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Translation of oral health research priorities into research topics in an equity-based priority setting exercise

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Abstract

Background In the context of research priority-setting, participants express their research priorities and ideas in various forms, ranging from narratives to explicit topics or questions. However, the transition from these expressions to well-structured research topics or questions is not always straightforward. Challenges intensify when research priorities pertain to interventions or diagnostic accuracy, requiring the conversion of narratives into the Participant, Intervention, Comparator, Outcome (PICO) format.

Scope and findings This project aimed to understand the challenges of engaging a diverse, multilingual population in setting oral health research priorities. While not a comprehensive priority-setting effort, we modified James Lind Alliance's (JLA) methods and used thematic analysis to establish a list of priority research topics and questions. This was accomplished by conducting interviews with 40 community participants and 14 dentists from various ethnic backgrounds in Malaysia. The interview language depended on participant preferences, including English, Malay, and Mandarin, with translations handled collaboratively by bilingual research assistants. The process involved thematic analysis, discussion with a research committee, and necessary modifications. Our interpretations revealed distinct categories of participant statements: explicit, complicated, implicit and incomplete. In this study, we identified a three-step approach to translate research ideas that are presented either as explicit statements or as complicated narratives.

Conclusions Translating community research priorities poses inherent challenges. Our model, although not exhaustive, provides a valuable tool to assist research priority-setting groups in translating these priorities into meaningful research topics and questions, facilitating the equitable inclusion of diverse perspectives. Future research priority-setting endeavours should document their translation processes, thus aiding researchers in understanding and tackling the intricacies of this task.

Keywords Translation, Research priority-setting, Research topics, Research questions

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Introduction

Research priority-setting is defined as “any interpersonal activity that leads to the selection of topics and/or choices of key questions to investigate” [1]. In the process of research priority-setting, participants express their research priorities and ideas in various formats such as narratives, topics or questions. However, it may not always be straightforward statements that are easy to transform into well-defined research topics or questions. Many times, these research ideas are expressed in a complex way and do not make meaningful research questions until the context is understood. In some cases, spoken language and dialects, cultural influences and the mother tongue shape intricate research ideas and these ideas may be difficult to translate and comprehend. When the research priorities revolve around interventions, diagnostic accuracy or prognosis, an additional challenge arises in converting these narratives, topics or questions into the PICO format. Some of the research ideas are not mature enough to be formatted into a research topic or question and thus need additional input from subject experts.

Different research priority-setting groups have employed diverse approaches to develop meaningful research topics and questions. For instance, Shah et al. [2] categorized research priorities according to predefined domains and themes, followed by in-depth discussions involving subject experts during a 2-day workshop. In contrast, James Lind Alliance [3] recommends the establishment of a steering committee tasked with deliberating on research priorities and deriving research topics and questions. This transparent process ensures that the interpretation of research priorities remains fair, impartial and accurate. In a unique approach called Research Prioritization by Affected Communities (RPAC), an exploratory method was used. In this approach, the participants shared their experiences and collaboratively transformed these experiences into research topics and questions. This entire process was performed as a group activity led by the research team [4]. Subsequently, the research team refined these research topics and questions. In a similar vein, a community-based participatory approach combined with consensus-building activities was reported. In this approach, participants initially received education on clinical trial designs, effectiveness research, quality improvement, patient-centred research, patient-centred outcomes and patient registries. They then attended an in-person workshop led by a facilitator, which enabled them to translate their research ideas into research topics and questions. These were later thematically analysed by the research team [5]. The World Café approach is a participatory method for

engaging patients and communities in research prioritization. With this approach, there is no pressure to reach a consensus, and diverse opinions are encouraged. Participants facilitated their own discussions, either individually or in groups, which were recorded. Subsequently, these recordings were reviewed by a large, assembled group to prioritize and were then thematically analysed by the university research team [6]. However, there is no universally accepted method for translating research priorities into properly structured research topics or questions.

Objective

The objective of this paper is to describe a comprehensive method for translating research ideas or research priorities into structured research topics or questions.

Context

This is part of the larger project (S.K.N.'s PhD research) which aims to comprehend the challenges associated with involving a multiethnic population that speaks different languages in an oral health research priority-setting exercise. The initial case study that this paper is based on focussed on community participants and dentists from the selected ethnic groups (Malay, Chinese, Melaka Chetti, Baba Nyonya and Indian) in Melaka, Malaysia. We conducted semi-structured interviews with 40 community participants (10 participants from Malay and Baba Nyonya ethnic groups, 11 from Chinese and 9 from Melaka Chetti ethnic groups) and 14 dentists (4 each from Malay, Chinese and Indian ethnic groups and 2 from Baba Nyonya ethnicity). The participants could choose whether they wanted the interview in English or their mother tongue and whether they wanted it face-to-face or virtual on the basis of the preference reported by the participants. Bilingual translators who were recruited for this project conducted the interviews in Bahasa Malay or Mandarin.

In the interview, the participants were asked to share three of their identified research priorities in oral health-care and the reasons for their choices.

The Malay and Mandarin interviews were translated by two bilingual research assistants, and anonymized through pseudonyms, ensuring that they matched their gender and ethnicity. The final transcription of all interviews was in English. All the research priorities shared by the participants were translated to research topics or research questions using a novel method which is presented in this article.

Further details of the methods are briefly listed in the COREQ checklist (Supplementary file 1).

Methods

This project was not a comprehensive research priority-setting activity that ideally consists of planning, implementing, publishing and evaluating phases [7], and was limited only to the planning and a part of the implementing phase.

We did not fully adhere to the methods outlined in the literature for translating research ideas into research topics and questions. Nevertheless, we adapted the methods suggested by the JLA [3] (Box 1) and employed reflexive thematic analysis [8] to finalize the list of priority research topics and questions, as described in the following section.

Box 1: Details of the JLA method to translate research ideas into research topics and questions [3]

The JLA method describes the processing of the submitted uncertainties (research ideas) using the following six steps:

- Download the survey data
- Remove out-of-scope submissions
- Categorise eligible submissions
- Format the submissions
- Verify the uncertainties
- Prepare the long-list of uncertainties

Format the submissions: Submissions from patients, carers, and clinicians are rephrased to clarify uncertainties, ensuring linguistic consistency, and to maintain accessibility for lay audiences while engaging specialists. This process is typically undertaken by individuals with clinical or information expertise, employing the PICO framework (Patient, Intervention, Comparator, Outcome) to restructure submissions. Steering Group members are provided opportunities to review and contribute, ensuring fairness and neutrality in interpretation. Explicitly stated or inferred outcomes are separately documented for integration into databases such as UK Database of Uncertainties about the Effects of Treatments

To derive a list of priority research topics and questions from these transcripts, we opted for a stepwise approach, as outlined below:

1. Reflexive thematic analysis: a single researcher conducted a thematic analysis of the interview recordings and transcripts and interpreted the research topics/questions.
2. Discussion with a research committee: the results were presented and discussed within a research committee. The purpose of this discussion was to ensure a proper understanding and interpretation of the research ideas.
3. Modifications: on the basis of the discussion, themes and research topics/questions were modified.

We also established the following guiding principles for the translation:

1. The translated research topic/question should reflect the original statement given by the stakeholders.
2. The values and preferences of the stakeholders should be considered.
3. The research topic/question should match with the prioritisation reason as mentioned by the stakeholders.

Reflexive thematic analysis

In both the interviews with dentists and the interviews with community participants, the conversations were analysed to understand the specific research topics or research questions intended by the participants. Research priorities and the reasons for prioritizing highlighted by the participants were categorized as codes. The codes were then grouped as themes on the basis of the commonality. An initial list of research topics or research questions were interpreted on the basis of the codes and themes.

In some instances, the research topics/questions were readily apparent, as the participants had clearly articulated them. If the research topics/questions were evident during the interview, the interviewer confirmed their understanding with the participant, who could then clarify further.

However, in some cases, understanding the research question was not straightforward. In these instances, S.K.N. carefully reviewed the recordings, transcripts and reflexivity statements to interpret the most likely research topic/question that the participant was indicating.

Drawing from our experience in preparing this list of priority research topics or research questions, we classified the participant statements into two types:

- a. Explicit statements
- b. Complicated statements

Explicit statements

The majority of participants from both the dentist and community participant groups provided explicit statements during the interviews. For example, a community participant reported that government clinic dentists and their assistants should be trained to be more customer friendly.

This statement was easily interpreted as the research topic, “government healthcare workers should be more respectful”.

Similarly, a participant suggested that research should address immediate issues such as broken dentures in government clinics. This was interpreted as “reduce the waiting period in government clinics” rather than “reduce the waiting period for emergency dental treatment in government clinics”, as broken dentures are not considered dental emergencies, and Malaysian government hospitals promptly attend to pre-defined dental emergencies.

Some participants prepared more than the required three research topics/questions. For example, an elderly participant listed seven research topics. This suggests that some participants may have mentioned additional topics if not limited by the Participant Information Sheet.

Complicated statements

Three types of complicated statements were observed among participants:

Ambiguous narratives Some participants provided ambiguous narratives, explaining multiple research topics/questions and shifting between them, making it challenging to interpret their intended research priorities. Some of the participants would start their narratives by justifying their prioritization and then provide minimal details on their research priority.

For example, a participant prioritized reducing the time taken for wisdom tooth removal because her dentist struggled during the procedure, causing inconvenience. Following this portion of the interview, when the interviewer inquired about potential enhancements to dental procedures, the participant connected this question to the topic of wisdom tooth removal and expressed her trust in the dentist she had known since she was young.

During the interviews, we were unable to establish a direct connection between the participant's faith in her family dentist and her experience with wisdom tooth removal. Therefore, it was later interpreted that the participant had confidence in her dentist's skills, leading to the research topic of “techniques to reduce the time taken for wisdom tooth removal”.

In another instance, when asked about her research priority, a participant's statement appeared to lack a specific research topic or question.

“Usually before deciding, we would seek recommendations from friends and family for reliable dental clinics. Competent doctors with affordable prices plus facilities in the clinic and good management”.

However, upon examining the underlying reason for her prioritization, we were able to discern the intended

research topic. The rationale she provided was as follows:

“One of my friends got her tooth filled, but after a week, she still had lingering pain and immediately went back to the doctor. He explained that there is still some infection present with pus coming out from the gums”.

Considering her friend's painful experience, we interpreted this as one of the research topics: “improving the clinical skills of dentists”.

Implicit statements Some participants provided indirect statements, requiring interpretation on the basis of the overall context and reflexivity statements of interviewers and translators. For instance, a participant did not explicitly mention a research priority topic/question but stated:

“But there was one case many, many years ago whereby I told the doctor I need to save my teeth because if I don't have this teeth I can't chew my my food because sometimes we Chinese love to eat the meat uh meat especially pork and chicken uh, you know, they're very tough so we we need strong teeth to chew the food”.

Two members of our research team who were dentists are aware that procedures such as root canal treatment and crowning could be employed to salvage a badly decayed tooth. Consequently, drawing from their interpretation and the narrative throughout the entire interview, we inferred the following research question: “How can techniques for preserving badly decayed teeth be enhanced?” rather than simply “Saving badly decayed teeth”.

Another participant highlighted her priority research topic as focussing on implants for the elderly population with osteoporosis. We understood this as the need to “enhance bone quality to support dental implants”.

These implicit statements were not limited to the research priority topics and questions but also extended to the reasons behind prioritizing these topics and questions.

For instance, participants placed a high priority on promoting oral health care as a topic, even though she did not explicitly state her reason. She conveyed,

“Yes, we still need to stimulate people to come for dental check-ups, maybe do a carnival or work in partnership with NGOs”.

We inferred the reason behind her prioritization as “encouraging more individuals to seek dental check-ups”, as she emphasized the need to “stimulate people”.

Table 1 Example of the modifications of the research topics/questions which were more specific

Quote	Research topic/question	Modified research topic/question	Reason
"Some of them there's when they want to pull out the teeth they don't feel much pain. Some of the doctors where they go to private... sorry aaa. Doctors, they just simply never ask whether there still pain or not when they they're going to pull. Of course they should ask the patient whether still pain or not by shaking the teeth and so on. And this know some of them know they just go, they just pull".	How to improve empathy in dentists?	How to ensure that the dentist–patient interaction provides enough opportunities for patients to express and communicate their pain experience and their needs? How do train dentists to recognize when the patient is in pain and respond and react to it and empower the patient to communicate?	The modified research questions are more specific and reflect the research idea stated by the participant

Table 2 Examples of the modifications of the research topics/questions to reflect the nearest meaning of the statement

Quote	First interpretation of research topic/question	Modified research topic/question	Reason
"If you can come up the with something, you know how to scrape off the nicotine before it destroy the original teeth".	How can the effects of nicotine be reduced on teeth?	How smoking can affect oral health?	The patient seems to assume that the deposition of nicotine itself is a reason for their oral health issues, which is not correct. However, smoking can affect it, so we changed the question focussing on smoking and oral health rather than nicotine disposition, which is a mechanism that does not connect these two.
"... those days the doctors which I have gone to they are more professional and then nowadays sorry to say that the student their they don't understand English that well And I gone through one experience in xxx Polyclinic I go for my check up and I attend for my Aerobic classes. This two European lady who just arrived Malaysia and she wants to go for a check-up. When she talk to the nurses they don't understand no response to him and the wife. The wife was surprised!"	How to improve English language communication of dental healthcare providers with patients?	How to provide support for local dentists to communicate and engage with groups who have a different language? What are the other characteristics a dentist needs to have to be accepted in that community? For example, some expressed that a dentist should be able to understand other dentists to be considered a respected educated professional.	The participant is an elderly lady whose grandfather was working for British during the colonial rule and assumes that a medical healthcare professional should know English and otherwise they are not fit to pursue their job effectively. Such behaviour is not uncommon in Malaysia, which was once a British colony and the script of the national language, Bahasa Malaysia, is English.

Table 3 Example of the modifications of the research topics/questions to reflect the nearest research idea

Quote	First interpretation of research topic/question	Modified research topic/question	Reason
Participant: "Doctor, I would like to ask you. Those days when I was at school, it is imagine I'm 66. So when I was in the primary school, which is below 12 years old, the school did the filling for me the black filling, it is so lasting until now. But the recent filling are not as strong as the olden days, so I also wonder why". I: "So you want those black fillings to be ((Yeah)), re-established?" P: "Yes"	Can we re-establish dental amalgam as a choice of restorative material?	How to eliminate the dental amalgam related to mercury toxicity in the environment? How to increase the durability and longevity of newer filling materials?	On the basis of the Minamata convention on Mercury 2014 report [9], dental amalgam needs to be phased out by year 2030. Therefore, the research questions were modified.

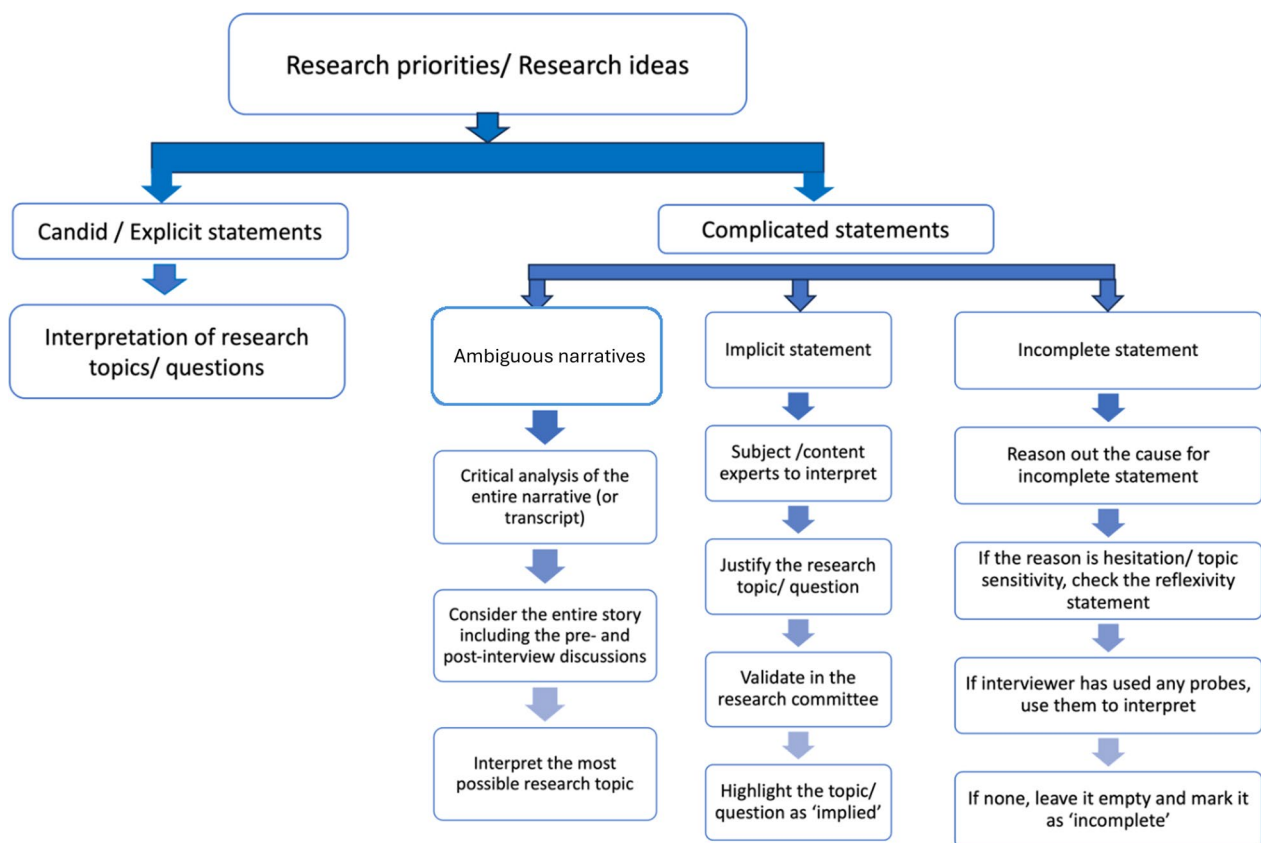


Fig. 1 The 3-step process for translating participant opinions, views, research ideas or research priorities to research topics/questions

Similarly, during another interview, an elderly participant made the following statement:

“For the denture, there’s one problem for my denture was that I have to return and visit the dentist for amending my denture a few times until it fits comfortably in my mouth.”

Although this statement did not directly explain her prioritization, we interpreted it as reflecting the “quality of the dental treatment experience” since she mentioned the word “comfortably”.

One of the dentists we interviewed articulated all the reasons for prioritization to enhance oral health awareness but provided a vague description of the priority topic, saying:

“Aa, something, aa, I mean in, in our system is not working well (giggle) when it comes to oral health.”

On the basis of the context within which he discussed the reasons for prioritization, we interpreted this statement as implying the research priority topic.

Incomplete statements A few participants responded with incomplete or ambiguous answers, sometimes

with a simple “yes” or “no”. In such cases, translators probed for more information and provided examples, but the participants still did not speak fluently. Research topics/questions had to be interpreted on the basis of these incomplete statements and their responses to the examples given by the translators.

For example, one participant mentioned experiencing pain even after dental treatment and suggested that it could be due to incorrect treatment. Further probing by the translator led to a somewhat confused agreement that the pain might be related to a persistent problem in the tooth. The research topic/question had to be interpreted on the basis of these probes.

In some cross-language interviews, either the reason for prioritization was not asked by the interviewer, or the participant did not answer appropriately. When the reason could not be determined from the available information, the reason for prioritization was left blank.

For instance, one participant suggested promoting oral health care but did not explain the reason. On the basis of the statement, the research topic was interpreted as “promote oral healthcare”. However, in this case, the translator did not inquire about the reason

for prioritizing this research topic. Consequently, we refrained from inferring any specific reason for this prioritization due to the lack of information.

These complexities in participant responses and their interpretations underscore the nuanced and intricate nature of research topic derivation from the interviews.

Discussion with the research committee

To validate the interpretations, a research committee comprising five PhD supervisors of S.K.N. was convened. This committee included one subject expert, M.N., who was a dental surgeon and a priority-setting methods expert, as well as one senior academic physician and three experienced qualitative researchers (M.P., L.C. and C.Q.).

The committee reviewed each research topic along with the related quotes, seeking justifications from the researcher, S.K.N., who had conducted the thematic analysis. When necessary, the committee offered comments to modify or alter the research topics on the basis of mutual consensus. During these discussions, S.K.N. documented the suggestions and modifications in the meeting minutes, which were later utilized for making the necessary changes.

Modifications

Following the feedback received during the research committee discussion, we either adjusted the research topics/questions or retained the original interpretations. For transparency, when modifications were made, we documented the reasons for modification alongside both the original and modified research topics/questions (Tables 1, 2 and 3).

The modifications of the research topics/questions are presented in Table 1.

There were instances where the participants shared research ideas on the basis of their assumptions or misconceptions. In such cases we had to cautiously rephrase the research questions to reflect the nearest meaning of the statement. Two such examples are presented in Table 2.

Some of the research ideas were not feasible due to existing regulatory issues. In such cases, we have modified the research questions to reflect the nearest research idea. An example of this is presented in Table 3.

Proposed model

On the basis of our experience, we propose the following model (Fig. 1) for translating participant opinions, views, research ideas or research priorities to research topics/questions.

The model is summarized as follows:

If research ideas – research priorities are expressed as explicit statements – can be translated to research topics or questions without much difficulty.

If the statements are ambiguous, then we need to critically analyse the entire narrative and consider the pre- and post-interview discussions to determine the most likely research topic.

If the statements are implicit, we should take the help of subject experts to interpret or verify the interpretation, consider the reason or justification for the research idea and if necessary, validate with a research committee and mark the final research topic/question as “implied”.

If the statements are incomplete, researchers should determine the cause of the incomplete statements. If the reason is hesitation or fear, this can be verified in the reflexivity statements of the interviewer that aid in the completion of the research idea and thus determine the research topic/question. If the interviewer used any probes to obtain the complete statement, those probes were used for the better interpretation. If there are no other clues to complete the statements, leave such research ideas as empty and mark them.

Discussion

The formulation of a well-defined research question is fundamental to the success of any research process, as it shapes the study design/structure, strategy and methodology [10, 11]. A clear and focussed question enhances the design, protocol development and analysis, ultimately increasing the likelihood of generating actionable solutions [12].

In research priority-setting, to avoid research waste, one of the recommendations is to increase the transparency of the processes [13]. A lack of transparent approach in identifying research questions increases the susceptibility that the key aspects of research may get lost in the translation process and the views of patients or clinicians might not be adequately considered.

An inadequately formulated research question can lead to several issues, including the selection of an inappropriate study design and challenges in developing a clear protocol [11]. It may also compromise the study clarity, hinder publication efforts and complicate the interpretation of results [12, 14, 15]. Additionally, an unclear question can make it difficult for readers to judge the relevance of the findings and determine whether the study qualifies for inclusion in systematic reviews or meta-analyses [16, 17]. Such ambiguity may also obscure the objectives of the study, leading to research waste and reducing its visibility and the likelihood of being cited in future research [11].

Therefore, a good research question should satisfy the Feasible, interesting, novel, ethical and relevant (FINER) criteria [18] or be presented in one of the formats such as PICO (Population, Intervention, Comparator, Outcomes) or Population/Problem, Concept, Context (PCC). For example, in the Cochrane collaboration, JLA and National Institute for Health and Care Research (NIHR) Peninsula Applied Research Collaboration (PenARC) collected research topics/questions in PICO format. However, not all stakeholders can comprehend their research ideas in such a format. It is indeed a challenging task to translate research priorities or research ideas from community participants into proper research questions that fit the FINER criteria or formats (such as PICO) [3], as the process involves interpretation and subjectivity. This process is not a simple linguistic translation but rather a translation of cultural issues. Furthermore, there is a paucity of literature providing guidance on the translation of research priorities. Our proposed method helps to understand the nuances of research topic/question identification which is otherwise lost and results in the research not being relevant to the population. The proposed translation model can serve as a simple tool to assist research priority-setting groups in interpreting the research priorities or ideas put forth by community participants.

Our translation model is different from the guiding principles of topic refinement reported by Buckley et al. [19]. The guiding principles of topic refinement were proposed for systematic reviews and consider the feasibility and relevance of the proposed research topics/questions. However, we did not judge the proposed research ideas or priorities on the basis of feasibility or relevance aspects in accordance with our three guiding principles.

In a Cochrane Oral Health Research Priority-Setting exercise [20], refinement of the research topics/questions was performed by a stakeholder committee with 30 members in the initial phase and was further refined by content experts in the implementation phase. However, the details of how the topics/questions were refined are not discussed.

The priority research topics suggested by the participants may or may not address existing research gaps. Some research topics/questions may already be established or answered, and the participants may not be aware of this (referred to as an information gap or implementation gap). This research project's scope does not involve listing topics/questions that pertain to research gaps. Therefore, regardless of the type of suggestions made by the participants, we translated them into research topics/questions.

Throughout this process of interpreting and comprehending research topics/questions, the interview process

played a significant role. As a natural part of the interviews, the interviewer initiated conversations with greetings, self-introductions, explanations of the research project's purpose and responses to any last minute queries. Some participants provided examples of research topics/questions and inquired whether they would fit the project. Others shared their dental problems, seeking consultation or guidance. A few participants were familiar to the interviewers as previous patients or acquaintances who had discussed dental issues in the past. These participants assumed that the interviewer would remember their dental concerns and based their statements on these assumptions. In some cases, these participants may have expressed themselves partially or given implicit statements, presuming that the interviewer would link them to previous dental treatment sessions and discussions. In such instances, relying solely on the interview transcripts for interpretation would not have been sufficient. Since these prior discussions were not recorded, the interviewers documented points in reflexivity statements whenever they believed these discussions would aid in a better interpretation of the interviews. These reflexivity notes proved valuable in deciphering some of the complex statements and establishing connections to the priority topics and reasons for prioritization.

The proposed translation model describes a comprehensive method to translate research ideas into easily usable research topics or questions in a transparent way. The model considers various possibilities of research ideas which could have been shared explicitly or implicitly by the research priority-setting participants.

We could not translate the research ideas to research topics or questions in the respective local languages. Such an attempt would have needed thematic analysis in local languages and the members of the research committee to be competent in those local languages, which was not the case.

Conclusions

The proposed model would help researchers to understand the nuances that are otherwise lost and not end up with the research questions not being relevant to the population. Future research priority-setting activities should include detailed accounts of how they translated research priorities/ideas into research questions/topics, complete with examples and the challenges faced during this process. Such information would serve as a valuable guide for researchers in translating intricate narratives into meaningful research topics/questions.

Although our guidance model may not encompass all potential issues that a research priority setting group

could encounter, it can be a useful tool for streamlining the process of translating research priorities or ideas.

Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12961-024-01261-0>.

Additional file 1.

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Author contributions

Sumanth Kumbargere Nagraj: conceptualization, data collection, analysis and drafting of the manuscript; Lynne Callaghan: modifications of research topics/questions, proofreading and supervision of work; Cath Quinn: modifications of research topics/questions, proofreading and supervision of work; Martha Paisi: modifications of research topics/questions, proofreading and supervision of work; and Mona Nasser: conceptualization, modifications of research topics/questions, proofreading and supervision of work.

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Availability of data and materials

Data that support the findings of this study have been deposited in the Open Science Framework repository and the link has been provided in the manuscript. The URL string for the data is: https://osf.io/89ptj/?view_only=3577d32515d54ae789a7016d8be345df4.

Declarations

Ethics approval and consent to participate

This study was approved in accordance with the Declarations of Helsinki by the Research and Ethics Committee of Melaka-Manipal Medical College, Melaka, Malaysia (ref no. MMMC/FOM/Research Ethics Committee-2/2019 dated 15 September 2019) and the Ethics Committee of the University of Plymouth, Plymouth, United Kingdom (ref no. 19/20 – 1199 dated 11 March 2020 and 28 April 2020). Informed consent was obtained from all the participants and translators.

Consent for publication

We have obtained consent from the participants and translators to share the anonymized data in publications, presentations and other scholarship activities.

Competing interests

The authors declare no competing interests.

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