowest ratio of 1.20 in the study by Nahvi et al. and the highest ratio

of 11.36 in the study by Solati.^{16, 22} On average, the researchers had to make approximately 5.18 times more calls than the calculated sample size in order to reach their desired number of participants.

In order to compare the response rates of the studies, an attempt was made to obtain a common measure for calculating the response rate. For consistency, the studies were examined for two reported figures: "answered calls" (excluding commercial lines) and "completed interviews". The numbers of answered calls and completed interviews were divided by each other to derive the "calculated response rate", as shown in Table 1. The ratio of completed interviews to answered calls varied from 41% to 100%. However, three studies did not report the number of answered calls; hence, a response rate could not be calculated for them.

The studies were examined for any advantages and disadvantages of using telephone interviews as mentioned by the authors. The benefits primarily included easy accessibility due to well-developed landline networks, low cost of data collection, convenience for both the interviewer and respondent, and the ability to maintain randomness.^{11, 14, 16, 17, 19} The disadvantages of these phone surveys were reported to include the exclusion of individuals without a fixed phone line, a weaker rapport compared to face-to-face interviews, time constraints of the interviews, and the potential risk of participant dropout.^{11, 12, 14, 16, 17, 19}

Table 1- Summary table of included studies and papers sorted by author and date

Study No.	Author	Location	Study Question	Target Population	Call Setting	Calculated Sample Size (Reached Sample)	Attempted Phone Numbers	Within-household Sampling	Reported Response Rate ^a	Calculated Response Rate ^b
1	Bayat et al (2006) ⁽¹¹⁾	Tehran	Dental attendance in relation to dental insurance status	Adults 18+	Landline	n/a (1086)	3200	No	83% (of the eligible cases answering the call)	71%
2	Bayat et al (2010) ⁽¹⁷⁾	Tehran	Patient's reasons for selecting out-of-pocket dental services	Adults 18+ with dental insurance	Landline	384 (726)	3200	No	n/a	47%
	Ghorbani et al (2013) ⁽¹²⁾	Tehran	Perceived oral health of adults	Adults 18+	Landline	1068 (1100)	5271	Yes (Kish Table)	73% (of those answering the call)	73%
	Ghorbani et al (2013) ⁽¹⁸⁾	Tehran	Developing a Socioeconomic Status index to interpret inequalities in oral health	Adults 18+	Landline	1068 (1100)	5271	Yes (Kish Table)	73% (of those answering the call)	73%
	Ghorbani et al (2015) ⁽¹⁹⁾	Tehran	Socioeconomic inequalities in oral health	Adults 18+	Landline	1068 (1100)	5271	Yes (Kish Table)	73% (of those answering the call)	73%
	Ghorbani et al (2015) ⁽²⁰⁾	Tehran	Effect of dental care behaviors on the association between socioeconomic status and nonreplaced extracted teeth	Adults 18+	Landline	1068 (1100)	5096	Yes (Kish Table)	73% (of those answering the call)	73%
3	Movahhed et al (2014) ⁽¹³⁾	Mashhad	Knowledge and attitude toward preventive oral health care	Adults 30+	Landline	n/a (946)	n/a	No	n/a	n/a
4	Tabatabaei et al (2014) ⁽²³⁾	Yazd	Satisfaction of care receivers at a dental clinic	All care receivers	n/a	1380 (1380)	n/a	No	n/a	n/a
5	Nahvi et al (2017) ⁽²²⁾	Ramsar	Utilization of dental services and out of pocket payments in dental clinics of the city	Care receivers at dental clinics	n/a	368 (302)	364	No	n/a	83%
6	Yaghoubi et al (2017) ⁽²¹⁾	Mashhad	Preparing and validating a questionnaire to evaluate the perceived oral health care needs, barriers in access and its utility	n/a	Landline	n/a (29)	70	No	n/a	100%
7	Yaghoubi et al (2021) ⁽¹⁵⁾	Mashhad - Kerman	Inequalities in unmet oral health care needs	Adults 18+	Landline	1475 (1475)	7291	No	63% (measure unclear)	66%
	Shariati [Thesis] (2019) ⁽¹⁴⁾	Mashhad	Correlation between adults' estimation of prevalence of healthy behaviors and self-reported oral health and behaviors	Adults 18+	Landline	384 (384)	3840	No	n/a	n/a
8	Solati [Thesis] (2023) ⁽¹⁶⁾	Mashhad	Comparison of self-perceived oral health with objective dental assessment	Adults 18-64	Landline	n/a ^c (499)	5671	Yes (Last Birthday)	40% (of potentially eligible cases - AAPOR RR3) (15)	41%

^aThe measures for calculating response rates are different in each study and thus difficult to compare.

^bThe number of completed interviews divided by the number of answered calls by an individual. These numbers are calculated for comparison only and are not per the studies' reports.

^cThis study included clinical examination of the interviewed participants and the sample size was calculated for the required number of completed examinations. Phone calls were made for as many as possible to reach the desired sample size.

n/a = Not available in the study

Discussion

This review uncovered eight studies conducted over a period of 17 years, which were carried out entirely or partially through telephone interviews. These limited studies primarily aimed to explore various aspects of perceived oral health and health-related behaviors, their socioeconomic determinants, and existing inequalities in communities. This highlights the potential of telephone surveys as a valuable tool for health research, despite their current limited use.

Landline and mobile telephone networks, which are relatively well-developed infrastructures in both urban and rural areas of Iran, are attracting research interest for conducting oral health surveys. The reliance on fixed telephone lines is justified by factors, such as easy access, the ability to allocate numbers to districts and strata, and greater trust and acceptability among participants. Conducting interviews via mobile phone lines could be also a viable option, especially when calls are made from a pre-registered document. This could potentially increase the likelihood of reaching the target participants and add the benefits of mobile phones to the study. The use of mobile phone calls in dentistry-related studies has been documented in the country with positive results, although this is not within the scope of the present paper's review.²⁴

Most of the studies under review dialed fixed telephone numbers, likely associated with households or businesses. The selection of a representative sample in these instances necessitates a systematic randomization process. This involves not just the random selection of phone numbers, but also the random selection of the individual answering the call, such as a household member. Only two studies by Ghorbani et al. and Solati utilized within-household randomization methods, specifically the Kish grid and the Last-Birthday technique.^{12, 16} In addition to other techniques, both methods provide highly valid randomization and enhance representativeness compared to simple "non-random" samplings.²⁵⁻²⁹

Several reviewed studies did not adequately detail their method and formula for calculating sample size. A clear explanation of a study's sampling process aids other researchers in understanding and expanding upon existing knowledge, and its absence can lead to potential misunderstandings and confusion. This issue was also observed in how each study reported their response rates. To compare participation rates among telephone surveys,

a standard metric for calculation and reporting is necessary. The tool offered by the American Association of Public Opinion Research (AAPOR) is recommended as a consistent, reliable, and repeatable measure in research.^{4, 28, 30} Except for one, none of the reviewed studies in Iran exhibited this characteristic¹⁶, which hindered our ability to accurately compare the response rates among the studies.

One limitation of this paper was the limited access to grey literature. The review was restricted to online databases, as gaining access to physical university libraries and their databases demanded extensive accessibility. A substantial number of studies conducted in the country may not be published on online indexing platforms, thus making them unavailable for search. The authors acknowledge that there are studies in physical or other sources that were overlooked in this paper, underscoring the need for a more exhaustive review.

The benefits and drawbacks of using phone calls for interviews suggest that the advantages outweigh the disadvantages. The capacity to access a large, representative sample quickly, lower expenses compared to other methods, and participant comfort were among the highlighted benefits. Despite a slight decrease in participation due to the absence of face-to-face interaction, the exclusion of individuals without telephone access appears to be a significant issue. Fewer people are likely to maintain a landline and pay its bills in the country if they already have access to a mobile phone. This issue should be more effectively addressed when planning future phone-based oral health surveys.

Conclusion

There is an increasing interest among local researchers for conducting oral health studies using telephone interviews. Factors, such as easy access, lower cost, convenience, and improved study design, contribute to this trend. However, the reviewed studies varied significantly in their methodology, sampling, and response rates. It is recommended that future study designs in this field adopt a clear and inclusive approach, facilitating easier interpretation, comparison, and decision-making for researchers in the future.

Conflict of Interest

Non Declared ■

References

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