Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

# EviDent platform – a feasibility study of acceptability, demand, and impact on dentist readiness for change in seeking and critically evaluating scientific evidence through a randomized controlled trial protocol.) - (twitter @machado_gm)

**Gabriela Manco Machado**
University of São Paulo
**Luanna Gonçalves Ferreira**
University of São Paulo
**Lucas Gabriel Santini Rodrigues**
University of São Paulo
**Alfredo Goldman**
University of São Paulo
**Mariana Minatel Braga**
mmbraga@usp.br

University of São Paulo

**Study protocol**

**Keywords:** feasibility studies, mobile application, evidence-based practice, dentists, oral health

**Posted Date:** August 25th, 2026

**DOI:** https://doi.org/10.21203/rs.3.rs-10690469/v1

**License:** This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

**Additional Declarations:** No competing interests reported.

## Abstract

# Background

Scientific processes aim to inform safer and more effective practices to guide clinical decisions. However, barriers limit dentists' compliance with evidence-based practices. The EviDent platform was designed by dentists for use by dentists. Viewing EviDent as a complex intervention, which includes not only the means of distribution but also the content and its format, this study aims to describe EviDent, investigate its acceptability and demand, and assess its impact on the willingness of dentists and undergraduate students to change their behavior, as well as on participants' stages of change.

# Methods

We will use the "Guide to Knowledge Translation," which organizes communication into six steps. Based on the EviDent initiative's methodology for developing graphic materials, designed to translate knowledge produced in academia for professionals, we will produce test materials to assess the feasibility of the customized strategy, incorporating the professionals' perspectives. Based on these findings, necessary adjustments and changes will be made before moving on to the subsequent phases. A small-scale randomized controlled trial will be conducted, with two parallel arms, to test a method of presenting evidence that combines content and presentation format and to evaluate its impact, compared to a non-systematic intervention chosen by the dentist on dentists' readiness to change their behavior toward evidence-based practice. Concurrently, the same comparison will be made with undergraduate students at the School of Dentistry of the University of São Paulo (FOUSP) to determine whether there is a readiness for behavioral change during undergraduate studies compared to that of graduated dentists. The methods used in this phase of the study were described in our previously published protocol, available on the Open Science Framework (https://osf.io/m4jq6). For the small-scale efficacy trial, which is a two-arm parallel-group study, 70 dentists will be randomly assigned to either the EviDent group (intervention, n = 35) or the control group (usual practice, n = 35). In addition, 70 undergraduate students will be assigned in the same manner. Self-administered questionnaires and guided group discussions will be used at the start of the study and after three and six months to compare the interventions in terms of dentists' readiness to change and their stage of change regarding the search for evidence and its critical evaluation, with a view to guiding clinical decisions. Both qualitative and quantitative data will be collected. The proportion of participants who achieved a minimum significant score on the readiness-to-change scale will be calculated, and a chi-square test for frequencies and/or regression models will be used for comparisons between groups.

# Discussion

The EviDent platform aims to bridge the gap between dentists and scientific evidence. Digital platforms are highly acceptable and feasible for health professionals. Although many platforms are designed to

change patients' behaviors today, there is no convincing evidence that they change behavior. However, they seem to increase healthy behavior engagement. Our studies will contribute to the evidence for the construction of an intervention to improve dentists' engagement with evidence-based practice.

# Trial registration

ClinicalTrials.gov registration is currently in progress [last update 17 August 2026]. Analysis Plan https//doi.org/10.48321/D1D2FD3620. Registration on Open Science Framework (OSF Registries), https//osf.io/m4jq6/overview.

## Background

Scientific processes aim to inform safer and more effective practices to guide clinical decisions. Evidence-based clinical practice provides adequate health care, avoids poor patient outcomes related to unnecessary tests or over(under)treatment, and minimizes the inefficient use of scarce healthcare resources (1–3). There are barriers relating to the professional and his context, the evidence itself, and the patient that limit dentists' compliance with such practices (4). Therefore, finding ways to overcome these barriers and improve conditions for professionals performing evidence-based practice is essential.

When considering the application of scientific evidence in clinical practice and the format that best facilitates its incorporation, we must also consider the means by which this information can reach professionals equitably. Over time, information and communication technologies have made it possible to reach a wider range of professionals, even in regions with various types of access difficulties, thereby minimizing geographical and even social barriers (5, 6). Strategies for disseminating research findings have been implemented to facilitate professionals’ access to scientific articles, including the use of mobile platforms and applications (platforms) (5, 6) which offer the convenience of always being available and allow for easy access to content. Many professionals already use digital platforms as work tools to facilitate certain activities, including access to professional updates (7). In addition to their high feasibility, these tools are widely used to promote changes in patients’ health-related behaviors, something that appears necessary when it comes to promoting evidence-based practice (8, 9).

It is important to recognize that making evidence available, even in other formats, does not guarantee its automatic incorporation into clinical practice. After all, effective behavioral change requires an approach that combines rational, emotional, and contextual elements (10). This perspective aligns with the principles of behavioral sciences, which emphasize the importance of context in determining behavior (11). Rather than focusing exclusively on changing individuals’ attitudes and knowledge, behavioral interventions modify the decision-making environment to make desired behaviors more likely and easier to perform (10, 11).

As a distinguishing feature of this study, we also highlight the need to identify potential inequities so that, during the implementation process throughout this project, they can be minimized and, ultimately,

the efficiency of the process can be improved.

As our outcome is the change in behaviour and a behaviour change is often a time dependent outcome, proxy measures are useful in this phase to provide information about the intervention trends on the impact on behaviour. The readiness for change is a proxy measure that indicates how prone to change an individual is, given their beliefs and perspectives (12, 13). Besides, the five stages of change measure the inclination of individuals at that moment to implement the desired change(14). This measure is the cognitive precursor to resistance or support of a change and has its foundation in the Transtheoretical Model (13).

Dentists designed and developed the EviDent (15) to be compatible with their contexts,and consequently improve its use in dentists' daily practice. Platforms can deliver a wide variety of behavioral interventions, which is interesting for researchers aiming to target complex behavior change (16). The EviDent intervention was designed based on a behavior change model called the Capability-Opportunity-Motivation-Behaviour Model (COM-B model) (17).

Before assessing the behaviour and testing the intervention in a controlled trial, a feasibility study may be conducted (18, 19) to assess the intervention's usability, utility, and suitability for everyday use for the target population (20). Then, the intervention is assessed in terms of efficacy through a controlled trial. As our outcome is the change in behaviour and a behaviour change is often a time-dependent outcome, proxy measures are useful in this phase to provide information about the intervention trends on the impact on behaviour. The readiness for change is a proxy measure that indicates how prone to change an individual is, given their beliefs and perspectives (21, 22). Besides, the five stages of change measure the inclination of individuals at that moment to implement the desired change (17). This measure is the cognitive precursor to resistance or support of a change and has its foundation in the Transtheoretical Model (23).

Therefore, understanding EviDent as a complex intervention, which includes not only the means of delivery but also the content and its format, this study aims to describe, investigate its acceptability, and demand, and evaluate its impact on dentists' readiness for change and on the stage of change of the participants.

# Methods

This protocol is part of an umbrella project titled “Tailoring the implementation of evidence to bridge the gap between clinical trial findings and clinical practice in pediatric dentistry incorporating the perspectives of professionals and service users, as well as principles of equity and diversity” (Funding: CNPq N° 443951/2023; CNPq N° 409689/2023-8; Pró-Reitoria de Pesquisa e Inovação - USP N° 2020.1.4353.1.5 and 2022.1.15982.1.0) and focuses on platforming and incorporating the professional's perspective into the implementation of the latest scientific evidence generated in academia.

This project will be structured based on the Knowledge-to-Action Framework (KTA) (24), which organizes the implementation process into: (i) assessing current practice against evidence-based recommendations, (ii) identifying challenges and supports for the use of evidence, (iii) ensuring that the evidence is feasible and acceptable within the implementation context, (iv) selecting appropriate strategies to support the implementation of evidence, (v) iteratively evaluating how well the evidence and strategies have been implemented. To this end, this cycle will be initiated with a focus on the dentist's perspective as captured in previous experiments from our umbrella project, in light of their preferences and values within the process of making clinical decisions based on science.

To this end, we will divide the work into two separate feasibility studies, as part of a broader project designed to guide the development and refinement of the EviDent platform. In the initial phase of developing the EviDent intervention, our overall project gathers progressive evidence: starting with an initial phase that assesses potential effectiveness ("Does it work?"), previously explored through a crossover trial and a discrete choice experiment (25, 26), until the demand, acceptability, and effectiveness have been assessed on a small scale, under ideal conditions.

Each study in this manuscript follows the appropriate equator network reporting guidelines that will be provided in Additional files. The studies will be submitted to the Ethics Committee of the Dentistry School, University of São Paulo (FOUSP), and only will include the first participant after approval, in accordance with the Declaration of Helsinki. Any protocol modifications will be reported in the final manuscript.

## 1. Acceptability and demand study

# 1.1 Study design and theoretical background

This study focuses on the demand and acceptability (19) of the intervention in development, measuring it through quantitative and qualitative approaches. The intervention tested included both the format and content offered by EviDent. Specifically, this study aims to assess whether the intervention is appropriate, appealing, and likely to be used in a dental practice setting. If not, refinements and adjustments can be made to improve the intervention to be tested in the next study, first in a small-scale trial and subsequently with the full sample, using outcomes related to effectiveness.

This study will be reported following the STARE-HI – Statement on Reporting of Evaluation Studies in Health Informatics (27) (Additional file 1) to ensure a complete transparency report. The platform, as an intervention, will be detailed using the TIDieR checklist (Additional file 2) (28).

For this step, we will use the "Guide to Knowledge Translation," which organizes research communication into six steps: 1) Identify the objective of research dissemination; 2) Select applicable findings/determine what outcomes you wish to achieve with the research findings; 3) Identify the audience or those who can use the knowledge; 4) Develop key messages, develop content and

arguments; 5) Design and implement dissemination strategies; 6) Evaluate the results of the dissemination. This material will be widely disseminated to all interested stakeholders. We will use the findings from the reference studies, which were used to test professionals' preferences regarding the choice of treatment modalities for controlling dental caries lesions as the basis for this strategy. Using the methodology for developing graphic materials to translate academic knowledge to professionals as adopted by the EviDent initiative (3) we will produce test materials to verify the feasibility of the customized strategy, incorporating the professionals' perspectives.

## 1.2 Organizational setting

Academically, the EviDent initiative (https://evident.fo.usp.br/) has been working to translate the best scientific evidence for clinicians and society, seeking to find the best way to present content that is accessible to its target audiences (29). With the creation of Escute! Citizen Center for Knowledge Translation in Dentistry, an academic stance has been taken in response to an emerging and disruptive trend: dental practice-based research networks and knowledge translation centers aimed at engaging patients and professionals in the design of studies (30).

By combining structured social participation with inter-institutional coordination, Escute! establishes, within the Latin American context, a model recognized as a catalyst for evidence-based dentistry. To transform this potential into systemic impact within the Unified Health System (SUS), the startup Evident_PRO would play a strategic role, enabling the creation of a portfolio of digital products and services aligned with primary care protocols and funding structures. The EviDent intervention is self-administered, and participants will access it via the link sent to them. To get started, users will receive instructions on how to access the platform on their smartphones, as it features several available sections.

## 1.3 System details and system in use (EviDent platform Intervention)

The intervention is based on a menu (Fig. 1A) consisting of content derived from scientific evidence, such as infographics or videos and links to the original articles (Fig. 2). All system components and content are available in the Brazilian Portuguese language.

The research team periodically produces content used in various EviDent initiatives (social media, website, classes) (Fig. 3). This method includes steps for translating knowledge (to process and assimilate the conclusions of scientific articles) and strategies for presenting the content. For this latter task, the use of symbols (Fig. 4Ib) was proposed to illustrate the study design and its internal and external validation (risk of bias, certainty of the evidence, and its position within the evolving scientific landscape). In addition to populating the platform with updated content, the periodic production of content leads, in the long term, to the creation of a repository of synthesized scientific evidence. Each piece of selected scientific evidence will be presented through two infographics: the infographic on the article's results (Fig. 3I) and the infographic on the methodology (Fig. 3II). These can be presented

together in a carousel format, as illustrated in Fig. 2, or displayed separately in appropriate menus (topic and training menus, respectively).

The infographics presenting the results of the articles will highlight the key points reported in selected scientific publications. These relevant results are highlighted through group discussions. During the same sessions, the same group also discusses the approach to be used in the methodological infographic. The purpose of the methodological infographic is to help users understand how the results infographic was produced and why these results might (or might not) be applicable in clinical practice (Fig. 4II). The group also takes into account the repository of methodological content already available through the EviDent initiatives when making this choice. Finally, preliminary versions of the proposals are presented and discussed. Google Jamboard (31) It is used to dynamically and collaboratively create these preliminary versions of the infographics. Then, taking into account all the points discussed, the final infographics are produced using Canva (32) for its creation.

Despite systematic analysis and the use of evidence-based knowledge, infographics, as a content format, can be produced in a variety of ways, varying in structure and presentation style. The main information is typically presented in the center and includes the numerical result in the estimated effect and the confidence interval (when possible). Additional information needed to understand the numerical result is usually presented in the peripheral areas. The title is located at the top of the infographic, and we used a question format to capture the user's attention. Finally, a concise conclusion is presented at the bottom of the infographic, without any personal (or group) interpretation. This was considered the ideal structure used by our group; however, it is not always possible to present the information in this ideal structure, so occasionally some variations were introduced (Fig. 4).

# 1.4 Participants

A pilot study involving a small group of representatives from the target audience will be conducted to test the validity of the proposal and the initial feasibility of incorporating evidence. Massive dissemination waves through the social media of EviDent (33, 34) and others medias related to the pediatric dentistry field will be performed.. Following the outreach, interested users who access the platform at least twice a month will be considered active users for the purposes of this study. This approach aims to exclude those who accessed the platform solely out of curiosity. However, all visits will be included in the intervention's reach metric.

# 1.5 Outcomes measures and methods for data acquisition

# 1.5.1 Quantitative approach

The primary outcome is the acceptability reflected in 4 domains (satisfaction, interest, intention to continue to use, perceived appropriateness, and difficulties) and collected after the first visit of users at the platform or through an electronic form disposal at the "feedback" area to be answered at any convenient moment (Table 1). The questionnaire has been designed based on common questions to assess the usability of similar technologies (18). Key questions were chosen to generate a brief

questionnaire to test this version before the full-scale trial, at the end of the questionnaire there is a field for the user to enter the e-mail if they want to contribute to the continuous development of science and the application. Besides, one-month usage data (Google Analytics Metrics) will also be collected for the active users to measure the actual use.

Table 1
Feasibility quantitative outcomes

| Area of focus[1] | Outcome | Assessment | Analysis metric | Aggregation method | Assessment time |
|---|---|---|---|---|---|
| | **Primary** | | | | |
| Acceptability | Satisfaction | 4-points<br>Likert scale<br>*"Overall, I'm satisfied with the app!"* | Scores | Mean<br>(95% CI) | First access |
| | Secondary | | | | |
| Demand | Intention to<br>continuing to use | 4-points<br>Likert scale<br>*"I'd like to access the app again!"* | Scores | Mean<br>(95% CI) | First access |
| Acceptability | Perceive appropriateness | 4-points<br>Likert scale<br>*"The app seems to be useful*<br>*for my clinical practice"* | Scores | Mean<br>(95% CI) | First access |
| Acceptability | Perceive difficulties | 4-points<br>Likert scale<br>"*Overall, how difficult was*<br>*it to use the app?"* | Scores | Mean<br>(95% CI) | First access |
| Demand | Actual use | Metrics from Google analytics | | | |
| | mApp Reach | Number of<br>individual accesses<br>(all users) | Count | Mean<br>(95% CI) | 1 month |

[1]Based on Bowen, D. J., et al. (2009). "How we design feasibility studies." American journal of preventive medicine 36(5): 452–457.

| Area of focus[1] | Outcome | Assessment | Analysis metric | Aggregation method | Assessment time |
|---|---|---|---|---|---|
| | **Primary** | | | | |
| | Frequency of use | Accesses/month (per active users) | Count | Mean (95% CI) | 1 month |
| | Average engagement time | Average usage time/ active user over a period | Proportion | Proportion (95% CI) | 1 month |
| | User loyalty | Daily Active Users(DAU)/ Monthly Active Users(MAU) | Proportion | Proportion (95% CI) | 1 month |
| | Clicks to access the articles | Number of clicks on the button to access the main article | Count | Mean (95% CI) | 1 month |
| | Clicks to access each post | Number of clicks on the button to access the posts | Count | Mean (95% CI) | 1 month |
| | Second infographic access | Number of accesses of the second infographics at the carrousel | Count | Mean (95% CI) | 1 month |
| | Involvement | Sum of all reactions divided by the sum of all access of a post | Proportion | Proportion (95% CI) | 1 month |
| | Events | Events/active users | Count | Mean (95% CI) | 1 month |

[1]Based on Bowen, D. J., et al. (2009). "How we design feasibility studies." American journal of preventive medicine 36(5): 452–457.

# 1.5.2 Qualitative approach

A qualitative approach will be proposed to users that consents to receive platform communications to contribute to the EviDent development. This qualitative approach is being proposed to understand the quantitative findings better and guide the adjustments and refinement to prepare the intervention for the small-scale trial. Initially, a sample of five users who most used the application and five who used the least (frequency of use metric) will be invited to participate in an individual virtual call or answer questions through e-mail or electronic messages (Table 2). This sampling strategy was chosen to guarantee different views and concerns could be explored at this stage. However, if after these respondents we do not reach content saturation and still novel content has been brought, new respondents (including other users' profiles) may be invited until this content saturation can be reached. The answers will be recorded and transcribed in the virtual call case. They will be further analyzed by the seven steps of Clinical-Qualitative Content Analysis (35), based on content analysis proposed by Bardin (36).

Table 2
Structured interview to the qualitative approach

| **Questions** |
|---|
| How to use the EviDent? |
| Do you intend to continue using the EviDent in your routine? |
| Is the EviDent format appropriate for your routine? |
| What would you improve on the EviDent? |
| What did you like most about the EviDent? |
| How difficult (from 0 to 5) was acessing the EviDent to the smartphone desktop? Why? |
| How difficult (from 0 to 5) was accessing the EviDent for the first time? Why? |
| Do you access the posts?<br>How difficult (from 0 to 5) was accessing the posts? Why? |
| Do you access scientific articles?<br>How difficult (from 0 to 5) was accessing the articles (scientific evidence)? |
| Do some tasks take more time than you expected?<br>Which one? How long did it take? |

The first four steps focus on each participant's material, 1) editing material, which comprises the organization of the data collected and creation of the subgroups (according to the users' level of usage); 2) free-floating reading, reading the collected data freely, with no intention of categorizing just to understand the general context; 3) construction of the units of analysis, reading each excerpt and conducting the first preliminary codes of meaning and group together the speeches that suggest the same meaning; 4) identification of cores of meaning, re-reading of the grouped speeches, previously

identified, to give them a code (entitling them). The final next steps (5 to 7) will be supposed to work with the material of all the participants, 5) consolidation of categories, refining the codes; 6) discussion of the topics, with the group and the literature; 7) validity, considering the research question.

# 1.6 Methods for data analysis (Statistical Analysis Plan)

## 1.6.1 Quantitative approach

Firstly, acceptability and demand data will be descriptively analyzed. platform usage metrics will also describe the initiative and, further, compare it to similar ones.

For the acceptability and demand areas of focus, the association of the outcome (user's answer) and the user's patterns of use (explanatory variables) will be tested. This strategy will be used for each domain evaluated (Table 1). Usage metrics will be compared among different posts (topics). Metrics will also be compared alongside the time of platform launching to check trends of use. Different types of users' involvement will also be set as an outcome for some analysis. The relationship between the type of users' involvement and the number of MAU (potentially exposed to the platform contents) and users' engagement time will be tested using univariate bootstrapped quantile regression analyses.

## 1.6.2 Qualitative approach

The answers to the open questions will be coded following the seven steps of Clinical-Qualitative Content Analysis (35). The identified codes and the relevant speeches for understanding the codes will be presented by contrasting the users' groups (users' level of platform usage). Frequencies of the codes will be also explored and compared between groups.

# 2. EviDent impact on dentist's readiness for change – a small-scale randomized controlled trial

The present protocol was written according to the guidelines of the Standard Protocol Items: Recommendations for Interventional Trials (SPIRIT) (Additional file 3) and the CONSORT checklist for reporting a pilot or feasibility trial (Additional file 4).

# 2.1 Data management and security

All collected data will be stored in an electronic folder in a virtual cloud during the study, confined only to the coordinator and principal investigator. Anonymization and codification will be conducted to prevent any data leakage to external agents. These steps will follow the Brazilian General Data Protection Law (Law No. 13.709 / 2018BR). The encryption secret and deemed sensitive data (gender and ethnic origin) will be stored on the principal investigator's computer. At the end of the study, data will be anonymized and published online in an appropriate institutional repository.

# 2.2 Study Setting

This is a small-scale randomized controlled trial (19), with a two-arms parallel-group to test a method of presenting evidence that combines content and presentation format and to evaluate its impact compared to a non-systematic intervention chosen by the dentist on dentists' readiness to adopt behaviors that promote evidence-based practice. The methods used in this phase of the study were described in our previously published protocol, available on the Open Science Framework (https://osf.io/m4jq6). The participants will be allocated to one of the two arms, and self-reported questionnaires and Guided Group Discussions (GGD) will be used to compare the interventions concerning the dentists' readiness for change regarding a behavior favoring an evidence-based practice. The follow-up will be within six months (Fig. 5), the evaluation of the primary outcome (readiness to change) will be carried out in the third month and in the sixth month, the retention of readiness to change will be evaluated. Researchers will organize and monitor the data collection; they also will monitor potential losses of follow-up and determine whether reminders should be sent.

## 2.3 Sample Description and Recruitment

For sample size calculation, we used the application https://sample-size.net/(37). The sample size is calculated using the T statistic (with a non-centrality parameter (38)). We used a two-tailed approach, considering $\alpha = 0.05$ and $\beta = 0.2$ (power = 0.80). We fixed a 1:1 ratio between groups and assumed an effect size of 1.0. This effect size was assumed considering a minimum important difference derived from the sample of professionals previously studied regarding readiness for change (22). The minimum important difference (MID) was assumed by calculating one-half of the SD of the mean individual attribute (39). Readiness for change, our primary outcome, is composed of and considered different domains. We assumed the most conservative scenario using the domain for calculations that resulted in the bigger sample size. Then, an effect size of 1.0 and a standard deviation of the outcome in the population of 1.26 were considered (22). The minimum sample size estimated was 52 participants (26 per group). An additional 10% was added to compensate for possible non-normal distribution and possible follow-up losses, totalizing a final sample of 70 participants (35 per group) to be recruited (dentists and students).

The participants will be invited through social media channels, emails to councils (CFO - Federal Council of Dentistry), professional associations (ABOPED - Brazilian Association of Pediatric Dentistry), and principal meetings and congress in the field. The Health Department of the City of São Paulo (and potentially other Brazilian regions' equivalent departments) may also be contacted to include the dental professionals working at the Brazilian Unified Health System (SUS). The recruitment will be made following the Brazilian General Data Protection Law (Law No. 13.709 / 2018BR), respecting those individuals who have declared to the centers that they do not want to receive emails or survey invitations. Potential participants will receive an invitation in which they will find attached an electronic informed consent form and a pre-intervention questionnaire (baseline questionnaire). Those who agree to participate must fill out the electronic informed consent and the questionnaire.

After being recruited, the participants from both groups will be enrolled at a meeting. This first meeting will be used to reexplain the aims of the study and give instructions on intervention use, as well as to

sensibilize participants to get involved in the study during follow-up. A baseline questionnaire containing relevant aspects to describe the sample and groups will be delivered. In this questionnaire, some important independent variables for adjustment of analysis and/or composition of the change outcomes will also be collected. These variables will be enumerated further.

## 2.4 Eligibility Criteria

Oral health professionals working in Brazil, representing different regions, levels of education, and/or job positions, and operating in various healthcare settings, in order to encompass a range of demographic and personal characteristics and thus ensure the representativeness of the sample. At the same time, another sample will consist of undergraduate students from the School of Dentistry at the University of São Paulo (FOUSP). Those professionals and students who do not have access to an electronic device such as a smartphone, tablet, or computer or do not have access to the internet will be excluded because data collection is supposed to be done using an online platform. Those dentists who have not been practicing in the clinical setting for the last five years, or do not participate in any GGD will also be excluded.

## 2.5 Assignment of interventions

Participants will be randomly assigned to the control group or the experimental group (alternative intervention). Randomization will be stratified by Brazilian region (5 regions) and sector of employment (private or public). The allocation sequence will be generated electronically in advance in blocks of different sizes (2, 4, and 6). To ensure allocation of concealment, an independent researcher, unaware of the participants' data, will generate the randomization list. This researcher will receive a list of professionals who have agreed to participate in the study and will assign them according to the allocation sequence. Another researcher, who is aware of the participants' data, will receive the allocation information, conduct the initially proposed meetings, separately for each group to prevent cross-contamination and send information about the intervention to the participant via the preferred communication channel reported in the baseline questionnaire (email, WhatsApp, Telegram, etc.)

## 2.6 Interventions

For this study, the intervention to be tested is a package consisting of the processing and customization of evidence, plus the method of making it available through an open-access digital platform. Thus, the following parallel groups are defined:

Group 1 (Control) – oral health professionals who did not have access to the platform's content;

Group 2 (Experimental) – oral health professionals who have access to the platform's content.

The intervention to be tested will be a system package, delivered through the EviDent platform, comprising a repository of pre-processed evidence-based content and content to empower users to autonomously search and appraise critically future scientific evidence (15). As a comparator, we will use the professional's standard practice supposedly to obtain information to guide their practices. Clinical

guidelines, bibliographic databases, and scientific articles have been used to search for evidence for use in clinical practices (40, 41). Considering that, we believe it would be an acceptable comparator, even with the potential risk of a supportive-choice bias. Besides, as a comparator, stimulating other specific interventions could cause residual effects and undermine the actual findings we must see in this small-scale efficacy trial.

Thus, the posts will consist of scientific evidence presented in a less complex manner and reframed for healthcare professionals nationwide, using graphics and interactive features, with symbols that help them understand the study's relevance; user-friendly buttons that redirect users to the main article on which the post was based; and an explanation of how the study contributes to clinical practice.

The intervention will be guided but self-administered, and participants who consent to take part will receive instructions on how to use the platform on their computers or smartphones. As a comparison group, we will use the professionals' standard practice presumably, to obtain information that guides their clinical decisions. Thus, at the initial meeting, they will be instructed to continue practicing as they normally do.

Table 3 compares the main characteristics of the study groups based on the interventions carried out. Depending on which group they are assigned to, participants will either receive guidance on using the Evident platform or will continue to use their usual method for obtaining information to guide their practices, without being introduced to the app. For both groups, periodic reminders will be sent to encourage them to use the app or to continue using their preferred source of information to guide their practices. The system delivered through the EviDent is theory-based on the COM-B model and will be detailed below. A communication channel for questions and technical difficulties will also be available to minimize any possible limitation in the literacy of electronic resources.

Table 3
Interventions features

| **Intervention delivery mode*** | **EviDent** | **control group (no intervention)** |
|---|---|---|
| | **link to access** | **none** |
| Theory-based | Behaviour Change Wheel** | Regular practice [1, 2] |
| System use | ✓ | none |
| Evidence-based practice guide | ✓ | none |
| Pre-selected scientific evidence (dissemination)* | ✓ | none |
| Pre-processed content (produced content)* | ✓ | none |
| Empowering content (produced content) * | ✓ | none |
| Reminders | ✓ | ✓ |
| Channel for technical help | ✓ | none |
| *Better detailed above; **Better detailed in EviDent platform intervention description | | |
| 1. Oliveira, B.H., et al., *Information-seeking behaviors and barriers to the incorporation of scientific evidence into clinical practice: A survey with Brazilian dentists.* PLoS One, 2021. **16**(3): p. e0249260. | | |
| 2. Goncalves, A.P.R., et al., *Use of scientific evidence by dentists in Brazil: Room for improving the evidence-based practice.* PLoS One, 2018. **13**(9): p. e0203284. | | |

# 2.6.1 EviDent Intervention

The EviDent is a complex intervention (42, 43), with multiple interacting components and approaching several different outcomes to be tested. This interventional package is supposed to promote (or stimulate) a behavior change related to using evidence to guide clinical practice and performing a critical appraisal of it.

The Behaviour Change Wheel and its adjuncts taxonomies (Behaviour Change Technique v1 (44), and theoretical models (Capability-Opportunity-Motivation-Behaviour (17) were used to describe the intervention and its function and used techniques (Table 4).

Table 4
Links between Behaviour Change Wheel (BCW), COM-B model, platform features, intervention functions, and the primary outcome for EviDent platform intervention

| **Intervention function (BCW)** | **mApp feature** | **Behaviour Change Technique (BCTv1)** | **Behavioral analysis (COM-B)** | **Readiness for change domains** |
|---|---|---|---|---|
| Enablement | Application | Adding objects | Physical Opportunity:<br><br>Being able to perform the behaviour because owns the mApp. | Change-related self-efficacy<br><br>Affective commitment |
| | | | Psychological Capability: Expectancy to gradually better understand the evidence-based practice | |
| | | | Physical Capability:<br><br>Having the knowledge and skills to consciously perform the behaviour | |
| | | Goal Setting (final behaviour) | Reflective Motivation:<br><br>Intending to perform due to the capability/opportunity improvement. | Change-related self-efficacy<br><br>Level of individual change |
| | | Problem-solving | Psychological Capability:<br><br>Understanding the self-factors affecting the behaviour performance. | Change-related self-efficacy<br><br>Change appropriateness |
| Education<br><br>Training | Content | Provide instruction/<br><br>information | Reflective motivation:<br><br>Intention to perform the behaviour. | Affective commitment<br><br>Level of individual change<br><br>Change appropriateness<br><br>Change-related self-efficacy |
| | | | Psychological capability:<br><br>Understanding the impact of decisions, scientifically informed. | |
| | | | Physical capability:<br><br>Developing skills, advanced training, and knowledge to critically appraise scientific literature | |
| Incentivisation | Environment | Reward expectation | Reflective motivation: | Change-related self-efficacy |

| Intervention function (BCW) | mApp feature | Behaviour Change Technique (BCTv1) | Behavioral analysis (COM-B) | Readiness for change domains |
|---|---|---|---|---|
| | | | Intention to perform the behaviour due to the social/professional expectancy. | |
| | | | Automatic motivation:<br><br>Feeling anticipated achievement at the prospect of doing the expected behaviour | |

Four intervention functions were identified for the EviDent platform, enablement (increasing means/reducing barriers to increase capability and/or opportunity), educational (increasing knowledge or understanding), training (imparting skills), and incentivization (creating an expectation of reward).

The enablement function was identified as a direct function due to its directiveness impact on the COM-B model and consequently on the behavior identified. This function is given through the insertion or availability of the platform in the dentist environment, both for personal use and, for example, the employer making it available as a tool/program for continuous updating (Opportunity). Since the EviDent is available for use, professionals might expect to understand the evidence-based practice and future perform gradually better it autonomously (Capability). All content available on EviDent is designed to always point towards the goal (promoting an evidence-based practice), encouraging users to achieve it. Thus, the "goal setting" technique is not directly explicit but is continually addressed in the application content. We believe the opportunity to use the App, and the potential improvement in professionals' self-confidence in their abilities, may stimulate them to try more often to perform evidence-based practice, leading them to identify individual barriers and facilitators, and think about strategies to overcome/improve these factors. This is how we postulate that the "problem-solving" behavior changes technique acts in the platform context.

The educational function is related to the content of the platform, better described in the demand and acceptability study (Figs. 3 and 4). As this complex intervention will be considered a package, the content is part of it. In this function, the behavior technique is supposed to inform the user and provide knowledge resources to promote Capability. It is not expected an action directed towards the behavior and its consequences (seeking evidence and performing critical appraisal) but increasing the knowledge and skills to promote better conditions to the behavior Opportunity. Similarly, the training functions are also related to the content. They aim to inform the technical knowledge of the user, increasing their skills (Capability) and motivating them to try to perform the behavior by themselves with these novels acquired or learned skills, providing a self-feedback evaluation concerning the practical attempt indirectly (Motivation).

Finally, the incentivization function is related to the social expectation that the dentist performs the behavior. It is indirectly affected by the enablement function. Using the platform can make the dentist feel that he will gradually understand and know more about how to perform the desired behavior (Capability). The reward expectation is simply the feeling of accomplishment or striving for it. This may be caused by just having the platform quickly available (Opportunity) or due to the empowerment acquired using the educational and training functions (Motivation). The incentivization is not directly provided by the platform to the user, as a monetary incentive, for example. Nonetheless, it is a feeling of having learned or being empowered, and/or finally performing the desired and socially/professionally expected behavior (Motivation).

# 2.7 Outcomes

This study has quantitative and qualitative stages. Outcomes assessment in the quantitative stage is related to the impact of the intervention on behavioural change. This impact will be measured regarding the behavioural change (including the percentage of participants ready to change and other secondary outcomes related to that), development of skills to systematic search, and critical appraisal of scientific literature (Table 5). The qualitative stage comprises a verbal behaviour assessment related to change (quali quanti analyses) and explores the participants' perspective regarding the seek and critically appraising the scientific literature. In the following sessions, we will explore different outcomes domains explored in this study

Table 5
Outcomes to assess the impact of using the platform in a small-scale efficacy trial.

| Outcome | Outcome assessment | Analysis metric | Method of aggregation | Follow-up assessment |
|---|---|---|---|---|
| Primary | | | | |
| Readiness for change | | | | |
| Affective commitment to change<br><br>Level of individual change<br><br>Change appropriateness<br><br>Change-related self-efficacy | 5-points Likert scales | Overall score adding up the fours domains | Proportion<br><br>Considering the MID in the 3rd month as a reference to dichotomize participants [74] | 3 and 6<br><br>months |
| Secondary | | | | |
| Affective commitment | 5-points Likert scales | Partial Scores<br><br>(for domain) | Mean for each domain<br><br>(95% CI) | 3 and 6<br><br>months |
| Level of individual | 5-points Likert scales | Partial Scores<br><br>(for domain) | Mean for each domain<br><br>(95% CI) | 3 and 6<br><br>months |
| Appropriateness | 5-points Likert scales | Partial Scores<br><br>(for domain) | Mean for each domain<br><br>(95% CI) | 3 and 6<br><br>months |
| Related self-efficacy | 5-points Likert scales | Partial Scores<br><br>(for domain) | Mean for each domain<br><br>(95% CI) | 3 and 6<br><br>months |
| Change in overall readiness for change | Readiness for change questionnaire<br><br>(4 domains, 5-points Likert scales) | Change in readiness for overall change score<br><br>(difference 6m – baseline) | Mean<br><br>(95% CI) | 3 and 6<br><br>months |
| Stages of change | | | | |
| Pre-contemplation | 5-points Likert scales | Scores | Mean for each domain<br><br>(95% CI) | 0, 3 and 6<br><br>months |

| Outcome | Outcome assessment | Analysis metric | Method of aggregation | Follow-up assessment |
|---|---|---|---|---|
| Contemplation | 5-points Likert scales | Scores | Mean for each domain<br>(95% CI) | 0, 3 and 6 months |
| Preparation | 5-points Likert scales | Scores | Mean for each domain<br>(95% CI) | 0, 3 and 6 months |
| Action | 5-points Likert scales | Scores | Mean for each domain<br>(95% CI) | 0, 3 and 6 months |
| Maintenance | 5-points Likert scales | Scores | Mean for each domain<br>(95% CI) | 0, 3 and 6 months |
| Migration in stages of change | Stage of change questionnaire<br>(5 stages, 5-points Likert scales) | Change in each stage of change (difference 6m – baseline) | Mean (95% CI) | 0, 3 and 6 months |
| Verbal behaviour | Guided group discussions | Categories Speech codes | Proportion<br>(95% CI) | 6 months |

The primary outcome is the readiness for change. This is a composed outcome measured considering different domains: affective commitment to change, level of individual change, change appropriateness, and change-related self-efficacy.

The domains will be assessed using a structured questionnaire (22), measured at the 3 and 6 months (supposed time to initiation to the platform in the alternative intervention). This questionnaire was once used in Portugal (22), and the need for cross-cultural adaptation and validation to Brazilian Portuguese will be evaluated.

The affective commitment to change is related to the participant's beliefs on the inherent benefits of performing the behavior. The level of individual change assesses the motivation involved in the behavior from the respondent's perspective. The change appropriateness is related to the perceived change compatibility with your professional routine. Finally, change-related self-efficacy concerns the personal belief that the participant can perform the behavior. The participants' readiness for change will be composed according to the described domain(s). The scores for partial domains will be registered at the 6-month follow-up, and then, an overall score adding partial scores will be calculated for the primary outcome. Then, participants will be classified as ready or not to change based on the minimally

important difference for the sample (39). For that, a preliminary assessment of baseline values of readiness will be necessary. Each partial score related to readiness to change will be set as a secondary outcome, and the mean for each domain will be considered. Besides, the difference between the final and baseline overall score (change) will be considered another secondary outcome. For such a situation, the same questionnaire will also be answered before the intervention (at baseline) to permit the registration of possible individual changes.

*Stages of Change*

According to the transtheoretical model (23), to achieve a change in some behavior an individual moves across the following five stages of change, pre-contemplation, contemplation, preparation, action, and maintenance. Measuring the change stage of the participants could provide additional information to understand the findings and, if necessary, propose changes to the platform intervention. The stages of change will be assessed through a brief questionnaire already validated in the Brazilian Portuguese language (45). The questionnaire will be answered at the baseline, after three and after six months of follow-up. The mean score for each domain will be obtained in the final assessment. Besides, the difference between the baseline and 6-month scores will be also used as another secondary outcome.

*Verbal Behaviour*

The final guided group discussions will be conducted by the researchers using motivation interviewing (MI) (46, 47) that focuses on solution-focus communication (48), aiming to construct and preserve the participants' feelings of autonomy instead of persuasive or "teaching" communication (48, 49). The idea is not to perform an interview, instead, an open discussion will be encouraged to understand the participants' beliefs and perspectives regarding evidence-based practice. These discussions will happen after the six months of follow-up, dividing participants per group of intervention.

The discussions will be recorded, and the speeches at the GGDs will be first segmented by units of speech (the smallest speech that expresses a complete thought), and then coded using the INTERACT software (50) or similar. The speeches will be identified to differentiate the researcher from the participants' speeches. The coding scheme was the same subset of the MISC-d (51) used in a previous study (48). The participants' speeches will be coded to "change talk" (verbal behavior that expresses readiness for change), "sustain talk" (expressions of resistance to change), and "neutral talk" (verbal behavior that is unrelated to the subject of change). We will try to blind the researcher conducting the guided group discussions or coding the speeches concerning the groups. However, the group may reveal their allocation through discussions. Therefore, researchers will be instructed to assume a neutral position if that happens. The questions to guide these discussions will be prepared based on the findings of previous studies presented in this manuscript.

**Independent variables**

The following variables will be collected at the baseline to be used in model adjustments or to compose some change outcomes: professional and sociodemographic data. Additionally, during the 6-month intervention, the variable mode of information seeking will also be collected. Other independent variables will be collected in the platform group to also check the user profile of the platform: frequency of use, average, engagement time, user loyalty, click to access the articles, clicks to access each post, second infographic access, and involvement (Table 6).

Table 6
Usage metrics from Google Analytics

| Usage metrics | Description | Assessment | Aggregation | Follow-up |
|---|---|---|---|---|
| Frequency of use | Accesses/month | Count | Mean (95% CI) | 3 and 6 months |
| Average engagement time | Average usage time/ active user over a period | Proportion | Proportion (95% CI) | 3 and 6 months |
| User loyalty | DAU/MAU | Proportion | Proportion (95% CI) | 3 and 6 months |
| Clicks to access the articles | Number of clicks on the button to access to main article | Count | Mean (95% CI) | 3 and 6 months |
| Clicks to access each post | Number of clicks on the button to access the posts | Count | Mean (95% CI) | 3 and 6 months |
| Second infographic access | Number of accesses of the second infographics at the carrousel | Count | Mean (95% CI) | 3 and 6 months |
| Involvement | Sum of all reactions divided by the sum of all access of a post | Proportion | Proportion (95% CI) | 3 and 6 months |

*Mode of information-seeking*

To assess the mode of information seeking to guide decisions and/or professional scientific updates that have been made during the follow-up period, two intermediate questionnaires will be applied, for both groups, after 3 and 6 months of study follow-up. Besides, we also aim to assess the similarity of what has been made and an expected evidence-based practice (literature search for rigorous and clinically relevant studies, critical appraisal of the scientific evidence and its application in clinical practice). For this, a few questions will be structured such as "During these two months, did you ever access some information/content to make any clinical decisions?", "Do you remember which information/content was important for you to decide on what you should do? (Study name, link to study or brief description)", "Do you remember what happened to the clinical course after you made that

decision?". To avoid possible response errors or memory bias, the questionnaires will be constructed with different questions, however aiming to evaluate the same variable. The questions will be open-ended, however, to avoid guesses an option "prefer not to answer" will be available.

*platform Metrics*

From Google Analytics, six-month usage data (Google Analytics Metrics) will also be collected to measure the actual use (Table 6).

# 2.8 Statistical Analysis Plan

An independent researcher not involved in the delivery of the intervention will be responsible for administering baseline assessments and performing group allocation (randomization). Participants (dentists and undergraduate students) will be masked to their group assignment and intervention timing through a waitlist control design. Outcome assessment (post-intervention questionnaires and quantitative/qualitative evaluations) and data analyses will be conducted by independent assessors blinded to group allocation. Because only the allocation manager will have access to the randomization list and platform access schedules, double-blind integrity (participants and outcome assessors) is preserved throughout the trial.

Missing data will be identified and the method of conditional imputation by a regression model appropriate to the type of the imputed variable will be used. The proportion of participants who presented a minimal important score of readiness to change will be calculated for primary analyses. This minimal important difference will be calculated using the distributional approach (39), applied to the baseline sample distribution. After calculating this difference for the sample (either for each group or in case of a baseline difference between them), cases will be dichotomized to obtain those who were ready to change vs. those who were not after the 6-month intervention. The proportions will be compared between groups. A Chi-square test for frequency and/or regression models will be used for these comparisons. The last approach will be also helpful for testing the association between the readiness for change and participants' characteristics, such as age, educational degree, and other independent variables, and also permit the model adjustment for these variables if needed. platform metrics and intermediate retention feedback will be also used for model adjustment.

Means of different domains in readiness for change and stages of change will be compared between the interventions using a t-test for the independent samples or any appropriate non-parametric test according to the variable distribution in the sample. Eventual necessary adjustments for covariates will be performed using regression models. The same approach will be used to compare the differences between the baseline and final scores for final readiness for change assessment and each stage of change.

Qualitative analyses will follow the same structure presented in the previous study described. For verbal behaviour (quali-quanti) analyses, we computed the frequencies and percentages of the different

behaviours related to changes. Besides, the mean of different behaviour types was also compared between groups.

Even assuming we have used the most conservative sample size calculation (requiring the largest sample size) among all the domains we will explore regarding readiness for change, if a lack of statistical power is identified due to factors beyond our control, such as high variability among individuals, we anticipate that the sample size can be increased, with a new calculation based on the initial data obtained. On the other hand, if the study still lacks the necessary statistical power, the results will be interpreted with caution, given the increased risk of a Type II error. The analysis will therefore prioritize the presentation of the respective confidence intervals to enable an assessment of the clinical relevance of the findings, regardless of statistical significance.

# Discussion

EviDent platform aims to bridge the gap between dentists and scientific evidence. It is designed to overcome evidence-based practice barriers by impacting different behavior patterns and addressing multiple functions. Health professionals' adoption of platforms has been proven to be feasible and highly acceptable (18, 19). Nowadays, there are a variety of platforms designed to change patients' behaviors (52, 53). Nevertheless, there is no convincing evidence that platforms can change behavior (16), but they may increase engagement in healthy behaviors (54).

A pediatric electronic decision support tool delivered as a mApp (PedsGuide) designed to improve professionals' adherence to guidelines for febrile infants, reached a broad audience. After being distributed through hospital and medical association mailings, it received 3805 users worldwide within eight months (55). This was a higher reach than scientific dissemination through social media (56–59). Furthermore, PedsGuide, as the EviDent platform, uses graphic formats to convey information, which appears to give users in-depth engagement and rapid dissemination (55). Our crossover study also found a preference (78%) for infographics over short texts when receiving information "digested" from scientific articles (60).

EviDent platform was idealized by dentists thinking about the day-to-day of dentists. We believe we could address functions relevant to our target population. However, as part of the validation, a feasibility study will measure if the intervention is suitable, attractive, and likely to be used in the context of dentists. Otherwise, refinements and adjustments can be made to improve the intervention to be tested in the controlled trial. Then, when ready a small-scale efficacy randomized controlled trial is also proposed to assess the impact of the EviDent platform on the dentists' readiness to change and the stage of change, they are concerning their behavior to search for reliable evidence and empowering themselves to perform critical appraisal of this evidence in the context of evidence-based clinical practice.

The pattern of interaction will also be important to create strategies to improve users' engagement and interaction. This evidence will be important for the continuous development of the platform itself and the

intervention related to evidence-based practice intended with its use ensuring a more adequate and specific intervention for the target audience's context.

These studies precede a full-scale efficacy/effectiveness trial and also be useful to estimate the effect size and sample size for it. Besides, an economic analysis may also be conducted to relate the cost of the EviDent platform with the effects achieved in the controlled randomized study (trial-based). Gradually building evidence to create an intervention to improve dentists' engagement with evidence-based practice.

## Declarations

**Ethics approval and consent to participate**

This protocol is in submission stage at local Research Ethics Committee, Dental School, University of São Paulo and will begin the inclusion of participants when finally approved. This protocol was devised in accordance with the Declaration of Helsinki and will be conducted entirely virtually, using electronic forms in compliance with the Brazilian National Research Ethics Guidelines (Resolution No. 510, of April 7, 2016 — National Health Council). Any protocol modifications will be reported in the final manuscript.

# Consent for publication

Not applicable

# Funding Information

This work was supported by the Technological Initiation Scholarship and Initiation Scholarship [156511/2018-5],[137013/2022-1],[120527/2023-5], Ph.D. Scholarship [142109/2020-7] and research productivity scholarship [304319/2018-0] from the Brazilian National Council for Scientific and Technological Development (CNPq) N° 443951/2023; CNPq N° 409689/2023-8; Pró-Reitoria de Pesquisa e Inovação - USP N° 2020.1.4353.1.5 and 2022.1.15982.1.0; and São Paulo Research Foundation (FAPESP ) Nº 2025/22715-9.

# Author Contribution

MMB is the initiative coordinator and was responsible for the conceptualization and design of the study. She also is responsible for trial supervision and data management, analysis, and interpretation.GMM and LGF participates in the design of the study is responsible for drafting the manuscript and will carry out the trial. Besides, she also actively participates in platform development. AG participates in the conceptualization and design of the study and contributes to platform development.LSR participates in

the platform development and will be auxiliary in the carrying over of the trial. All authors contributed, critically reviewed, and approved the final manuscript as submitted.

# Acknowledgement

The authors would like to thank the students' team that contributed to developing the platform, Julio Kenji Ueda, Luis Gustavo Araujo Rodriguez, Maireli Santos Wessel, Thatiane De Oliveira Rosa, Vitor Ricardo Oliveira, Otavio Aragoni, Ederson Cassio, Renan Silva, Eduardo, Nathalia Borin, Luis Hikaru Saito Silva, Gabriel Mota, Agnaldo Nunes, Gabriela Queiroz, Lucas Quaresma, Vinicius Moreno da Silva, Iggor Francis Numata Mathews, BrunoVilla Ribeiro. We also thank Professors in the Pediatric Dentistry Department, University of São Paulo, for their support of our initiatives, as well as Doctor Ana Carla Crispim for her partnership with our initiatives and the contributions and insights in this study. This work was supported by the Technological Initiation Scholarship and Initiation Scholarship [156511/2018-5], [137013/2022-1],[120527/2023-5], Ph.D. Scholarship [142109/2020-7] and research productivity scholarship [304319/2018-0] from the Brazilian National Council for Scientific and Technological Development (CNPq) N° 443951/2023; CNPq N° 409689/2023-8; Pró-Reitoria de Pesquisa e Inovação - USP N° 2020.1.4353.1.5 and 2022.1.15982.1.0; and São Paulo Research Foundation (FAPESP ) Nº 2025/22715-9.

# Data Availability

Data generated or analysed during this study will be included in the final manuscript or will be made available in institutional repository.

## References

1. Neuppmann Feres Mf Fau -, Roscoe MG, Roscoe Mg Fau - Job SA, Job Sa Fau - Mamani JB, Mamani Jb Fau - Canto GDL, Canto Gl Fau - Flores-Mir C, Flores-Mir C. Barriers involved in the application of evidence-based dentistry principles: A systematic review. (1943–4723 (Electronic)).
2. Ohta L, O'Brien B, Knight H, Patel J, Anthonappa RP. Publication Trends in Pediatric Dentistry Journal: A 20-year Bibliometric Analysis (1999–2018). (1942–5473 (Electronic)).
3. website) E-FSIEE. [Available from: https://evident.fo.usp.br/
4. Mejàre IA, Klingberg G, Mowafi FK, Stecksén-Blicks C, Twetman SH, Tranæus SH. A systematic map of systematic reviews in pediatric dentistry–what do we really know? (1932–6203 (Electronic)).
5. Sit SMM, Lai AYK, Kwok TO, Wong HW, Wong YL, Lam EYW et al. Process Evaluation and Experience Sharing on Utilizing Information Communication Technologies and Digital Games in a Large Community Family Health Event: Hong Kong Jockey Club SMART Family-Link Project. (2296–565 (Electronic)).

6. França T, Rabello ET, Magnago C. As mídias e as plataformas digitais no campo da Educação Permanente em Saúde: debates e propostas. Saúde em Debate. 2019;43.
7. Sadeghi-Bazargani H, Tabrizi Js Fau -, Azami-Aghdash S, Azami-Aghdash S. Barriers to evidence-based medicine: a systematic review. (1365–2753 (Electronic)).
8. Du HA-O, Venkatakrishnan A, Auid- Orcid P, Pirolli PA-O. A Group-Based Mobile Application to Increase Adherence in Exercise and Nutrition Programs: A Factorial Design Feasibility Study. (2291–5222 (Print)).
9. Tonkin EA-O, Jeffs LA-O, Wycherley TA-O, Maher CA-O, Smith RA-O, Hart JA-O et al. A Smartphone App to Reduce Sugar-Sweetened Beverage Consumption Among Young Adults in Australian Remote Indigenous Communities: Design, Formative Evaluation and User-Testing. (2291–5222 (Print)).
10. Kotter JP. Leading change: Why transformation efforts fail. Harvard Business Rev 2 ed1995.
11. Heath CHeD. Switch: How to Change Things When Change Is Hard2010. 320 p.
12. Schoon YA-O. Shared decision-making is not common in clinical practice. (1468-201X (Electronic)).
13. Mühlbacher A, Johnson FR. Choice Experiments to Quantify Preferences for Health and Healthcare: State of the Practice. (1179–1896 (Electronic)).
14. Thoma BA-O, Murray H, Huang SYM, Milne WK, Martin LJ, Bond CM et al. The impact of social media promotion with infographics and podcasts on research dissemination and readership. (1481–8043 (Electronic)).
15. Machado GM, Braga MM, Goldman A, Ueda JK, Rodriguez LGA, Wessel MS et al. inventorsEviDent App Versão 1.0. Brasil2018.
16. Milne-Ives M, Lam C, De Cock C, Van Velthoven MH, Meinert E. Mobile Apps for Health Behavior Change in Physical Activity, Diet, Drug and Alcohol Use, and Mental Health: Systematic Review. JMIR Mhealth Uhealth. 2020;8(3):e17046.
17. Michie S, Atkins L, West R. The Behaviour Change Wheel: A Guide to Designing Interventions. London: Silverback Publishing; 2014.
18. Martins AI, Rosa AF, Queirós A, Silva A, Rocha NP. European Portuguese Validation of the System Usability Scale (SUS). Procedia Comput Sci. 2015;67:293–300.
19. Bowen DJ, Kreuter M, Spring B, Cofta-Woerpel L, Linnan L, Weiner D, et al. How we design feasibility studies. Am J Prev Med. 2009;36(5):452–7.
20. Proctor E, Silmere H, Raghavan R, Hovmand P, Aarons G, Bunger A, et al. Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda. Adm Policy Mental Health Mental Health Serv Res. 2011;38(2):65–76.
21. Holt DT, Armenakis AA, Feild HS, Harris SG. Readiness for Organizational Change: The Systematic Development of a Scale. J Appl Behav Sci. 2007;43(2):232–55.
22. Neves P. Readiness for Change: Contributions for Employee's Level of Individual Change and Turnover Intentions. J Change Manage. 2009;9(2):215–31.

23. LaMorte WW. Behavioral Change Models - The Transtheoretical Model (Stages of Change) Boston University School of Public Health2019 [Available from: https://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories6.html
24. Graham ID, Logan J, Fau - Harrison MB. Harrison Mb Fau - Straus SE, Straus Se Fau - Tetroe J, Tetroe J Fau - Caswell W, Caswell W Fau - Robinson N, Lost in knowledge translation: time for a map? (0894–1912 (Print)).
25. Zhang YA-O, Chen D, Cheng S, Liang ZA-O, Yang L, Li Q et al. Use of suboptimal control arms in randomized clinical trials of investigational cancer drugs in China, 2016–2021: An observational study. (1549–676 (Electronic)).
26. World Medical Association Declaration. of Helsinki: ethical principles for medical research involving human subjects. (1538–3598 (Electronic)).
27. Brender J, Talmon J, Keizer Nd, Nykänen P, Rigby M, Ammenwerth E. STARE-HI – Statement on Reporting of Evaluation Studies in Health Informatics. Appl Clin Inf. 2013;04(03):331–58.
28. Hoffmann TC, Glasziou PP, Boutron I, Milne R, Perera R, Moher D, et al. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. BMJ: Br Med J. 2014;348:g1687.
29. Machado GA-O, Braga MA-O. Users' passivity in accessing digested scientific evidence through social media: cross-sectional insights. (1756 – 0500 (Electronic)).
30. Curro FA, Vena D, Fau - Naftolin F, Naftolin F, Fau - Terracio L, Terracio L, Fau - Thompson VP, Thompson VP. The PBRN initiative: transforming new technologies to improve patient care. (1544 – 0591 (Electronic)).
31. Neves P. Readiness for Change: Contributions for Employee's Level of Individual Change and Turnover Intentions. J Change Manage. 2009;9:215–31.
32. Rios LE. Behaviour Change Wheel (BCW): Guia para Intervenções de Mudança de Comportamento. Volume 40. Revista Brasileira de Educação Médica; 2016.
33. EviDent -. FOUSP EviDent - Instagram Profile [cited June, 17 2023]. Available from: https://www.instagram.com/evident.odontopediatria.fousp/
34. EviDent -. FOUSP EviDent - Facebook Profile [cited 2023 June, 15]. Available from: https://www.facebook.com/evidenciasodontopediatriafousp/
35. Faria-Schützer DBd, Surita FG, Alves VLP, Bastos RA, Campos CJG, Turato ER, Ciência. Saúde Coletiva. 2021;26:265–74.
36. Bardin L. Análise de Conteúdo. Lisboa: Edições 702009.
37. Kohn MA, Senyak J. Sample Size Calculators [website] UCSF CTSI [.
38. Chow S-C, Shao J, Wang H. Sample size calculations in clinical research. 2nd ed. ed. Boca Raton, Fla.; London: Chapman & Hall/CRC; 2008.
39. Guyatt GH, Osoba D, Wu AW, Wyrwich KW, Norman GR, Group CSCM, editors. Methods to explain the clinical significance of health status measures. Mayo Clinic Proceedings; 2002: Elsevier.

40. Goncalves APR, Correa MB, Nahsan FPS, Soares CJ, Moraes RR. Use of scientific evidence by dentists in Brazil: Room for improving the evidence-based practice. PLoS ONE. 2018;13(9):e0203284.
41. Oliveira BH, Hyppolito IMD, Malheiros Z, Stewart B, Pannuti CM. Information-seeking behaviors and barriers to the incorporation of scientific evidence into clinical practice: A survey with Brazilian dentists. PLoS ONE. 2021;16(3):e0249260.
42. Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M. Developing and evaluating complex interventions: the new Medical Research Council guidance. Int J Nurs Stud. 2013;50(5):587–92.
43. Medical Research Council A Framework For Development. And Evaluation of RCTs For Complex Interventions To Improve Health. 2000.
44. Abraham C, Michie S. A taxonomy of behavior change techniques used in interventions. Health Psychol. 2008;27(3):379–87.
45. Yoshida EMP, Primi R, Pace R. Validity of the stages of change scales. Estudos de Psicologia (Campinas) [online]. 2003 20.
46. Markland D, Ryan RM, Tobin VJ, Rollnick S. Motivational Interviewing and Self–Determination Theory. J Soc Clin Psychol. 2005;24(6):811–31.
47. Miller WR, Rose GS. Toward a theory of motivational interviewing. Am Psychol. 2009;64(6):527.
48. Güntner AV, Endrejat PC, Kauffeld S. The Emergence of Employees' Change Readiness for Energy-Conservation Behavior During Guided Group Discussions. Front Psychol. 2021;12:1588.
49. Lewin K. Frontiers in group dynamics: II. Channels of group life; social planning and action research. Hum Relat. 1947;1(2):143–53.
50. Mangold A. accessed March 1,. INTERACT (Lab Suite Version 2017)[Computer software]. Mangold International GmbH www mangold-international com (2018). 2017.
51. Klonek F, Kauffeld S. Der Motivational Interviewing Skill Code, deutsche Version (2.3).[The motivational interviewing skill code, German version (2.3)]. Unpublished manual, Technische Universität Braunschweig Available online at: https://www tu-braunschweig de/Medien-DB/aos/hinterlegtepdfs/misc-d pdf. 2012.
52. Du H, Venkatakrishnan A, Youngblood GM, Ram A, Pirolli P. A Group-Based Mobile Application to Increase Adherence in Exercise and Nutrition Programs: A Factorial Design Feasibility Study. JMIR mHealth uHealth. 2016;4(1):e4.
53. Tonkin E, Jeffs L, Wycherley TP, Maher C, Smith R, Hart J, et al. A Smartphone App to Reduce Sugar-Sweetened Beverage Consumption Among Young Adults in Australian Remote Indigenous Communities: Design, Formative Evaluation and User-Testing. JMIR Mhealth Uhealth. 2017;5(12):e192.
54. Likhitweerawong N, Boonchooduang N, Kittisakmontri K, Chonchaiya W, Louthrenoo O. Effectiveness of mobile application on changing weight, healthy eating habits, and quality of life in children and adolescents with obesity: a randomized controlled trial. BMC Pediatr. 2021;21(1):499.

55. McCulloh RJ, Fouquet SD, Herigon J, Biondi EA, Kennedy B, Kerns E, et al. Development and implementation of a mobile device-based pediatric electronic decision support tool as part of a national practice standardization project. J Am Med Inf Assoc. 2018;25(9):1175–82.
56. Machado GM, Braga MM. Users' passivity in accessing digested scientific evidence through social media: cross-sectional insights. BMC Res Notes. 2022;15(1):218.
57. Hamm MP, Chisholm A, Shulhan J, Milne A, Scott SD, Klassen TP, et al. Social media use by health care professionals and trainees: a scoping review. Acad medicine: J Association Am Med Colleges. 2013;88(9):1376–83.
58. Hand RK, Kenne D, Wolfram TM, Abram JK, Fleming M. Assessing the Viability of Social Media for Disseminating Evidence-Based Nutrition Practice Guideline Through Content Analysis of Twitter Messages and Health Professional Interviews: An Observational Study. J Med Internet Res. 2016;18(11):e295.
59. Moorhead SA, Hazlett DE, Harrison L, Carroll JK, Irwin A, Hoving C. A new dimension of health care: systematic review of the uses, benefits, and limitations of social media for health communication. J Med Internet Res. 2013;15(4):e85.
60. Machado GM, Leite IP, Crispim AC, Braga MM, editors. PD002 - Qual a melhor forma de divulgar ciência? – criando evidências para informar iniciativas de divulgação científica. 40ª Reuião da Sociedade Brasileira de Pesquisa Odontológica - Brazilian Division of IADR; 2023.

# Figures

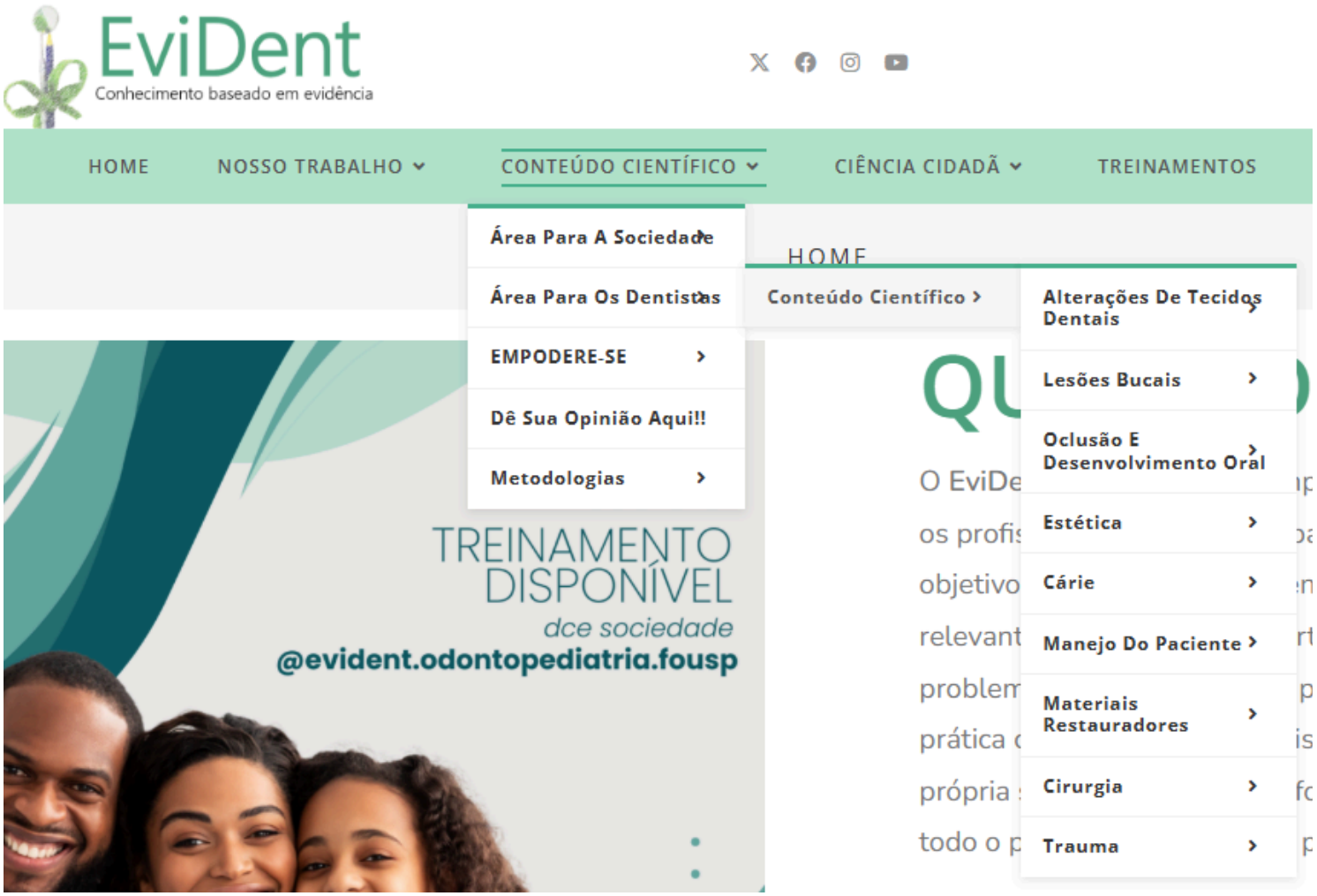


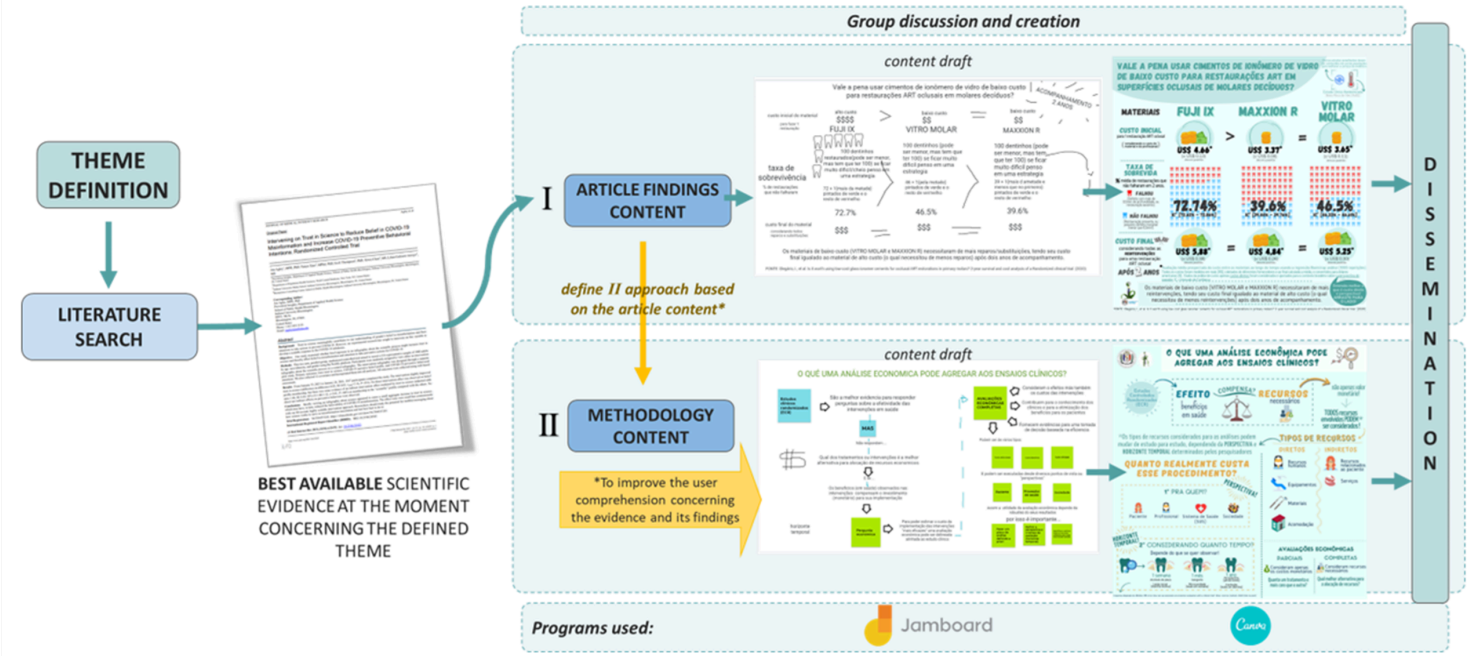

**Figure 1**

Legend not included with this version.




**Figure 2**

Legend not included with this version.




## Figure 3

Legend not included with this version.

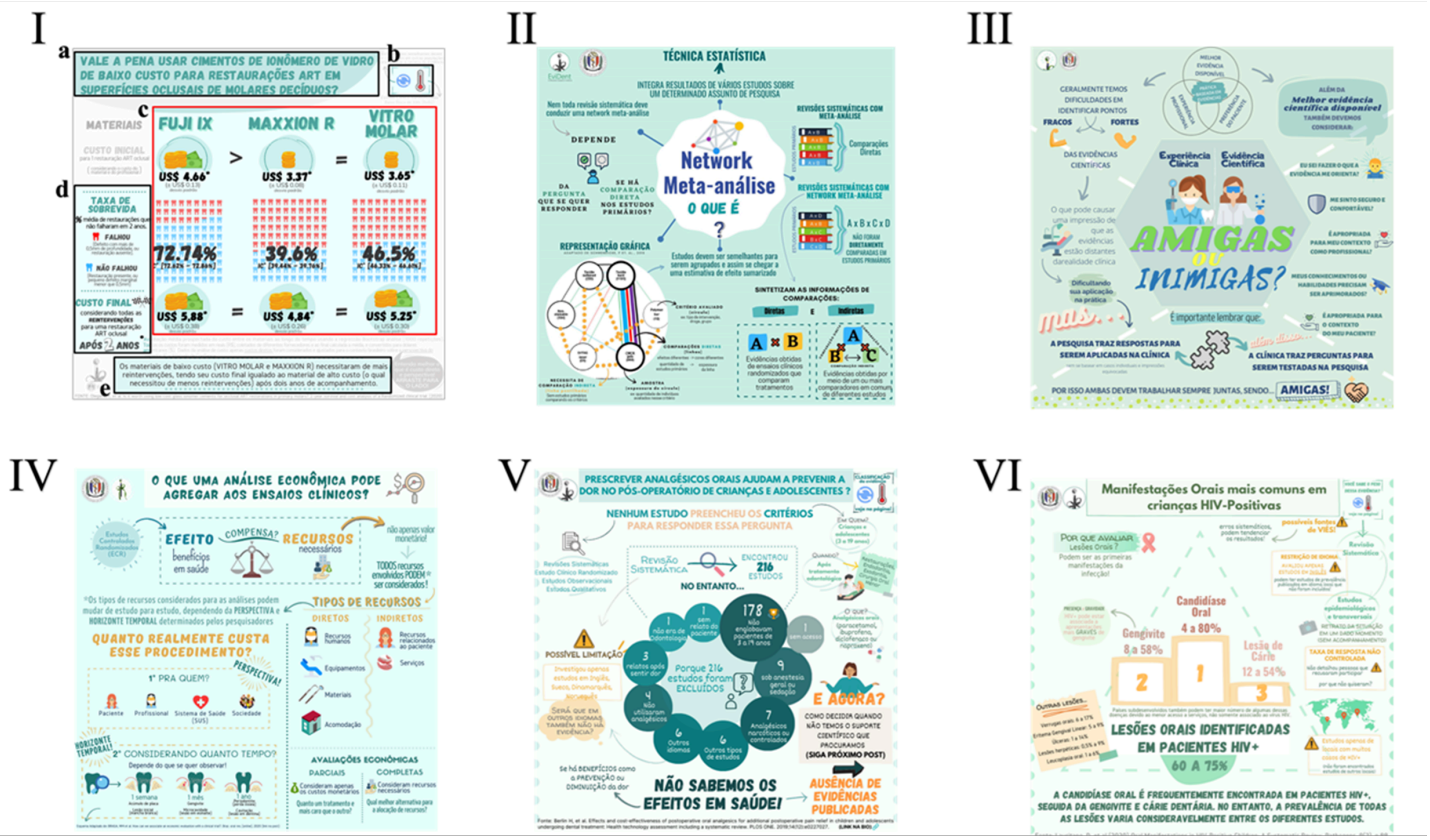


**Figure 4**

Legend not included with this version.

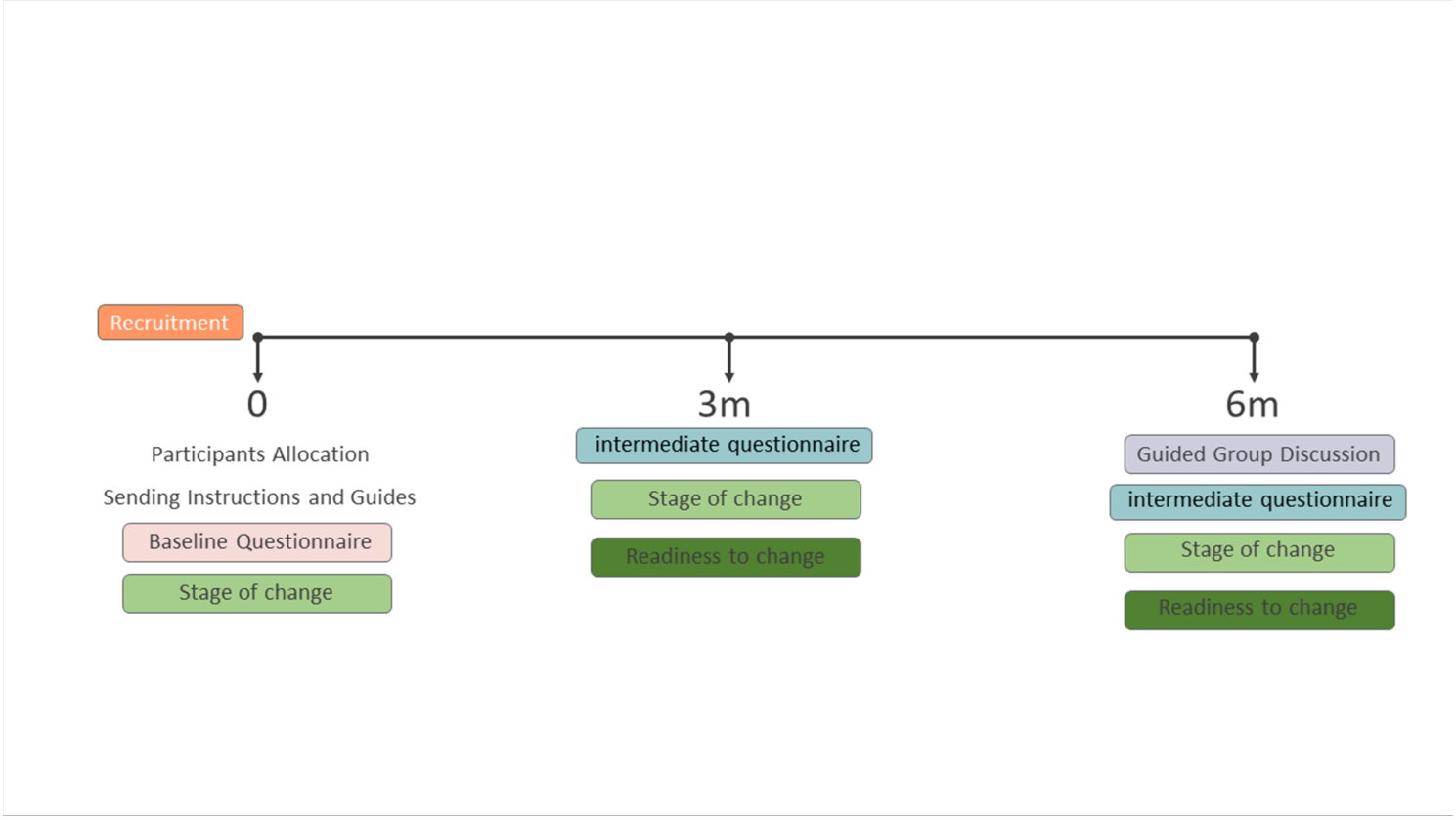



**Figure 5**

Legend not included with this version.

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Table6.UsagemetricsfromGoogleAnalytics.docx
- Table1.Feasibilityquantitativeoutcomes.docx
- Table2.Structuredinterviewtothequalitativeapproach.docx
- Table3.Interventionsfeatures.docx
- Table4.LinksbetweenBehaviourChangeWheelBCW.docx
- Table5.OutcomestoassesstheimpactofusingthemAppinasmallscaleefficacytrial.docx
- Table6.UsagemetricsfromGoogleAnalytics.docx
- Additionalfile1STAREHIStatementonReportingofEvaluationStudiesinHealthInformatics.docx
- Additionalfile2.TIDieRchecklistTemplateforInterventionDescriptionandReplication.docx

- Additionalfile3.SPIRITChecklistcrossover1.docx
- Additionalfile4.CONSORTextensionforPilotandFeasibilityTrials.docx