








Effectiveness of a course on family health in the knowledge of doctors of the *Mais Médicos* program

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SUMMARY

OBJECTIVE: The aim of this study was to analyze the effectiveness of the distance education course in family health in the knowledge of physicians from the *Mais Médicos* program.

METHOD: This is a quantitative, quasi-experimental study, without a pretest and posttest control group, carried out from August 2019 to September 2021. In all modules, physicians responded to a pretest and posttest to verify their knowledge of the subject.

RESULTS: There was a statistically significant difference in all modules with higher average scores in the posttests; the modules with the greatest emphasis are child health care: growth and development; approach to cancer in primary health care; and family health strategy and territorialization.

CONCLUSION: The effectiveness of the distance education course was verified, as evidenced by the significant improvement of knowledge in all the modules studied.

KEYWORDS: Community health planning. Primary health care. Education, distance. Education, continuing. Medicine.

INTRODUCTION

Primary Health Care (PHC) emerged as a strategy to achieve the principles of the Unified Health System (*SUS – Sistema Único de Saúde*), such as integrality, equity, and universality, which comprises a set of individual or collective actions, with the purpose of promoting and protecting health, preventing diseases and conditions, and meeting the needs of the individual, the family, and the community^{1,2}.

Faced with this demand, PHC professionals face constant challenges regarding their performance in different areas of knowledge³. Many professionals feel the need for continuous education that adds knowledge to professional practice due to the mechanisms provided by routine and constant changes in the health area. This drives them to a constant update for qualified care, making the need for Permanent Education in Health (PEH) evident^{4,5}.

The National Policy on Permanent Education in Health (*PNEPS – Política Nacional de Educação Permanente em Saúde*) encourages pedagogical proposals based on the problematization

and meaningful learning of professionals^{6,7}. From this, the Permanent Education Program in Family Health (*PEPSUS – Programa de Educação Permanente do Sistema Único de Saúde*) emerged as an interdisciplinary strategy of support and strengthening for PHC, linked to provision policies such as the *Mais Médicos* program (*PMM – Programa Mais Médicos*) of the Ministry of Health (MoH).

PEPSUS is carried out through distance education (DE) tools from the *SUS Virtual Learning Environment (AVASUS – Ambiente Virtual de Aprendizagem do SUS)*^{8,9}. This teaching modality, through virtual tools, allows professionals new learning opportunities, a reduction of distances, and flexibility of time to reconcile studies and work activities¹⁰.

Considering the importance of this type of education and PEH for PHC professionals, as well as the scarcity of studies that evaluate the results of these courses, this study aims to analyze the effectiveness of a DE course in family health on the knowledge of physicians from the *Mais Médicos* program.

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Conflicts of interest: the authors declare there is no conflicts of interest. Funding: none.

Received on September 17, 2022. Accepted on September 30, 2022.

METHOD

This is a quantitative, quasi-experimental research, without a pretest and posttest control group. The study was carried out from August 2019 to September 2021 using the AVASUS online platform.

The theme of the program is the family health strategy (FHS), and its objective is to contribute to the consolidation and improvement of PHC as a guide for the health care model. The course lasts 48 weeks, has a workload of 360 h, and allows for autonomous construction using the problematization method¹¹.

The specialization was organized into modules; the mandatory ones were Reception of Spontaneous and Scheduled Demand; Reproductive, Prenatal, and Puerperium Planning; Attention to Child Health and Attention to Mental Health; Health of the Elderly; Approach to Cancer; and Control of Chronic Non-Communicable Diseases in PHC. The optional modules were chosen based on the student's interest and choice among 33 topics. This study verified knowledge related to mandatory modules¹¹.

Before classes, the professionals signed a free and informed consent term (ICF) and answered an instrument with 10 multiple-choice questions related to the topic addressed in each module. After each class, the participants were again subjected to the instrument to identify the knowledge acquired in the studied module. Students had only one chance to respond in the pretest and posttest and had access to their successes/mistakes in the posttest.

This study used a sample of 620 specialist students enrolled in the specialization course in family health. Physicians who did not complete the activities and who dropped out of the study were excluded from the research.

The paired *t*-test was used, and the confidence coefficient adopted was equal to 5% ($p < 0.05$). The Cohen effect size estimate was calculated, and the cutoff points related to Cohen's¹² effects were classified as follows: negligible ($d < 0.20$), small ($d \geq 0.20$ and < 0.50), medium ($d \geq 0.50$ and < 0.80), and large ($d \geq 0.80$).

The project was approved in 2019 by the Research Ethics Committee of the Universidade Federal de Pernambuco (UFPE), Opinion Report No. 3,745,515, in line with Resolution No. 466/2012¹³.

RESULTS

The specialist students working in Family Health Units in the states of Amazonas (93), Amapá (72), Bahia (2), Ceará (1), Minas Gerais (1), Pará (4), Paraíba (1), Pernambuco (1), Paraná (160), Rio Grande do Norte (135), Roraima (54), Sergipe (81),

and São Paulo (15) (458 Brazilians trained in Brazil and 162 individual exchange students, that is, professionals regardless of nationality, trained abroad). At the end of the course, the total dropout rate was approximately 28%, totaling 441 specialist students who completed it. The pandemic period may have influenced the dropout rate of the course subjects, which was taken into account in the analysis.

It was observed that the difference was statistically significant in all modules. Table 1 presents a description of these results in the pretest and posttest.

The effect size of the DE course from Cohen's *d* was considered large and therefore clinically important in all modules of the course.

DISCUSSION

The DE modality encourages the participation and engagement of professionals in seeking to deepen their knowledge, providing greater autonomy, skill development, and an exchange of experiences with other participants in the learning process. It is noteworthy that DE does not require the replacement of other traditional forms of teaching but intends to be integrated as a complementary methodology, especially in the continuing education of health professionals¹⁴.

The main advantage of courses in the DE modality, such as Massive Open Online Courses (MOOCs), is the flexibility of access to materials, the integration of participants, and the possibility of interaction through forums. However, the participants' persistence and completion of the course are challenges¹⁵.

Results of a study that evaluated the ease of engagement and persistence of students in MOOCs observed that academic self-efficacy, teaching presence, and perceived usefulness had significant effects on learning engagement ($p < 0.05$). Also, the presence of teaching, perceived ease of use, and learning engagement had significant effects on learning persistence ($p < 0.05$)¹⁶.

The findings are consistent with the training of physicians for PHC, with challenges arising from the course's own curricular matrix, which emphasize specialized areas on the diagnosis and treatment of diseases that focused less on public policies, mental health, and management in the SUS. A study carried out with managers of 125 courses showed that the skills of risky prenatal care, follow-up of psychiatric patients, and psychiatric urgency and emergency care were considered the least developed in medical training courses. Course coordinators also point out as problems in this scenario the fragmentation of teaching and practice, emphasis on specializations, shortage of faculty and practical scenarios, and interprofessional development¹⁷.

Table 1. Differences between the pretest and posttest of *Programa de Educação Permanente do Sistema Único de Saúde* modules.

Modules	n	Mean	Standard deviation	Standard error	CI*		p-value	Cohen's d	r
Public health policies and health reform									
Pretest	557	5.27	1.81	0.08	5.12	5.42	<0.001	2.41	0.77
Posttest	557	8.90	1.12	0.05	8.80	8.99			
Family health strategy and territorialization									
Pretest	556	6.53	1.89	0.08	6.37	6.68	<0.001	1.71	0.65
Posttest	556	9.13	1.03	0.04	9.05	9.22			
Observation of the health unit									
Pretest	552	5.68	1.96	0.08	5.51	5.84	<0.001	2.18	0.74
Posttest	552	9.11	1.06	0.04	9.02	9.19			
Advice on spontaneous and scheduled demand									
Pretest	524	7.11	1.62	0.07	6.97	7.24	<0.001	1.28	0.54
Posttest	524	8.87	1.07	0.05	8.78	8.96			
Reproductive planning, prenatal, and postpartum									
Pretest	518	5.85	1.74	0.08	5.70	6.00	<0.001	1.96	0.70
Posttest	518	8.67	1.05	0.05	8.58	8.76			
Child health care									
Pretest	464	7.87	1.45	0.07	7.74	8.00	<0.001	1.27	0.54
Posttest	464	9.39	0.86	0.04	9.31	9.47			
Approach to cancer in PHC									
Pretest	458	7.02	1.73	0.08	6.86	7.18	<0.001	1.65	0.64
Posttest	458	9.37	1.03	0.05	9.27	9.46			
Control of noncommunicable chronic diseases in PHC									
Pretest	457	6.80	1.74	0.08	6.64	6.96	<0.001	1.50	0.60
Posttest	457	8.92	0.98	0.05	8.83	9.01			
Mental health care in PHC									
Pretest	448	6.21	1.77	0.08	6.05	6.38	<0.001	1.84	0.68
Posttest	448	8.83	0.95	0.05	8.74	8.92			
Elderly health care in PHC									
Post	448	5.85	2.18	0.10	5.65	6.05	<0.001	1.18	0.51
Posttest	448	7.97	1.30	0.06	7.85	8.09			

*CI: confidence interval.

Medical training, especially in the PHC context, has challenges because there is an emphasis on hospital disciplines focused on specialized areas since graduation¹⁸. This is also observed in the international scenario, where there were problems in specialized training to work in PHC, as doctors had deficient and outdated knowledge, lack of security, and problems in dealing with other professionals and patients¹⁹.

These aspects are the main factors that limit the strengthening of PHC, given the scarcity of investments, low salaries,

and deficient education, which reinforce the discouragement of professionals to work in PHC. From this, the need for changes to intensify the workforce of physicians in PHC is identified, with an emphasis on qualification for leadership, motivation, resolution, and protagonism²⁰.

In this sense, there is a need to reformulate curricula and teaching strategies for adequate training and qualification within the scope of PHC. Studies show that competency-based education, with the development of skills for the practical scenario,

active participation, teamwork, and implementation of technological resources are some of the trends for improvement in the training of physicians²¹.

It is noteworthy that the course of this study took place during the pandemic, when educational programs canceled face-to-face activities and migrated to online resources, strengthening DE initiatives. The use of these technologies proved to be a resource for promoting the learning of skills in training²².

Online teaching has the potential for self-directed learning and competency-based teaching when done properly. For this, it requires good practices in the implementation of this tool, such as the alignment of the curriculum and objectives; synchronous and asynchronous interaction; encouragement of active learning; and feedback focused on individuality. Furthermore, it is essential to train teachers to achieve the necessary teaching skills²³.

In this context, continuing education provides an opportunity to deepen the deficient knowledge linked to the experience of professional practice, and, especially in DE, there is a flexible schedule for the participation of active professionals and the incorporation of online educational technologies²⁴.

Online technologies provide interactive environments anchored in pedagogical assumptions that allow the construction of the learning process from the relationship between students, educators, and resources²⁵.

The positive impact of DE is also evidenced in health care, within the scope of PHC, with a decrease in hospitalizations for conditions sensitive to primary care and chronic conditions after the completion of the DE course by health professionals. This demonstrates the need for constant programs of courses and training for professionals in order to improve knowledge and performance in professional practice²⁵.

However, there is a need to implement strategies in DE that combine the most appropriate resources, activities, and methodologies for the actors involved in the learning process, as this combination is fundamental to avoid the dropout of students from the courses and the lack of engagement²⁴.

This study highlights the importance of DE teaching in the continuing education of medical professionals working in PHC, as well as suggests that this teaching modality can be beneficial in other contexts and for other health professionals

if anchored to the selection of appropriate methodologies and technological resources.

The limitations are related to the instruments not covering the entirety of the sociodemographic characterization and information that would allow further analysis for the effectiveness of the course. Therefore, more studies are needed to verify the benefits of these resources in other contexts and areas of medical training and what factors are related to the results.

CONCLUSION

It was possible to observe the effectiveness of the DE course in family health due to the significant improvement in the general knowledge of the participants in all the tested mandatory modules of the course, pointing out that the DE modality is a valid strategy for the development of continuing education for physicians in the context of PHC. However, it should be noted that such results are not generalizable to all courses in this educational format.

The offer of courses in the DE modality for the practice of permanent education in health is configured as an innovative and very useful tool for a professional qualification in *SUS* services.

AUTHOR'S CONTRIBUTIONS

LRC: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Supervision, Writing – review & editing. **JAS:** Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Writing – review & editing. **IKFC:** Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – review & editing. **IPS:** Validation, Visualization, Writing – original draft, Writing – review & editing. **LSF:** Validation, Visualization, Writing – original draft, Writing – review & editing. **RMN:** Validation, Visualization, Writing – original draft, Writing – review & editing. **SKCM:** Validation, Visualization, Writing – original draft, Writing – review & editing.

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