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Are AudioviSual maTERials disseminated via sOcIal meDia effective to improve evidence-based rehabilitation implementation for physiotherapists (ASTEROID trial)? A feasibility study

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Abstract

Objective The present study aimed to evaluate the feasibility of an educational program disseminated via social media to improve the scientific and technical knowledge of physiotherapists.

Results In this single-group interventional feasibility study, practicing physiotherapists participated in a 10-week Instagram-based program, which included 20 infographics posted twice weekly. Feasibility was evaluated using the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, and Maintenance). After the intervention, semi-structured interviews were conducted to gather feedback on participant experiences. Of the 30 physiotherapists recruited, 15 initiated the program, and 8 (53%) completed it. No significant differences were observed between pre- and post-program scores on effectiveness outcomes related to perceptions, utilization, and understanding of scientific information for clinical practice. While 63% of participants reported that the program helped them overcome barriers to EBP, overall perceptions and behaviors showed minimal change. Nonetheless, all participants recognized a positive impact on their clinical practice, with 50% reporting that they applied program content to their work. Although 63% indicated they would maintain their approach to studying technical content, all participants affirmed their intention to use resources that facilitate knowledge acquisition. Feedback from interviews indicated positive attitudes towards social media-based educational programs.

Keywords Knowledge translation, Continuous education, Evidence-based practice, Instagram, Infographic

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Introduction

The evidence-based practice (EBP) asserts that clinicians should base their clinical decisions on a combination of high-quality scientific evidence, professional experience, and patient preferences [1, 2]. Despite its benefits [3–5], implementing EBP is not straightforward, and several barriers to its adoption have been identified [6]. A systematic review, aggregating the perspectives of nearly 10,000 physiotherapists, reported main implementation barriers including time constraints, language proficiency, and lack of specific skills [6]. Consequently, healthcare professionals who lack proficiency in the English language, feel uncomfortable with critically appraising scientific papers, and face time constraints due to heavy workloads will inevitable choose information sources that facilitate knowledge acquisition, such as social media [7]. Although there is a large amount of information lacking scientific basis, focusing on personal interests [8], these platforms are a potential useful strategy to transfer knowledge to clinicians experiencing difficulties in implementing EBP [9, 10].

Social media has been recognized as a prominent tool for knowledge translation in healthcare [11–14]. The phenomenon of science's mediatization presents an opportunity for the production of knowledge translation content, with social media emerging as a crucial channel for engagement in science communication [15]. This content has potential to overcome barriers and difficulties previously encountered in traditional scientific communication, such as language barriers or limited access to scientific articles [6]. Furthermore, the spreadability of social media promotes audience participation and engagement [16], potentially influencing attitudes.

Despite the potential of social media platforms to disseminate healthcare information, it is uncertain whether information disseminated through social media are truly effective in enhancing professional knowledge or if the knowledge translated via social media influences clinical practice [12]. Additionally, it remains unclear what the most effective methods are for facilitating knowledge translation. Various scientific journals have advocated for the use of infographics on social media as a means to aid knowledge translation. Indeed, infographics can be a powerful tool for drawing attention to content and simplifying scientific information [17]. However, Ferreira et al. [18] found the majority of infographics published by peer-reviewed journal lacked essential information necessary for a comprehensive understanding of the original study. Therefore, the design of audiovisual content requires careful attention to ensure that all pertinent information needed for clinical decision-making is included. In this context, the present study aimed to evaluate the feasibility of an educational program delivered through social media, designed for subsequent use in a larger randomized controlled trial to assess its effectiveness on physiotherapists' clinical practice, knowledge and perceptions.

Methods

Study design

This was a single-group interventional feasibility study, reported following the extension for randomized pilot and feasibility trials of the CONSORT (Consolidated Standards of Reporting Trails) 2010 statement [19]. A mixed-methods approach, incorporating both quantitative and qualitative data, was employed. As the primary focus was on evaluating feasibility of the educational program and identifying any required modifications to the experimental protocol, no comparator group was included. Approval for the study was obtained from the Human Research Ethics Committee of Federal University of Santa Maria (registration no CAAE 30989920.2.0000.5346), and consent was obtained from all participants.

Participants

We included physiotherapists currently practicing in Brazil who were involved in the rehabilitation of at least three patients per week to ensure representation in clinical practice [7]. Recruitment was conducted from October to November 2023 by direct invitation via email sent to physiotherapists affiliated with a national physiotherapy association. Given the exploratory nature of this study and our primary interest in evaluating feasibility, we did not conduct a formal sample size calculation [20]. All participants provided informed consent before any research procedures were conducted.

Procedures

A link was attached to the recruitment email for potential participants to complete a questionnaire indicating their interest in participating in the study and responding to questions regarding eligibility criteria. Those meeting the criteria were contacted via email with a new link for the initial assessment questionnaire. A reminder was sent after one week, and a third contact attempt was made via phone message. Upon completion of the initial assessments, the sharing of materials via social media commenced and lasted for 10 weeks. After that, participants underwent reassessment following the same procedure as the initial assessment. Additionally,

participants were invited to be interviewed for qualitative analysis of the program.

Intervention

The content production was guided by the structure proposed by Straus et al. [9] and other concept frameworks addressing knowledge dissemination through social media [21–23]. In a previous data collection [7], we identified clinical topics of potential interest to physiotherapists. For this feasibility study, we focused on scientific methods and musculoskeletal content. Subsequently, a literature search was conducted on these topics, and the selection of scientific findings for dissemination followed a specific process: initially, physiotherapy researchers and educators selected articles with high methodological quality and clinical relevance based on the identified demand; these articles were then discussed within a focal group comprising physiotherapy researchers, undergraduate and graduate students, and clinicians to identify key points for clinical practice [18]. All content underwent group review before dissemination. Further details about the content production are presented in supplementary material A.

Twenty infographics were created in Portuguese, incorporating visually appealing graphical elements to present scientific information on clinical practice and address EBP competencies [2]. This material was disseminated through the social media platform (Instagram) using the feed post and Reels tools. Clinical practice topics were disseminated on Mondays and methodological content on Thursdays, over a 10-week period. A new Instagram profile was created for the study, which was not publicly accessible.

Outcomes and data analysis

The feasibility of the program was evaluated following the RE-AIM framework (Reach, Effectiveness, Adoption, Implementation, and Maintenance) [24]. We only considered for final analysis those participants who completed the protocol.

The outcomes, methods for their analysis and determination of feasibility for the quantitative data are detailed in Table 1. A web-based questionnaire was developed utilizing the Google Forms tool (Google LLC), based on the authors' expertise and an extensive review of the literature [7, 9, 21–23] (Supplementary material B). Prior to data collection, an expert panel evaluated the questionnaire for content validity. The panel was composed of seven experts, including three physiotherapists with over 5–10 years of clinical experience in rehabilitation and two researchers with expertise in questionnaire development, communication and psychometrics. It was then distributed to a group of physiotherapists and students for clarity and comprehensibility analysis.

In addition, upon completion of the program, participants underwent individualized, semi-structured interviews designed to explore their experiences with the educational program [25, 26]. These interviews, conducted by the lead investigator via telephone and audio-recorded, involved open-ended questions regarding program content, delivery methods, and suggestions for improvement (Supplementary material C). Interview transcripts were transcribed verbatim and analyzed using a deductive thematic approach following Braun and Clarke's six-phase framework [27, 28]. Two researchers independently coded the data line-by-line and met regularly to iteratively develop and refine themes. Field notes and analytic memos were incorporated to support contextual interpretation and enhance reflexivity. To ensure the trustworthiness of the findings, investigator triangulation was employed, and a detailed log of analytic decisions was maintained. Themes were collaboratively finalized when consistency and clarity emerged across interviews.

Results

Reach

Of the 15 participants who initiated the program, eight participants completed the protocol (Fig. 1, supplementary material D), resulting in a completion rate of 53%. Regarding engagement, no difference was observed between the proportions of participants rating their attention or reading of the shared material. Specifically, 50% (n = 4) of participants rated their engagement as less than 7, while the remaining 50% rated it above 7 on a 0–10 scale.

Effectiveness

Table 2 presents the pre- and post-program scores (Supplementary material E). Since all 95% confidence intervals included zero, no significant differences were found for perceptions of scientific information use, self-assessment of scientific information understanding, motivation to search for scientific information, perceived importance of scientific information, and scores on the Evidence-Based Practice Questionnaire (EBPQ).

Although no significant change was observed in the number of barriers reported to EBP implementation, most participants (63%, n = 5) indicated that the program was helpful in overcoming barriers to EBP application.

Table 1 Outcomes and analysis for feasibility study

RE-AIM	Assessment	Measure	Analysis	Feasible
Reach	Participants who completed the study	Number	Percentage	≥ 85% completing the program
	Level of participation[a]	Scale 0–10 (0 = I did not pay attention to any shared material; 10 = I read all the shared material of my interest)	Dichotomization (< 7 points and ≥ 7 points)	Same or greater proportion of scores ≥ 7 points
Effectiveness	Use of scientific information to make clinical decisions[b]	Scale 0–10 (0 = I do not use; 10 = I only make clinical decisions using the best available evidence)	Descriptive: analysis of 95% confidence intervals for score differences from pre- to post-program	Significant improvements in at least four items (95% CIs that do not include zero)
	Understanding of scientific information interpretation for application in clinical practice[b]	Scale 0–10 (0 = I do not understand; 10 = I have a complete understanding to apply scientific findings in clinical practice)		
	Motivation to search for scientific information that could support clinical decisions[b]	Scale 0–10 (0 = I have no motivation; 10 = I am completely motivated)		
	Importance of scientific information in making clinical decisions[b]	Scale 0–10 (0 = No importance; 10 = Extremely important)		
	Barriers to applying scientific findings[b]	Number of barriers reported was considered for analysis		
	Evidence-Based Practice Questionnaire (EBPQ) to evaluate EBP competencies[b] [32, 33]	24 items scored using a 7-point Likert scale (1–7 points); total and subscales mean of the items were used for analysis		
	Whether the program helped to overcome the reported barriers[a]	Frequence of answers "yes" or "no"	Percentage of each category	Same of greater proportion of "yes" answers
Adoption	Impact of program on the clinical practice and decisions[a]	5-point Likert scale (1 = much worse, 2 = worse, 3 = the same, 4 = better, 5 = much better)	Percentage of each category	Same or greater proportion of participants indicating positive impact and "yes" answers
	Application of information shared during the program in clinical practice[a]	Frequence of answers "yes" or "no"		
	Influence of the program to do something different in clinical practice[a]	Frequence of answers "yes" or "no"		
Implementation	We assessed whether any modifications to the interventional protocol were necessary during the educational program		As no changed was applied, no analysis was performed for this factor	
Maintenance	Attitude towards seeking information from channels that facilitate the understanding of high-quality scientific findings[a]	Scale 0–10 (0 = I will not use such information source; 10 = I will definitely use information source that facilitate my understanding)	Dichotomization (< 7 points and ≥ 7 points)	Same or greater proportion of scores ≥ 7 points and "yes" answers
	Influence of the program on the approach to studying technical content[a]	Frequence of answers "yes" or "no"	Percentage of each category	

[a] Assessed at the end of program; [b] Assessed before the program commenced and at the end of the 10-week period

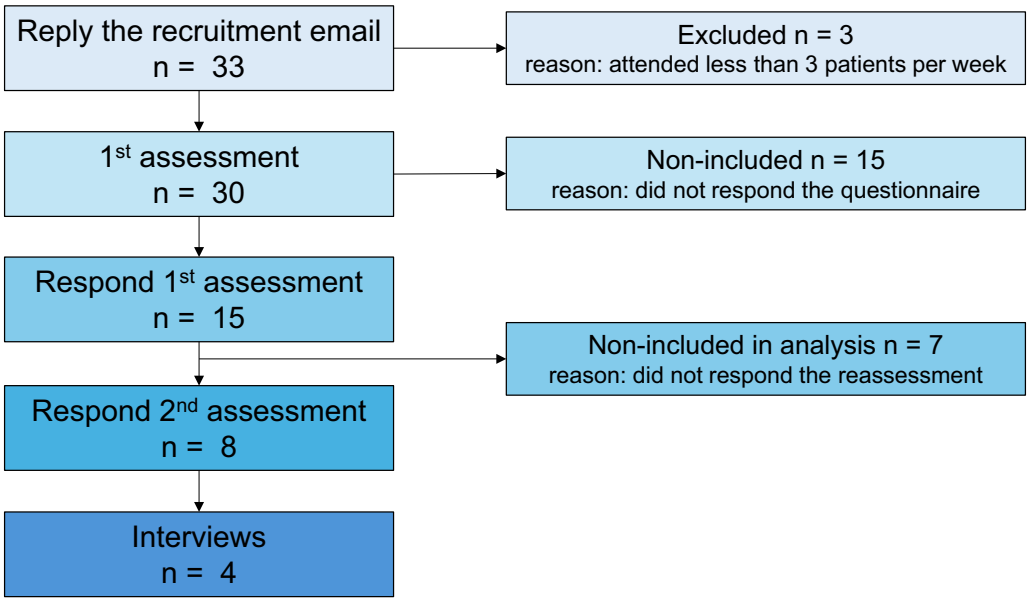

Fig. 1 Flow diagram regarding the participation

Table 2 Results for the effectiveness outcomes (n = 8)

Outcomes	Pre-Program		Post-Program		Mean Difference (95% CI)
	Mean (SD)	Median (min–max)	Mean (SD)	Median (min–max)	
Use of scientific information	8.9 (1.3)	9 (7–10)	8.5 (1.7)	8.5 (5–10)	– 0.4 (– 2.2 to 1.5)
Self-evaluation about interpretation	8.1 (1.4)	7.5 (7–10)	8.6 (1.1)	8.5 (7–10)	0.5 (– 0.7 to 1.7)
Motivation to search scientific content	8.4 (1.9)	9 (6–10)	9.1 (1.4)	10 (7–10)	0.8 (– 1.1 to 2.6)
Importance of scientific information	9.6 (0.7)	10 (8–10)	9.3 (1.2)	10 (7–10)	– 0.4 (– 1.6 to 0.8)
Barriers to applying scientific findings	1.1 (0.6)	1 (0–2)	0.9 (0.7)	1 (0–2)	– 0.3 (– 1.1 to 0.6)
EBPQ Total score	5.5 (0.9)	5.7 (4.3–6.9)	5.7 (0.6)	5.7 (4.8–6.7)	0.2 (– 0.2 to 0.6)
EBPQ Practice score	5.5 (0.9)	5.4 (4.33–7.0)	5.8 (0.6)	5.9 (5.0–6.7)	0.3 (– 0.1 to 0.6)
EBPQ Attitude score	5.8 (1.3)	6.1 (3.0–7.0)	5.8 (0.9)	5.9 (4.3–7.0)	0.0 (– 0.6 to 0.4)
EBPQ Knowledge score	5.4 (0.9)	5.6 (3.9–6.7)	5.6 (0.7)	5.5 (4.6–6.7)	0.2 (– 0.3 to 0.8)

EBPQ Evidence-Based Practice Questionnaire, *SD* standard deviation, *min* minimum value, *max* maximum value, *CI* confidence interval

Adoption

All participants reported that the program improved their clinical practice and decision-making, with 50% indicating it was "better" and 50% stating it as "much better". Additionally, 50% (n = 4) reported applying program's content in their clinical practice, while the same proportion indicated that the program influenced them to modify in their approach in clinical practice.

Maintenance

All participants rated their attitudes towards information sources facilitating the understanding of high-quality scientific findings above 7 (our criterium for good maintenance). Regarding the influence of the program on their approach to studying technical content, the majority (63%, n = 5) reported no change.

Interviews

Four individuals (50% of the participants) agreed to participate in the interviews (Supplementary material F). The major themes identified during the interviews relevant for feasibility conclusions were: (i) Instagram can be considered a platform for disseminating scientific information; (ii) Program posts were not delivered as expected; (iii) Preference for scientific content in video format; and (iv) Text-based content provides greater credibility and ease for clinical practice application.

Discussion

Nearly half of the participants who started the program did not complete it, indicating that its structure was insufficient to sustain engagement. This aligns with expectations given the high competition for attention on social media [29] and the challenge of maintaining engagement with scientific content [30, 31]. As the content was disseminated publicly, it competed with more appealing alternatives, likely contributing to dropout. Interviews with program completers highlighted issues related to reach. While infographics were used, participants preferred videos or materials with less text. Additionally, we did not implement strategies to retain participation within or beyond social media; incorporating such strategies may enhance retention. However, among those who completed the program, half achieved an optimal engagement level, suggesting that content modifications to improve engagement could increase retention.

Regarding effectiveness, the program may not be feasible for significantly altering perceptions, utilization, and understanding of scientific information for clinical practice. These results pertain to feasibility, not efficacy, due to the small sample size and lack of a comparator group. Baseline analysis revealed high initial scores, indicating pre-existing positive perceptions toward EBP, which likely limited measurable changes. This sample may not represent individuals struggling to apply scientific content in clinical practice [6, 7]. Additionally, some participants reported lower scores on the post-program. While declines in EBP perceptions are possible, it is unlikely that an EBP-promoting program would reduce scores; at most, it would have no effect if ineffective. While average scores showed no change, these individual cases warrant further investigation. Most participants reported the program as helpful in overcoming EBP application barriers, suggesting potential benefits for physiotherapists facing greater challenges in EBP implementation.

In terms of adoption and maintenance, findings indicate feasibility. Most participants were receptive to integrating this methodology into their routines. Although they did not intend to change their study approach, this did not seem to compromise the program's long-term viability. Given that all participants recognized a positive impact on clinical practice and had high baseline effectiveness scores, they appeared satisfied with their current knowledge acquisition methods. Participants viewed the program's content and delivery as a valuable supplement rather than a necessary change to their routine.

The definitive study will help determine whether disseminating scientific content via social media is valuable. If effective, this approach could facilitate broader dissemination of high-quality scientific content, enhancing clinical practice and healthcare quality by promoting evidence-based procedures. This could also help bridge the gap between research and clinical practice, enabling direct application of laboratory findings. Increased visibility on social media may encourage researchers to explore alternative dissemination methods beyond traditional publications. However, if the definitive study finds content dissemination via social media ineffective, the findings will inform the community to consider more effective strategies for reaching the target audience and prompt a reevaluation of social media's suitability for this purpose. Prior research highlights the growing role of social media in medical education and knowledge translation [13]. Chan et al. [13] reported an increase in publications on this topic since 1996. However, the majority of these studies were descriptive in nature, with limited empirical evaluation [13]. Similarly, Giroux et al. [21] investigated how social media is used by health professions educators and noted a lack of conceptual clarity, including vague definitions of target audiences and the roles of content disseminators. These findings emphasize not only the expanding reliance on social media for educational purposes, but also the pressing need for more robust theoretical frameworks to guide its effective use [21].

Limitations

This study has limitations that may have impacted results: (i) the absence of strategies to retain engagement within or beyond social media, which may have improved retention; (ii) the small sample size and lack of a comparator group, intrinsic limitations of a feasibility study; and (iii) the inclusion of only physiotherapists from a specific field, which may limit generalizability to other healthcare professionals.

Conclusion

Using the RE-AIM framework, this feasibility study suggests that delivering an educational program through social media is partially feasible. The program met feasibility criteria for adoption and maintenance but had limitations in reach and effectiveness. These findings highlight the need for protocol adjustments before conducting a larger randomized controlled trial to assess the program's impact on physiotherapists' clinical practice, knowledge acquisition, and perceptions.

Abbreviations

CONSORT	Consolidated standards of reporting trails
EBP	Evidence-based practice
EBPQ	Evidence-based practice questionnaire
RE-AIM	Reach, effectiveness, adoption, implementation, and maintenance framework
SPIRIT	Standard protocol items: recommendations for interventional trials

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s13104-025-07259-3.

Additional file 1.

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Author contributions
GSN, AH, BW, ACMS and MF were responsible for the study conceptualization and methodology; ACMS, MF, MMGF, ACOM, RAS, AJMD, MMP, DR, LMM, ERM, APD, BDG, LSC, ILB, CHN, NCT and LB were responsible for the creation of materials, GSN, MMGF, and BW were responsible for the data collection; GSN, MMGF, BW and AH were responsible for the analysis; GSN, MMGF and BW were responsible for writing the original draft; all authors were responsible for the review and edit of the original draft; GSN and AH supervised the project; and all authors read and approved the final manuscript.

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Availability of data and materials
The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate
This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. This study was approved by the Human Research Ethics Committee of Federal University of Santa Maria (registration no CAAE 30989920.2.0000.5346). Informed consent was obtained from all participants before any research procedures were conducted. All methods were carried out in accordance with relevant guidelines and regulations.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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