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Research Article

Software for the Development of Knowledge in Foot Reflexology in Health Personnel

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Abstract

Introduction: According to the World Health Organization, Traditional and Complementary Medicine is an important part of prevention and health care; its practice occurs in almost all countries in the world.
Objective: Design software for the development of foot reflexology for health personnel in the Cuban Medical Mission in Venezuela. Methods: An innovative development study was carried out in the Republic of Venezuela, in the period from February 15 to May 22, 2023. The study sample was made up of 17 Cuban doctors specializing in Comprehensive General Medicine and Venezuelan doctors who they worked providing services in Venezuela who gave their consent to participate in the study.
Results: The specialist group was made up of 7 (5 doctors specializing in MTN and 2 graduates in computer science), which agreed with the design of the software for its implementation in all the parameters analyzed. In the knowledge related to the generalities of foot reflexology before the intervention, 11.76% knew that it was the same, a result that changed after the intervention reaching 100%.
Conclusions: The educational software fulfilled the use for which it was created as an educational tool, with principles of didactics, becoming more motivating when incorporating knowledge about the topics of foot reflexology to doctors in service.

Keywords: Educational software, Traditional Natural Medicine, Foot reflexology.

Introduction

According to the World Health Organization (WHO), Traditional and Complementary Medicine (TCM) is an important part of prevention and health care, its practice occurs in almost all countries of the world. These medicines, developed with quality, safety and efficacy, contribute to ensuring people's access to health care [1].
Therefore, the WHO Strategies in TCM (2002-2005 and 2014-2023) document recommends that governments sup-

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port training activities for health personnel in TCM in a comprehensive manner, including the training of TCM skills in response to social needs and in coordination with conventional medicine [1].

While traditional Chinese medicine (TCM) is widely practiced in Asian populations such as China, Hong Kong, Taiwan, and Singapore, many non-Asian countries have also recognized the enormous therapeutic potential of traditional therapies and are intensively leveraging the benefits of these medical practices. In the last three decades, several Western countries such as Germany, the USA, Australia, among others, began the application in public and private health services of various therapeutics of traditional Eastern medicine [2].

In recent years, new policies have been projected aimed at "making Information and Communication Technologies (ICT) a strategic development sector for the nation, strengthening a knowledge-based economy, which is expressed in significant contributions to exports and the national economy, facilitating broad access to digital content and services by citizens [3].

As a guarantee of the future, the Medical Teaching Program in Venezuela is strengthened, 19 years after its launch, with the collaboration of Cuban specialists, who have sown in this sister land a quarry of health professionals, indispensable to safeguard care for the people. At the end of this year 2023, and just when we have just celebrated Educator's Day in Cuba, the Medical Teaching Program in Venezuela shows laudable results, another mark of the island's consecrated teachers who leave their mark on the classrooms of the Bolivarian nation [4].

In order to continue contributing to the development of knowledge in this sister nation, we set ourselves the goal of designing software for the development of knowledge of foot reflexology for health personnel in the Cuban Medical Mission in Venezuela.

Method

An innovative development study was carried out in the Republic of Venezuela, in the period from February 15 to May 22, 2023. Structured by three stages, where in the first stage bibliographic searches were carried out in indexed databases (PubMed, CUMED, Google Scholar and SCIELO), to know about didactic means of teaching and learning capable of bringing knowledge to health personnel in service provision on foot reflexology. In the second stage, the teaching methods of foot reflexology were determined and a diagnosis was made to know the real state of knowledge in the study subjects. And in the third stage, an educational software was designed through a computer platform that complied with didactic elements that make the knowledge to be taught more accessible, validated by an expert group and the results obtained with the application of the proposal were evaluated.

The study sample consisted of 12 Cuban physicians special-izing in Comprehensive General Medicine and 5 Venezuelan physicians working in the state of Carabobo in Venezuela who gave their consent to participate in the study.

Through the researchers, a pre-test was applied to diagnose knowledge about foot reflexology to detect educational gaps in the subject, the software was designed and validated by a group of specialists to be applied, educational workshops on the software were held for the health personnel of the study for their educational interaction and it was explained how to work with it. In case of difficulty, computer advice was offered. Finally, a post-test was applied to collect the knowledge acquired after working with the proposed software.

The software consists of a presentation, a content menu where different topics related to foot reflexology are reflected, these topics are related to images and figures for a better understanding of the contents (Figure 1).

Figure 1: Images of Foot Reflexology Education Software

This educational intervention was approved by the Directorate of the Cuban Medical Brigade in Venezuelan territory by the training staff and the Science and Technology staff.

Result

The specialist group was made up of 7 members (5 doctors specializing in MTN and 2 Bachelors in computer science), in the indicators form of presentation of the content, scientific validity of the topics, environmental design, representation of a didactic model, usefulness for learning, ease, originality and functionality all agreed (100 %) (Table 1).

Software Features	I agree		Disagree	
	No.	%	No.	%
Presentation of the content	7	100	0	-
Scientific validity of the topics addressed	7	100	0	-
Language	6	85,71	1	14,28
Environmental Design	7	100	0	-
Pertinence	5	71,42	2	28,57
Representation of a didactic model	7	100	0	-
Usefulness for learning	7	100	0	-
Applicability	6	85,71	1	14,28
Content	4	57,14	3	42,85
Facility	7	100	0	-
Functionality	7	100	0	-
Originality	7	100	0	-
User Interface	6	85,71	1	14,28

Table 1: Assessment by specialist criteria

Among the physicians' characteristics, the age group between 25 and 30 years old (47.05%) and the male sex (76.47%) prevailed. 70.58% of the physicians were of Cuban nationality (Table 2).

Age group	No.	%
Ages 25 to 30	8	47,05
From 31 to 40 years old	6	35,29
Ages 41 to 49	2	11,76
More than 50 years	1	5,88
Total	**17**	**100**
Gender	**No.**	**%**
Female	4	23,52
Male	13	76,47
Total	**17**	**100**

Nationality	No.	%
Cuban	12	70,58
Venezuelan	5	29,41
Total	**17**	**100**

Table 2: Characterization of the doctors in the study according to age and sex and nationality working in Venezuela

In the knowledge related to the generalities of foot reflexology before the intervention, 11.76 % knew that it was the same, a result that changed after the intervention reaching 100 % (Table 3).

Level of knowledge about generalities of foot reflexology	Before the software		After the software	
	No.	%	No.	%
Adequate	2	11,76	17	100
Inadequate	15	88,23	0	-
Total	**17**	**100**	**17**	**100**

Table 3: Doctors according to knowledge of general aspects of foot reflexology (before and after the intervention with the software)

When analyzing the knowledge that the physicians had about the representation of the organs and systems in the feet before the intervention with the software, only 11.76 % responded adequately, this indicator after the intervention was improved since 94.11 % identified such representations (Table 4).

Level of knowledge about organ and system representation	Before the software		After the software	
	No.	%	No.	%
Adequate	2	11,76	16	94,11
Inadequate	15	88,23	1	5,88
Total	**17**	**100**	**17**	**100**

Table 4: Doctors according to knowledge about the representation of organs and systems on the soles of the feet (before and after the intervention with the software)

It is shown in the knowledge about the shapes of the feet before the intervention with the software, where 5.88% responded to the appropriate indicator, and after the intervention 76.47% of the doctors responded favorably. In relation to the diseases to be treated in the appropriate indicator, it was completely unknown in the physicians and once the intervention in this same indicator was completed, the physicians responded adequate in 94.11%. In the indicator on knowledge of the sedative circular pressure technique before the intervention with the software, 17.64 % answered

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adequately, after the intervention in this same indicator the level of knowledge was improved to 100 % (Table 5).

Level of knowledge about foot shapes	Before the software		After the software	
	No.	%	No.	%
Adequate	1	5,88	13	76,47
Inadequate	16	94,11	4	23,52
Total	**17**	**100**	**17**	**100**
Level of knowledge about diseases to be treated	Before the software		After the software	
	No.	%	No.	%
Adequate	0	-	16	94,11
Inadequate	17	100	1	5,88
Total	**17**	**100**	**17**	**100**
Level of knowledge about the sedative circular pressure technique	Before the software		After the software	
	No.	%	No.	%
Adequate	3	17,64	17	100
Inadequate	14	82,35	0	-
Total	**17**	**100**	**17**	**100**

Table 5: Doctors according to knowledge of foot shapes, diseases to be treated in foot reflexology and knowledge of the sedative circular pressure technique (before and after the intervention with the software)

Discussion

Today, the means of teaching have ceased to be the classic "auxiliaries" of the teacher to become components of the teaching-learning system; it is not simply a semantic change, but a complex renewal of functions and conceptions.[5]

In our work, the specialist group was made up of 5 doctors specializing in Traditional Natural Medicine and 2 Bachelors in Computer Science, who agreed with the design of the software for use as an educational tool. The age group between 25 and 30 years and the male sex prevailed. Most of the doctors in the study were Cuban nationals. The knowledge that was had before the intervention with the educational software was below the level of knowledge that must be had to use foot reflexology as an alternative therapy, after the intervention the levels of knowledge were developed allowing a practical approach in the workplace as a curative alternative in the treatments to be performed.

Other studies make positive reference to the use of educational software for development in Traditional Natural Medicine, such as those by Suárez et al.,[6] evaluated the usefulness of the multimedia Fitosoft for knowledge about Natural and Traditional Medicine to 60 third-year medical students at the Faculty of Medical Sciences of Bayamo. Before applying multimedia, 70% of the students reflected a low level of knowledge. After using the IT product, 90% achieved high levels of knowledge.

On the other hand, Guevara and Lorenzo,[7] developed a multimedia application for the study of Natural and Traditional Medicine integrated into the curriculum of the medical career. 100% of the variables evaluated achieved average scores above the value of 7 points, which qualitatively places them in the evaluation of Very Adequate. The agreement between the experts' criteria was very significantly reliable with a Kendall coefficient of 0.580.

O et al.,[8] prepared a multimedia as complementary material to the subject of Traditional and Natural Medicine for fifth-year students of the Stomatology career at the "Victoria de Girón" Teaching Polyclinic, in Palma Soriano, Santiago de Cuba. The methodological aspects conceived for the adequate selection of the contents, images and videos that make up the body of the film and the elaboration of the multimedia script with the detailed description of each and every one of the scenes of the audiovisual product prepared were taken into account. These contents are located in the syllabus of the subject.

Domínguez,[9] evaluated a MEDINAT educational software to 100 5th year students of the Medicine career, for the learning of Natural and Traditional Medicine. In the evaluation of the effectiveness of the software, before its implementation, 82% of the students had an inadequate level of knowledge about NTM, after its application 92% of the students with an adequate level of knowledge were obtained, which evidences the effectiveness of the MEDINAT educational software with a significance of 0.05.

Robaina et al.,[10] developed a multimedia application for the study of natural and traditional medicine integrated into the subject of Pediatrics in the curriculum for 25 students and 6 professors of the medical career. Regarding the level of knowledge of techniques that are oriented in Pediatrics and general contraindications, 64% obtained the rating of bad in this variable during the pretest, 28% of fair and 8% obtained a good evaluation. After using the software, 76% then know and are able to guide NTM techniques in Pediatrics and their contraindications (evaluation of good) in relation to 16% of regular and 8% who are still unfamiliar. Once the software has been used, better results are achieved in this aspect, with 60% of students responding adequately with a grade of good, 24% regular and 16% still experiencing certain difficulties, as they do not know how to integrate NTM in Pediatrics. The total number of teachers interviewed (n=6) stated that NatuPedia facilitated the MNT-Pediatrics integration and was useful in the preparation of their classes.

Montes de Oca et al.,[11] produced an educational multimedia on Traditional and Natural Medicine and its use in ophthalmological conditions. Its effectiveness was verified in 210 students from the University of Medical Sciences of Santiago

de Cuba through a questionnaire applied before and after using it. Before using multimedia (NaturOft), 59% of the students reflected a low level of knowledge, a relationship that was modified after its application where 75.7% reached a high level.

Conclusions

The educational software fulfilled the use for which it was created as an educational tool, with principles of didactics, becoming more motivating when it comes to incorporating knowledge on the topics of foot reflexology to health personnel in service to society.

Conflict of interest
The authors declare that there is no conflict of interest.

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