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Continuing education programme on vaccines for primary healthcare professionals: mixed-method protocol

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ABSTRACT

Introduction Vaccination is a fundamental intervention in disease prevention; therefore, the advice and recommendations of health professionals have a major influence on the population's decision to be vaccinated or not. Professionals must have sufficient competencies to carry out their work and recommend vaccination with evidence-based knowledge. The aim is to design and validate a strategy to improve professional competencies in vaccination to positively influence adherence and increase vaccination rates in the population.

Methods and analysis Training will be designed based on evidence and previous studies and piloted with healthcare providers. To test changes in knowledge, a pretest and post-test will be conducted. To test feasibility, a think-aloud method will be used with participants and triangulated with focus groups using SWOT (strengths, weaknesses, opportunities and threats) analysis. Transfer will be measured using the questionnaire 'factors for the indirect evaluation of transfer' and an efficacy questionnaire 1½ months later; for satisfaction, an ad hoc questionnaire will be used. A summative approach will be used for the analysis of the focus groups and descriptive and bivariate statistics for the questionnaires.

Ethics and dissemination This study was approved by the Andalusian Research Ethics Committee, Spain (approval number: 0524-N-20). The results will be made available to the public at journal publications and scientific conferences.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The use of several methods to check the feasibility of the educational intervention can be considered a strength.
⇒ Measuring transfer of learning allows us to know whether the participants apply what they have learned to their work.
⇒ The use of think-aloud methods allows for the identification of areas for improvement in training.
⇒ One limitation may be that the health professionals who are most willing to be trained are those who agree to participate, which may affect the results.
⇒ Another possible limitation is the dropout of course participants.

INTRODUCTION

Vaccination is an important intervention to achieve disease prevention and eradication.[1] The current pandemic caused by COVID-19, which has already caused more than 453 million infections and more than 6 million deaths worldwide,[2] has demonstrated the importance of vaccine programmes.[3] Worldwide, the vaccination rate with the complete COVID-19 regimen is approximately 53%, although there is much variability between countries. While some countries, such as Portugal or the United Arab Emirates, have vaccination rates of more than 90%, others, such as Nigeria, have vaccination rates of only 4% of the population.[4] No medical breakthrough has succeeded in saving as many lives as vaccination.[5–8]

The information that health professionals hold about vaccines is not always based on the recommendations offered by the latest studies.[9] In Spain, 30% of respondents to the 'Barometro Sanitario survey' stated that they were not adequately informed about vaccines by health professionals.[10] In line with this, other research showed that 24% of respondents stated that their doubts about vaccines are a consequence of poor information provided to them about vaccines.[11] Some studies suggest that health professionals are unaware of, for example, vaccine storage, coadministration of vaccines and other products, as well as sometimes the current vaccine schedule.[12] We found other studies in which paediatricians and paediatric nurses have doubts about at least one vaccine, as well as doubts about the efficacy or adverse effects of vaccines.[13 14] The same doubts were found in a recent study conducted in Italy, where the lack of confidence in the COVID-19 vaccine was one of the main reasons given by participating healthcare workers, where 33% were classified as hesitant to vaccinate.[15]

Some authors suggest that health professionals require more skills when dealing with situations where patients take a negative stance on vaccination.[16] These doubts or gaps in health professionals' knowledge negatively affect the intention to convey information about vaccines to patients.[17] The advice and recommendations of health workers have a strong influence on citizens when making decisions about their own and their family's health.[18]

There have been many advances in vaccinology, so there is a need for continuing education, which is not always accessible or of adequate quantity or quality.[19] Continuing education enables professionals to acquire the necessary skills and to develop their capacity for innovation.[20] Such training is essential as health professionals who participate in such activities are more likely to make evidence-based clinical decisions than those who do not.[21]

Among these activities is learning using information and communication technologies (ICTs) or e-learning,[22] which was widely used at all levels of education during the COVID-19 pandemic. This type of learning is a useful tool for lifelong learning that is widely disseminated at a low cost and is sometimes even preferred to traditional learning.[23–25] Courses using e-learning methodology have the advantage that professionals can access them whenever and wherever they want without having to attend in person. In addition, these courses allow the content to be easily updated and edited.[25]

However, some of the continuing education programmes that are offered are not based on the real needs of the professionals to whom they are addressed, which means that they do not meet all their needs or even, as we have seen in previous research, they are not offered at all.[26]

OBJECTIVES

The study aim is to design and validate a strategy to improve professional competencies in vaccination, in a personalised way and using ICTs, to positively influence adherence and increase vaccination rates in the population.

Specific goals:

1. To design an intervention based on the use of ICTs for training in the field of vaccination.
2. To test the feasibility and acceptability of the intervention developed for training in the field of vaccination, by piloting it in the centres included in the research.
3. To analyse the degree of transferability of the training.

METHODS AND ANALYSIS

Study design

This protocol proposes to carry out a mixed study in primary health centres in Granada with a duration of 1 year, from May 2022 to May 2023. First, a training course on vaccines will be designed; the content of which will be based on the existing scientific evidence. The educational intervention will be set up on the Moodle platform, which allows the construction of personalised learning, free of charge. Once the education intervention has been created, it will be piloted with a representative sample. For this part, pretests will be used to identify the previous knowledge of the participants on the subject. Once the training has been carried out, a post-test will be conducted, with the same content as the pretest, to check for changes in knowledge. To check the feasibility of the training, a think-aloud method will be carried out, which will be completed and triangulated with focus groups using SWOT (strengths, weaknesses, opportunities and threats) analysis. In addition, questionnaires will be used to check transfer and satisfaction with the education intervention.

Selection of participants

The research will be piloted in primary healthcare centres in the province of Granada. Expert recommendations are to include between 30 and 50 subjects in the pilot studies.[27] In this case, to cover different professional profiles, in different primary healthcare centres serving diverse populations, the following will be carried out with 50 healthcare providers (nurses, primary health physicians and paediatricians) who meet the inclusion criteria. For this purpose, convenience sampling will be carried out in the primary healthcare centres. To be included in the sample, participants must comply with the following eligibility criteria: be a primary healthcare provider (primary health physicians, paediatricians and nurses), be willing to participate and have basic knowledge in the use of ICTs.

The focus groups will be carried out with the same participants as the training. Each focus group will be made up of between 4 and 12 professionals, as per the guidelines.[28]

Data collection and measures

Design of the intervention

Considering previous research on continuing education on vaccines,[29–31] the blocks to be included will be: (1) relevance of preventable diseases, (2) vaccines included in the childhood and adult vaccine schedule, (3) vaccines in special situations, (4) administration and safety of vaccines and (5) communication strategies. For the creation of content, content based on scientific evidence will be used, so a review of the literature will be carried out. This content will be posted on the Moodle platform in the form of videos, slideshows and/or study documents. The aim will be to create materials that are dynamic, conducive to learning and interactive.[32]

The pretest/post-test questionnaire will be designed by the researchers based on the literature review and the information to be included in the course.

Piloting the intervention

Once the educational intervention has been designed, the training will be implemented in groups of five healthcare providers in the selected primary healthcare centres.

All sessions will be observed. The think-aloud method will be used during the development of the training.[33] This method consists of having the users verbalise their thoughts while they are using the product, thus allowing us to know what they are thinking. The researchers observe and take notes during whole process verbal language (questions asked, statements, comments, expressions, tone and volume of voice) and non-verbal language (gaze, way of sitting, gestures and facial expressions).[34] This makes it possible to identify areas for improvement in the training. In these cases, in addition to observation, the sessions will be audio-recorded. Before starting to use the training platform, it will be explained to the participants that while they are carrying out the tasks, they should speak out loud everything they would say to themselves if they had to be silent.[35]

Evaluation of training results

The educational intervention will be evaluated using different questionnaires. The post-test will be repeated to check any changes in the level of knowledge. Transfer of learning, that is, the degree to which the training participants apply the knowledge, skills and attitudes acquired in the training in their work,[36] as well as satisfaction, will also be evaluated. For transfer of learning and satisfaction, the following will be used:

- The 'factors for the indirect evaluation of transfer (FET)' questionnaire, which seeks to evaluate and detect the factors that hinder or facilitate the transfer.[37] This questionnaire was developed by integrating several theories related to the transfer of training, based on training results (intent to transfer, achieved learning and deferred transfer) and on the three transfer dimensions (organisation, trainee and training).[38] This instrument was validated in two samples to ensure that it is suitable for application in public institutions and private companies, with a Cronbach's alpha of 0.927.[39] It is composed of seven factors that are divided into three dimensions: participant, work environment and training dimensions. It is composed of 42 items that are answered on a 5-point Likert scale from 1 (not agreeing at all) to 5 (strongly agreeing). It will be applied at the end of the training.[37] The validated Spanish version of the questionnaire can be found in online supplemental annex 1.
- Satisfaction questionnaire on different aspects of the training. Questions will be asked about: compliance with the training programme, functioning and usefulness of the virtual platform, suitability of the duration, help and attention to students, quality of the teaching material, promotion of student motivation and participation. These points will be evaluated on a scale from 1 (very dissatisfied) to 5 (very satisfied). Two open questions will be included about the aspects that need to be improved and the most satisfactory aspects.

After filling in the questionnaires, focus groups will be held with the participants. The purpose of these focus groups is to 'validate' the researchers' interpretation of the participants' expressions collected by the think-aloud method, as well as to fill in possible gaps. Once this first phase of the think-aloud method has been completed, the results obtained will be used to develop a script of questions for the focus groups. SWOT analysis will be incorporated into these groups. This analysis aims to obtain information on the negative and positive aspects of the educational intervention. These groups will also help in the interpretation of the quantitative data. All groups will be audio-recorded, and field notes will be taken.

Finally, 1½ months after the end of the training, a questionnaire will be administered again to check whether what has been learned has been applied in the workplace:

- Efficacy questionnaire, which is based on the same transference theories as the questionnaire FET, with a Cronbach's alpha of 0.894, showing adequate internal consistency.[39] It is made up of one factor with six items that are evaluated on a 5-point Likert scale from 1 (not agreeing at all) to 5 (strongly agreeing). In addition, it has two more questions that allow us to distinguish between those who have transferred what they have learned and those who have not. For those who have not transferred, the reasons for not having done so are explored in question 8, and for those who have transferred, evidence of this is requested in question 9.[37] The validated Spanish version of the questionnaire can be found in the online supplemental annex 1.

Data preparation and analysis

For the think-aloud method and the focus groups, after the fieldwork has been carried out, notes will be made of the first impressions and provisional conclusions we have obtained. Subsequently, the audios will be transcribed verbatim, accompanied by the annotations of the non-verbal language that were made during the sessions to try to combine all the information. After this, the transcriptions will be read, and the text will be divided into smaller elements for content analysis. In the case of the data obtained by the think-aloud method, categories will be obtained through an inductive approach. In the case of the focus groups, a summative approach will be used, that is, categories will first be obtained through a deductive approach derived from the SWOT analysis, and emerging categories will be identified after repeated reading of the transcripts (inductive approach). Coding will be carried out independently by two researchers and when there are discrepancies a third researcher will be used. Nvivo software (V. 12) will be used for coding. To guarantee the quality of the qualitative research, the criteria of Guba and Lincoln (credibility, transferability, dependability and confirmability) will be taken into account.[40]

For the analysis of the results obtained from the questionnaires answered during the piloting, we will use descriptive and bivariate statistics for the variables obtained. Dependent t-tests will be used to assess differences between the pretest and post-test responses,

provided that the data are normally distributed, which will be tested with the Shapiro-Wilk test. If this is not the case, its non-parametric alternative will be used. A comparison of means (ANOVAs) will be carried out to identify differences between profile variables, as well as simple and multiple linear regressions. To ensure the quality of the quantitative research, the reliability and validity of the questionnaires administered to this sample will be analysed. All analyses will be carried out with the R statistical programme.

Patient and public involvement

Patients or the public were not involved in the design and development of the research.

Ethics and dissemination

The present research was approved by the Andalusian Research Ethics Committee, Spain (approval number: 0524N-20). Written informed consent will be requested from all participants before the start of the study.

This project will be offered to the health district to form part of the training offered to their health professionals. The results will be made available to the public at journal publications and scientific conferences.

DISCUSSION

Studies show that educational interventions by health professionals can increase the acceptability of vaccines, both those included in childhood immunisation schedules and the COVID-19 vaccine.[41–43] When health professionals do not provide sufficient information to parents about vaccines, this may lead them to doubt the efficacy of vaccines.[11 44] Sometimes it is their lack of knowledge on the subject that leads professionals to make unclear recommendations.[26]

Under normal conditions, it can be difficult to promote confidence in vaccination, and in the last year with the pandemic, it has become more complicated due to the controversy generated around vaccination.[3] This is compounded by the lack of information, especially if the population is adolescent and lives in underdeveloped countries. Health professionals have a fundamental role to play in ensuring that young people adhere to vaccination as a tool to reduce disease and, in this case, the pandemic.[45] It is therefore important that professionals are continuously educated to keep up to date with the evidence. Continuing education is useful for acquiring knowledge but also attitudes, skills and behaviours. As suggested by several authors,[32 46] it is important that this training is adapted to the needs of the students, that is, to the gaps in their knowledge, as we intend to do in this protocol. Continuing education for healthcare professionals leads to improved professional practice and better health outcomes for patients.[47 48] Furthermore, it can also benefit the healthcare system, as continuing education leads to changes in practice (based on evidence) which can lead to cost savings.[49]

As the main outcome, we hope to create an educational intervention that is tailored to the needs of the participants and fosters knowledge transfer. In turn, we believe that by increasing knowledge in healthcare professionals, they will convey evidence-based information through good communication with patients, which can lead to increased adherence to vaccination programmes. The results of this study could be shared with other professionals in different countries, which can help to share facilitators and training difficulties and thus improve it. These improvements can help professionals in different countries better respond to the demands of the population in terms of vaccines and thus have a positive impact on vaccination rates.

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Contributors MG-C-C has participated in the conceptualisation, methodology, validation and review and editing of the manuscript. EF-O and MG-G have in turn carried out the conceptualisation of the protocol. CG-M, MDC-C and EF-F have contributed to the methodology and formal analysis. EF-O, CG-M and EF-F have written the manuscript; preparation, review and editing of the original draft. MG-G has coordinated and supervised the completion of the manuscript.

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