# VALIDATION OF AN ONLINE COURSE ON PATIENT SAFETY IN PRIMARY HEALTH CARE: A METHODOLOGICAL STUDY

Validação de curso online sobre segurança do paciente na atenção primária: estudo metodológico

Validación de curso online sobre seguridad del paciente en atención primaria: estudio metodológico

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**ABSTRACT**

**Background:** patient safety in Primary Health Care is essential to guarantee the quality of care, yet it is often undervalued. Continuous professional training, mediated by educational technologies, constitutes an effective strategy for risk reduction and the promotion of safe practices. **Objectives:** to develop and validate an online course on patient safety, targeting Primary Health Care professionals. **Methodology:** this was a quantitative methodological study, structured according to an instructional model comprising five stages (analysis, design, development, implementation, and evaluation). The course was submitted for validation by a panel of 11 experts with recognized experience in the field. Quantitative data analysis was based on the Content Validity Index, with 0.78 considered the minimum acceptable value. **Results:** the course, with a total workload of 60 hours and divided into three modules, obtained 100% agreement among the experts on the 14 evaluated criteria. The evaluators' suggestions were integrated, contributing to the improvement of content clarity, usability, and applicability. **Conclusion:** the course was considered valid, establishing itself as a relevant pedagogical tool for professional training and the reinforcement of patient safety in Primary Health Care.

**Keywords:** patient safety; nursing staff; continuing education; primary health care

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**RESUMO**

**Enquadramento:** a segurança do paciente na Atenção Primária à Saúde é essencial para garantir a qualidade dos cuidados, sendo frequentemente desvalorizada. A formação profissional contínua, mediada por tecnologias educativas, constitui uma estratégia eficaz para a redução de riscos e promoção de práticas seguras. **Objetivos:** desenvolver e validar um curso online sobre segurança do paciente, dirigido a profissionais da Atenção Primária à Saúde**. Metodologia:** estudo metodológico, de natureza quantitativa, estruturado segundo um modelo instrucional composto por cinco etapas (análise, conceção, desenvolvimento, implementação e avaliação). O curso foi submetido à validação por um painel de 11 peritos com experiência reconhecida na área. A análise quantitativa dos dados teve por base o Índice de Validade de Conteúdo, considerando-se como valor mínimo aceitável 0,78. **Resultados:** o curso, com uma carga horária total de 60 horas e dividido em três módulos, obteve 100% de concordância entre os peritos nos 14 critérios avaliados. As sugestões dos avaliadores foram integradas, contribuindo para a melhoria da clareza, usabilidade e aplicabilidade dos conteúdos. **Conclusão:** o curso foi considerado válido, configurando-se como uma ferramenta pedagógica relevante para a capacitação profissional e o reforço da segurança do paciente na Atenção Primária à Saúde.

**Palavras-chave:** segurança do paciente; equipe de enfermagem; educação continuada; atenção primária à saúde

**RESUMEN**

**Marco contextual:** la seguridad del paciente en la atención primaria de salud es esencial para garantizar la calidad de la atención, frecuentemente subestimada. La formación profesional continua mediante tecnologías educativas representa una estrategia eficaz para la reducción de riesgos y la promoción de prácticas seguras. **Objetivos:** desarrollar y validar un curso en línea sobre seguridad del paciente, dirigido a profesionales de la Atención Primaria de Salud. **Metodología:** estudio metodológico, de enfoque cuantitativo, estructurado según un modelo instruccional de cinco etapas (análisis, diseño, desarrollo, implementación y evaluación). El curso fue sometido a validación por un panel de 11 expertos con experiencia reconocida en el área. El análisis cuantitativo de los datos se realizó con base en el Índice de Validez de Contenido, considerando como valor mínimo aceptable 0,78. **Resultados:** el curso, con una carga horaria total de 60 horas y dividido en tres módulos, obtuvo un 100% de concordancia entre los expertos en los 14 criterios evaluados. Las sugerencias de los evaluadores fueron integradas, mejorando la claridad, la usabilidad y la aplicabilidad del contenido. **Conclusión:** el curso fue considerado válido, constituyendo una herramienta pedagógica relevante para la capacitación profesional y el fortalecimiento de la seguridad del paciente en la atención primaria de salud.

**Palabras clave:** seguridad del paciente; equipo de enfermería; educación continua; atención primaria de salud

# INTRODUCTION

In Brazil, as in many other countries worldwide, Primary Health Care (PHC) plays a fundamental role in the health system, considered the gateway for continuous and coordinated access to healthcare. It integrates clinical care with the social, demographic, and epidemiological aspects that impact both the patient and the community (Pan American Health Organization, 2024). PHC aims to provide healthcare closer to the community, focusing on the prevention, treatment, and management of chronic diseases, as well as health promotion.

In this context, patient safety emerges as one of the cornerstones for ensuring the quality and effectiveness of the care provided (World Health Organization [WHO], 2021, 2024). However, despite its strategic importance, patient safety in PHC often remains a neglected area, especially when compared to hospital care (Pedrosa, 2020). Although safety incidents in PHC are generally less severe than those occurring in hospitals, their impact should not be underestimated.

It is worth noting that one alternative to bridge this gap is continuing health education through adequate training and qualification of the professionals involved in care (Oliveira et al., 2016). However, training opportunities of this nature usually occur only in short-term events or workshops without repeated editions, which can compromise professionals' access and the continuity of their training. In Brazil, only one study was identified that evaluated the impact of an online training course on patient safety. However, this was a lato sensu specialization program, which requires continuous and simultaneous dedication and may not be accessible to all professionals, given the limited number of available places. Nevertheless, the results were positive, with 68% of participants reporting having incorporated the acquired knowledge into their professional practice and 73% indicating they had started studying and researching patient safety-related topics (Santos et al., 2021).

Given the above, the present study proposed the construction and validation of an online course on patient safety in Primary Health Care (PHC). The adoption of online courses in the health sector is based on evidence demonstrating that these training modalities significantly enhance professionals' knowledge, technical skills, and attitudes regarding patient safety. A recent systematic review showed that "spaced digital education" is effective in increasing theoretical knowledge, acquiring practical skills, and altering clinical behaviors, showing learning gains superior to conventional distance learning methods (Martinengo et al., 2024). Additionally, interprofessional training programs combining online modules with face-to-face sessions proved viable and promising in promoting collaboration among multiprofessional teams, reinforcing the adoption of a safety culture and improving the integration of theoretical knowledge into care practice (Körner et al., 2023).

Reference studies also emphasize that attributes such as accessibility, interactivity, flexibility, knowledge management, and cost-effectiveness are determining factors for the success of online courses in healthcare, especially in remote regions or those with limited resources. These factors enable overcoming geographical barriers, adapting to each person's pace, and ensuring continuous knowledge updating, essential aspects for the continuing education of PHC professionals (Ardestani et al., 2023).

The choice of the online format aims to facilitate access to knowledge, providing flexible and accessible learning tailored to the needs of PHC professionals, regardless of their geographical location. This study intends not only to contribute to the advancement of knowledge in the area of patient safety in PHC but also to provide a validated practical tool capable of encouraging the adoption of good practices and reducing the occurrence of adverse events in primary healthcare.

It is noted that no similar studies were identified in the national or Latin American literature, which reinforces the originality and relevance of this research for the field of patient safety in PHC. In light of the foregoing, the article aimed to develop and validate an online course on patient safety, targeting Primary Health Care professionals.

**BACKGROUND**

PHC faces its own challenges, such as the high volume of patients seen, the diversity of clinical cases, and structural and human resource limitations. These conditions can result in diagnostic failures, treatment delays, the occurrence of adverse events in medication use, and communication breakdowns among health team members, all of which compromise patient safety and, consequently, the quality of care provided (Yuan et al., 2022).

For example, a study conducted in Brazilian PHC showed that, among more than two thousand prescriptions prepared by doctors, nurses, and dentists, approximately 40% had poor legibility (Sousa et al., 2025). A similar investigation evaluated notifications made by physicians in Basic Health Units and identified the occurrence of adverse events in locations including the patient's home, the consulting room, and the pharmacy, which raises an alert about the variety of error possibilities that can affect the patient (Aguiar et al., 2020). Such aspects may be related, for example, to the negative perception of patient safety by the professionals themselves, possibly influenced by resource scarcity and workload (Sousa et al., 2023; Vasconcelos et al., 2021).

The specific difficulties of PHC require integrated approaches and continuous training strategies for professionals to mitigate patient safety risks (Silva et al., 2022). Although strategies involving continuous professional training exist, they have not yet proven sufficiently effective in integrating safe practices into daily PHC activities (Pedrosa, 2020; Reis et al., 2022; Araújo et al. 2023; Sousa et al., 2023). A limiting factor has been the scarcity of specific training programs for this level of care, particularly in the online course format, which could facilitate access to quality training, especially in more remote areas with less access to resources, as is the case in inland areas of Brazil (Silva et al., 2022).

Patient safety in PHC is particularly challenging because professionals in this area frequently deal with the complexity of chronic conditions, multiple comorbidities, and a population with diverse health needs. Furthermore, communication and coordination among the various PHC professional teams are often insufficient to ensure continuity and safety in care, which increases the risk of adverse events (Báfica et al., 2021). Therefore, it is imperative that specific training strategies be developed and implemented to empower professionals for early identification and prevention of risks, thus contributing to the improvement of the quality of care provided (Báfica et al., 2021; Silva et al., 2022).

3

**METHODOLOGY**

This was a methodological study with a quantitative approach, focused on the development of educational health technologies aimed at training the multiprofessional PHC team. To ensure transparency, exhaustiveness, and methodological rigor in data presentation, the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) were followed.

The construction of the online course was guided by the ADDIE instructional model, widely used in the development of digital educational resources in healthcare (Branch, 2009). This model structures the development process into five sequential phases: Analysis, Design, Development, Implementation, and Evaluation (Figure 1).
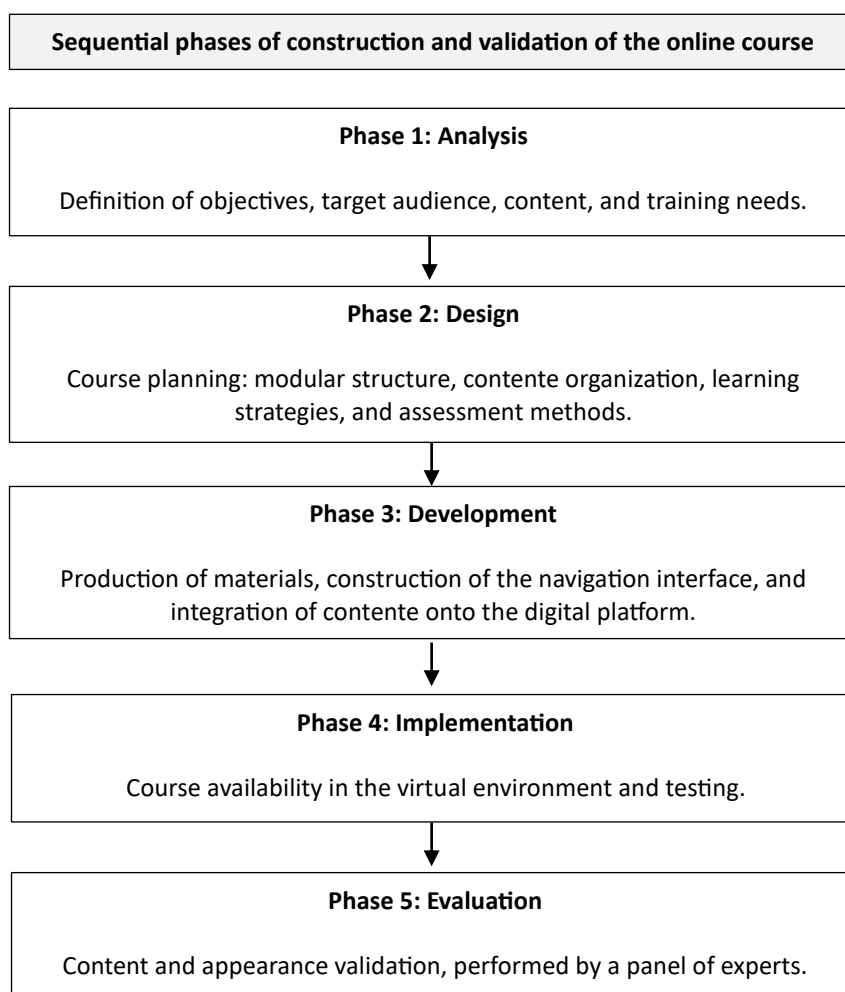


Figure 1

Sequential phases of construction and validation of the online course

In the Analysis phase, the learning objectives, target audience, relevant content, and training needs of the multiprofessional PHC team were defined, based on regulatory documents and national and international guidelines on patient safety (WHO, 2016, 2021; Ministério da Saúde, 2014). The course content was validated by a group of five experts from a university in northeastern Brazil who had expertise in patient safety. This phase took place between November 2022 and January 2023.

4

In the Design phase, the course planning was carried out, defining the modular structure, content organization, learning strategies, and formative assessment methods. Each module was designed based on principles of usability, accessibility, and interactivity, aiming to promote active, user-centered learning. This phase took place in February 2023 and was supported by a survey conducted with professionals working in PHC using a snowball sampling strategy. A total of 23 professionals from different PHC units participated. Their input was essential for the course development phase.

The Development phase involved producing multimedia teaching materials, building the navigation interface, and integrating the content into the digital platform. This phase, which took place in March and the first half of April 2023, also included technical and pedagogical revision of the materials by the same group of experts who participated in the first (Analysis) phase. The development of the navigation interface and digital integration of the content was carried out with the collaboration of information technology specialists.

In the Implementation phase, the course was made available in a virtual environment and was first pilot tested by a small group of users (n = 10) from the health field, recruited through snowball sampling. The objective was to identify any technical or pedagogical issues, allowing for adjustments prior to the final course validation. This stage occurred during the second half of April 2023.

The Evaluation phase involved the validation of the course's content and appearance, carried out by a panel of experts with recognized experience in patient safety. Sixteen experts from Brazil were invited, identified through the CNPq Lattes Platform based on criteria of technical and scientific qualification. Of these 16 experts, 14 agreed to participate, and 11 completed the process within the established timeframe, forming the final expert panel (n = 11). The number of experts, consistent with literature recommendations (Lynn, 1986; Pasquali, 1996), was considered sufficient to ensure representativeness and reliability of the content validation. Nevertheless, it is acknowledged that a smaller number of experts may limit the generalizability of results, which is common in methodological studies of this nature.

To ensure the appropriate qualification of participants in this stage, recruitment followed the inclusion criteria defined by the Brazilian expert classification system, with experts identified through the CNPq Lattes Platform. The criteria were: a master's degree or higher academic qualification, completed doctorate, professional practice certificate or specialization in patient safety, a minimum of one year of experience in the field, relevant research on the topic, and publication of articles in indexed scientific journals. Only professionals who reached a score of five points or higher were included. As an exclusion criterion, failure to complete the evaluation instrument within the established timeframe was adopted.

The validation was carried out between May and June 2023 in a virtual environment. Experts received, via email, a formal invitation with a link to access the course and the validation questionnaire, as well as instructions for registration and completion. The online questionnaire, adapted from Pinto (2018), consisted of three parts. The first part presented the study description and the informed consent form; only after consent was given did the expert gain access to the second part. The second part included sociodemographic and professional information, and

5

the third part contained the closed-ended questionnaire items, along with an open space for suggestions if the expert wished to provide any.

The questionnaire consisted of 14 items organized into three dimensions: usability, functionality, and efficiency of the course. Usability refers to the navigability and accessibility of the platform; functionality concerns the extent to which the training tool meets users' needs; and efficiency refers to the relationship between the resources employed and the learning outcomes achieved (Leite et al., 2018). Each item was evaluated on a four-point Likert scale to measure the degree of agreement among experts, using the following scale: 1 – disagree; 2 – partially disagree; 3 – partially agree; and 4 – agree.

The course developed was structured into three modules, each with a workload of 20 hours, totaling 60 hours. Progression between modules was sequential and dependent on the completion of the previous module, with each module associated with a formative assessment.

Quantitative response data were analyzed using Microsoft Excel® and the Epi Info™ software program. The Content Validity Index (CVI) was used to determine the degree of agreement among experts, with a value ≥ 0.78 considered acceptable, as recommended by Costa et al. (2018). The score for each item was calculated by dividing the number of responses considered adequate (items 3 and 4 on the Likert scale) by the total number of responses (Alexandre & Coluci, 2011). Categorical variables were expressed as absolute and relative frequencies, while continuous variables were expressed using measures of central tendency (mean and median) and dispersion (standard deviation).

Suggestions provided by the experts in the open-ended responses were analyzed qualitatively through detailed reading and careful evaluation of each contribution. The course content was reviewed and adjusted whenever suggestions were found to be relevant, ensuring that changes maintained alignment with the course objectives and the accuracy of information. This process enabled the direct incorporation of expert knowledge and experience, ensuring adequacy, clarity, and relevance of the content without the need for formal coding or thematic saturation, given the methodological nature of the study.

The study was approved by the Research Ethics Committee of the University for International Integration of the Afro-Brazilian Lusophony (Approval No. 5.884.298/2023; CAAE: 66533422.3.0000.5576), in accordance with the ethical principles of the Declaration of Helsinki. All participants signed the informed consent form.

## RESULTS

The initial version of the online course was structured into three modules, in addition to the introductory module (Figure 2).

| Online patient safety course modules |
|:---:|

| INTRODUCTORY MODULE |
|:---:|

↓

| MODULE I (20 hours)<br>**Overview of patient safety worldwide and in Brazil** |
|:---:|

| *Final activities, supplementary readings, and bibliographic references* |
|:---:|

↓

| MODULE II (20 hours)<br>**International classification for patient safety and safety protocols** |
|:---:|

| *Final activities, supplementary readings, and bibliographic references* |
|:---:|

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| MODULE III (20 hours)<br>**Safety culture and strategies for incidente prevention** |
|:---:|

| *Final activities, supplementary readings, and bibliographic references* |
|:---:|

↓

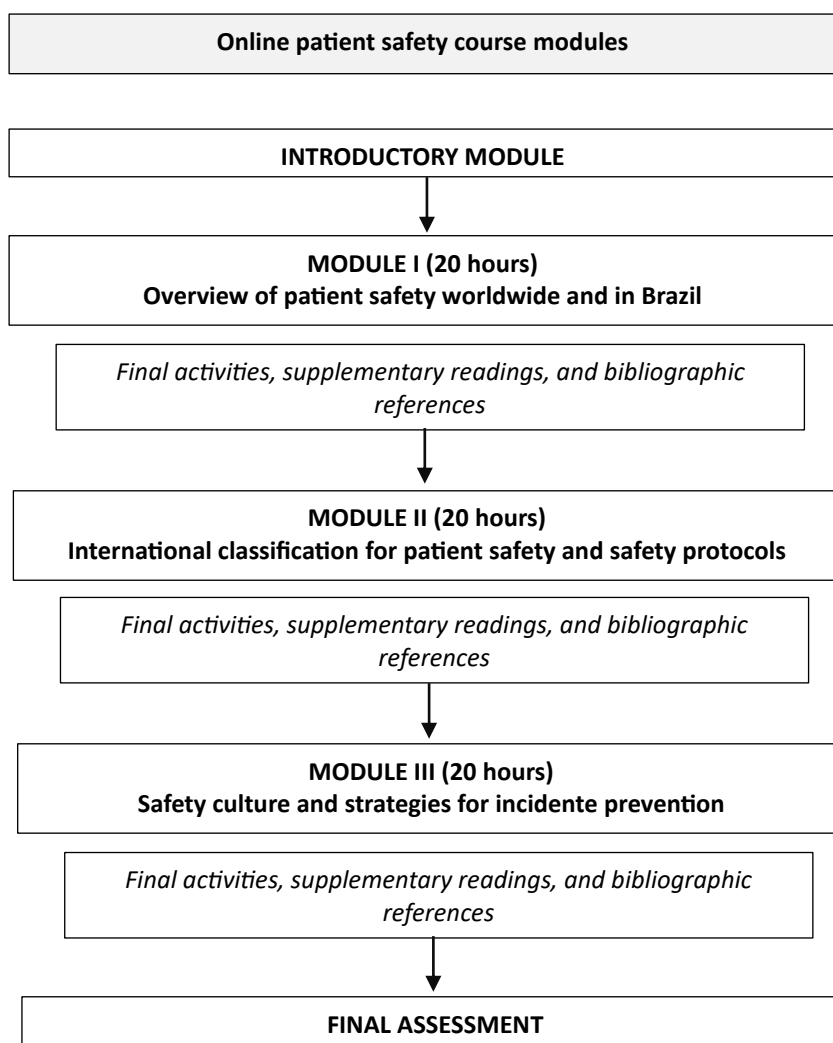| FINAL ASSESSMENT |
|:---:|

Figure 2

Online patient safety course modules

Module I, entitled *"Overview of Patient Safety in the World and in Brazil,"* included an introduction to the topic, the history of patient safety, and the international patient safety goals. Module II, titled *"International Classification for Patient Safety and Safety Protocols,"* addressed an introduction to the international classification of patient safety and the main patient safety protocols. Module III, titled *"Safety Culture and Strategies for Incident Prevention,"* covered safety culture and preventive strategies in patient safety. Each module included final activities, supplementary readings, and bibliographic references. After completing the third module, participants were required to complete a final assessment. The total course workload was 60 hours (20 hours per module), with sequential progression dependent on the completion of activities in the previous modules.

The online platform's home page provided participants with guidance regarding the course structure and navigation through the different contents. The virtual learning environment included top and side menus for quick access to lessons, notes, calendar, participants, and tutorials. Discussion forums and assessment

activities were incorporated to promote learner engagement. The introductory module also provided supplementary materials, as well as links to the course syllabus, table of contents, and general guidelines.

Content validation involved the participation of 11 health professionals, all female (100%), with a mean age of 40.5 years (±13.1). Regarding academic background, six were from the field of nursing (54.5%), four from dentistry (36.4%), and one from veterinary medicine (9.1%). In terms of academic qualifications,

ten (90.9%) held a specialization degree, nine (81.8%) held a master's degree, and two (18.2%) held a doctoral degree. Regarding professional roles, four (36.4%) held management or leadership positions, three (27.3%) were enrolled in postgraduate training, three (27.3%) worked as faculty members, and one (9.1%) worked in clinical practice. All experts reported previous experience with patient safety. The sociodemographic and professional characteristics of the experts are presented in Table 1.

Table 1

Sociodemographic and professional characterization of the expert panel (n=11)

| Variables | n (%) |
|---|---|
| **Sex** | |
| Female | 11 (100.0) |
| Age 40.5 (±13.1)* | |
| **Academic training área** | |
| Nursing | 6 (54.5) |
| Veterinary medicine | 1 (9.1) |
| Dental medicine | 4 (36.3) |
| **Academic qualifications** | |
| Specialization | 10 (90.9) |
| Master's degree | 9 (81.8) |
| Doctoral degree | 2 (18.2) |
| **Professional occupation** | |
| Management position | 4 (36.3) |
| Graduate student | 3 (27.3) |
| Teaching | 3 (27.3) |
| Care provision | 1 (9.1) |
| **Experience with patient safety** | |
| Yes | 11 (100.0) |
| **Time working with patient safety** 4.3 (2.3)* | |

*Mean and standard deviation

Regarding the course validation, all 14 analyzed items obtained a CVI of 1.00, with the option "fully agree" being the most frequently marked by the experts. None of the items received responses in the categories "totally disagree," "partially disagree," or "no opinion."

All evaluated items exceeded the minimum agreement threshold of 0.78, demonstrating high acceptance by the expert group regarding the functionality, usability, and efficiency of the course. The detailed data from the agreement analysis are presented in Table 2.

Table 2

Expert agreement with course quality (n=11)

| Evaluation requirements | FA* | PA† | CVI‡ |
|---|---|---|---|
| **Functionality** | | | |
| The course is an adequate tool for the proposal | 10 | 1 | 1.0 |
| The course is capable of generating positive results | 11 | - | 1.0 |
| **Usability** | | | |
| The course allows easy navigation | 9 | 2 | 1.0 |
| The concepts and their applications are easy to learn | 11 | - | 1.0 |
| Allows the target audience to easily apply the concepts | 8 | 3 | 1.0 |
| Provides information clearly | 10 | 1 | 1.0 |
| Provides complete information | 7 | 4 | 1.0 |
| Provides quick, non-tiring assistance | 9 | 2 | 1.0 |
| **Efficiency** | | | |
| The proposed time is adequate for professionals to learn the content | 8 | 3 | 1.0 |
| The number of lessons is consistent with the proposed course time | 9 | 2 | 1.0 |
| The organization of lessons into thematic topics is adequate for good content understanding and easy location of the desired topic | 10 | 1 | 1.00 |
| Moodle resources are used efficiently and comprehensibly | 11 | - | 1.00 |

*Fully Agree; †Partially Agree; ‡Content Validity Index*

Despite the high levels of agreement, several suggestions were made, and, after a careful analysis of the experts' comments, they were incorporated into the course. The main changes included: the addition of supplementary links for further consultation, including materials from the National Health Surveillance Agency (Anvisa); revision of the content with the inclusion of topics on safety culture versus blame culture and practical examples adapted to the reality of Primary Health Care (PHC); clarification of protocol terminology; textual and grammatical revision; improvements in platform navigation; and reformulation of assessment activities. A summary of the suggestions provided by the experts, as well as the changes implemented, is presented in Table 3.

Table 3

Expert suggestions and implemented improvements (n=11)

| Suggestions | Decision | Changes Implemented |
|---|---|---|
| The more links provided to expand access to complementary knowledge sources, the better. For example: within the international goals section, there is the ordinance that establishes the PNSP*, but there are also two specific ordinances related to the six goals. In addition, Anvisa has a collection of online books on patient safety, for which a link can also be provided. | Accepted | Inserted supplementary links, including those from the Anvisa patient safety collection. |
| Review the item on international goals; review national goal 2 on communication. | Accepted | Correction performed. |
| Include content on blame culture to bridge with the need for safety culture. | Accepted | Included a paragraph on the fear of reporting committed errors. |
| Link content with real-life PHC situations for relevance, especially for professionals new to the topic. | Accepted | Expanded content on patient safety in PHC. |
| Consider expanding some modules, given the proposed objectives for a basic level course. | Accepted | Expanded the module on safety culture. |
| Perform a textual review of the course content. | Accepted | Textual and orthographic review performed. |
| Include a "back" button for easier user navigation. | Accepted | Requested adjustment performed. |
| Add scoring to PDFs and remove duplicate activities from PDFs to avoid confusion. | Accepted | Implemented changes to scoring and activity placement. |

| Change the nomenclature for the medication protocol in Module 2. | Accepted | Modified to "Safety Protocol on the Prescription, Use, and Administration of Medications." |
|---|---|---|
| Replace the article on patient safety in the hospital setting. | Accepted | Substituted with the article: "Patient Safety in Primary Health Care of a Brazilian Municipality." |
| The final activity in Module 3 needs to be structured as a question. | Accepted | Activity set with options: a) Fully agree, b) Partially agree, c) Totally disagree, d) Partially disagree, e) No opinion. |

*\*National Patient Safety Program*

The general structure of the course (three modules, 60-hour workload) was maintained. The implemented changes aimed to ensure the pedagogical quality of the material, its suitability for the target audience, and its effectiveness in promoting patient safety competencies.

After the changes were introduced, a new link was sent, highlighting the alterations for the expert group to verify. All experts agreed with the changes, achieving a 100% consensus among the group of 11.

The results obtained evidence the validity of the course in terms of content, usability, functionality, and efficiency, reinforcing its potential as a training resource for PHC professionals in the area of patient safety.

**DISCUSSION**

The development and validation of the online course on patient safety in PHC emerged from the professional practice of one of the researchers, who identified a significant gap in the training of multiprofessional teams in this area. The recognition of the scarcity of structured training directed toward these teams motivated the design of the course, with the aim of promoting knowledge and improving the quality of care delivered. As an innovative educational tool, the online course offers the flexibility necessary to overcome geographical and time constraints, supporting the ongoing training of health professionals (Rocha et al., 2021; Zhang et al., 2024). This alignment with educational technologies reflects their growing use, as demonstrated by Santos et al. (2021), who highlight the benefits in raising awareness on health-related issues and enhancing interprofessional communication.

The choice of distance education as the pedagogical modality proved advantageous in ensuring accessibility for health professionals, fostering their continuous professional development. The literature emphasizes several benefits of this model, including time flexibility, geographical accessibility, and the opportunity to tailor the educational process to individual needs, as noted by Mlambo et al. (2021) and Rocha et al. (2021). This modality not only facilitates the inclusion of health professionals from different geographical contexts but also promotes continuous learning in a constantly evolving care environment. According to the WHO (2021), investing in the continuous training of health professionals is essential to promoting safe and high-quality environments, aligning with global patient safety goals.

Other experiences described in the literature, although not directly related to patient safety, have demonstrated positive results from training initiatives directed toward PHC professionals. Such initiatives have proven to be relevant tools in supporting educational processes in health, fostering knowledge updating, technical skill development, and improvements in the quality of care provided (Fagundes & Melo, 2024).

10

The course was structured based on the ADDIE methodology (Analysis, Design, Development, Implementation, and Evaluation), ensuring its relevance and suitability to the identified needs. The module on patient safety and the promotion of a safety culture were central themes. The need to address the blame culture associated with the occurrence of adverse events emerged as a key point of intervention. Underreporting of adverse events is a persistent concern in healthcare practices, often driven by fear of sanctions and the absence of an open learning culture (Moreira et al., 2022; Lee & Chang, 2024). Thus, the course incorporated content designed to reduce professionals' anxiety regarding reporting, promoting a learning-oriented rather than punitive culture. This approach seeks to encourage transparent reporting of incidents as a strategy to identify and mitigate care-related risks.

Furthermore, the course contributes to the training of multiprofessional teams, highlighting the importance of collaboration between physicians and nurses. Such collaboration is essential for the promotion of integrated and patient-centered care (Souza et al., 2019; Mattions & Rocha, 2023). Interdisciplinarity and mutual understanding of professional responsibilities are essential principles for ensuring care effectiveness. Interprofessional education strengthens these relationships and contributes to improved quality of care in PHC, aligning with patient safety objectives and promoting safer and more efficient care practices (Oliveira et al., 2021).

Another fundamental aspect addressed in the course is the promotion of a culture of continuous learning. Systematic reflection on adverse events and the sharing of experiences among professionals are practices that contribute to improving work processes and creating safe environments. Gomes et al. (2022) emphasize that collaborative case review and incident analysis are powerful tools for identifying failures and implementing improvements in care practice. In this context, the online course not only delivers technical content but also functions as a catalyst for shifting mindsets, encouraging professionals to adopt a more open and collaborative stance in the pursuit of continuous improvement.

Sustainable investment in educational resources, such as the online course, represents a promising strategy for strengthening the capacity of health professionals and improving the quality of care provided. The evaluation of the course's impact will be essential, with indicators such as completion rate, participant satisfaction, and practical application in clinical routine serving as measures of training effectiveness. Thus, the course has the potential not only to qualify professionals but also to positively impact the quality of PHC services.

It is also noteworthy that the improvements implemented based on expert contributions reinforced essential competencies in patient safety, such as the identification and prevention of adverse events, safe communication, risk management, and the promotion of a safety culture. The course is therefore expected to contribute to continuous professional development and to the improvement of quality and safety in PHC services.

In conclusion, the development and implementation of the online course on patient safety in PHC represent a strategic initiative with the potential to promote meaningful changes in clinical practice. The flexibility and accessibility afforded by distance education, combined with the promotion of a culture of safety and continuous learning, are key elements for ensuring the

11

quality of care and patient safety. Future evaluation of the course may provide valuable data to refine continuing education for health professionals and contribute to strengthening the Brazilian health system.

**CONCLUSION**

The results of the study demonstrated that the developed content is relevant and appropriate, having been validated by experts with experience in the field of patient safety. The suggestions presented by the expert panel were considered and integrated into the final version of the course, promoting greater clarity in the content presentation. This iterative process of validation and refinement evidences the methodological rigor adopted and reinforces the pedagogical quality of the educational resource.

However, this study presents some limitations that should be acknowledged. One is the absence of a pilot study, which would have allowed for a more comprehensive validation of the course content among the target audience. Furthermore, the homogeneous profile of the participating experts (all female) may represent a selection bias, limiting the diversity of perspectives in the validation stage. It is also recognized that the expert sample was restricted to the Brazilian context, which may limit the generalization of results to other regions or realities of Primary Health Care.

Although the analysis was comprehensive and the results indicative of quality, the lack of a longitudinal evaluation prevents understanding the knowledge retention and practical application of the content over time. Therefore, it is recommended that future investigations include pilot studies, pre- and post-training evaluations, and impact analyses on clinical practice, in order to deepen the understanding of the course's effectiveness and applicability.

Despite the limitations mentioned, this study offers relevant contributions to health sciences, professional training, and research in the area of patient safety in Primary Health Care. The developed course has the potential to prevent adverse events, foster a safety culture, and enhance the qualification of professionals, thereby contributing to the improvement of the quality of care provided.

For future studies, it is suggested to conduct pilot studies with the evaluation of concrete indicators, such as course completion rate, participant satisfaction, practical application of content in clinical routine, and reduction of adverse events. Furthermore, research could be expanded to different regions and PHC contexts, allowing for the assessment of the course's generalizability and deepening the understanding of its impact. Finally, the obtained results offer theoretical contributions by demonstrating the relevance of online continuing education as a strategy for promoting patient safety, suggesting pathways for future training interventions and large-scale research.

**CONFLICT OF INTEREST**

The authors declare that there are no conflicts of interest related to the present investigation.

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