Original Article

Technologies for maternal self-efficacy in preventing childhood diarrhea: a clinical trial

Tecnologias para a autoeficácia materna na prevenção da diarreia infantil: ensaio clínico

Tecnologías para la autoeficacia materna en la prevención de la diarrea infantil: ensayo clínico

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Abstract

Objective: To assess the effects of two educational technologies, video and booklet, associated with Motivational Interviewing to promote maternal self-efficacy in preventing childhood diarrhea.

Methods: A clinical trial conducted with 122 mothers of children under 5 years old; mothers were randomly randomized into two groups: educational video ("Child's diarrhea: you are able to prevent it") combined with Brief Motivational Interviewing or booklet ("You are able to prevent diarrhea in your child!") combined with Brief Motivational Interviewing. Data collection took place in the first contact with the mothers at the Primary Health Care unit; the Maternal Self-Efficacy Scale for preventing childhood diarrhea and a sociodemographic form were applied. The second and third moments of data collection occurred through telephone, after one and two months, respectively, using the scale and a form for investigating diarrhea.

Results: It was found that one month after the interventions, most of the participants in both groups were considered to have high self-efficacy in preventing childhood diarrhea, with 78.4% of mothers in the video and Motivational Interviewing group; 83.0% in the booklet and Motivational Interviewing group. Two months after the interventions, mean maternal self-efficacy scores increased and decreased in cases of childhood diarrhea in both groups.

Conclusion: It has been proved that these educational technologies, combined with Brief Motivational Interviewing, increased self-efficacy to prevent childhood diarrhea. Therefore, they can be used by nurses working at Primary Health Care as an educational tool.

Clinical Trial Brazilian Registry: RBR-6974xz

Resumo

Objetivo: Avaliar os efeitos de duas tecnologias educativas, vídeo e cartilha, associadas à entrevista motivacional para promover a autoeficácia materna na prevenção da diarreia infantil.

Métodos: Ensaio clínico com 122 mães de crianças menores de 5 anos, randomizadas aleatoriamente em dois grupos: vídeo educativo ("Diarreia Infantil: você é capaz de prevenir") aliado à Entrevista Motivacional Breve ou cartilha ("Você é capaz de prevenir a diarreia no seu filho!") aliada à Entrevista Motivacional Breve. A coleta ocorreu presencialmente no primeiro contato com as mães, na unidade de atenção primária à saúde, aplicando-se a Escala de Autoeficácia Materna para prevenção da Diarreia Infantil e um formulário sociodemográfico. O segundo e terceiro momentos de coleta de dados ocorreram por telefone, após um e dois meses, respectivamente, utilizando-se a escala e um formulário de investigação da diarreia.

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Conflicts of interest: nothing to declare.

Resultados: Constatou-se que um mês após as intervenções, a maioria das participantes dos dois grupos foram consideradas com autoeficácia elevada para prevenção da diarreia infantil, sendo 78,4% das mães no grupo vídeo e entrevista motivacional e; 83,0% no grupo cartilha e entrevista motivacional. Dois meses após as intervenções, as médias dos escores de autoeficácia materna elevaram-se e tiveram redução nos casos de diarreia infantil, em ambos os grupos.

Conclusão: Comprovou-se que essas tecnologias educativas aliadas à entrevista motivacional breve elevaram a autoeficácia para prevenir a diarreia infantil. Logo, podem ser utilizadas pelos enfermeiros que atuam na Atenção Primária à Saúde, como uma ferramenta educativa.

Resumen

Objetivo: Evaluar los efectos de dos tecnologías educativas, video y cartilla, junto con la encuesta motivacional, para promover la autoeficacia materna en la prevención de la diarrea infantil.

Métodos: Ensayo clínico con 122 madres de niños menores de 5 años, aleatorizadas en dos grupos: video educativo ("Diarrea infantil: tú puedes prevenirla") junto con la encuesta motivacional breve o cartilla ("¡Tú puedes prevenir la diarrea de tu hijo!") junto con la encuesta motivacional breve. La recolección se realizó presencialmente en el primer contacto con las madres, en la unidad de atención primaria de salud, mediante la implementación de la Escala de Autoeficacia Materna para la Prevención de la Diarrea Infantil y un formulario sociodemográfico. El segundo y tercer momento de recolección de datos fue por teléfono, luego de uno y dos meses, respectivamente, mediante la escala y un formulario de investigación de la diarrea.

Resultados: Se constató que, un mes después de las intervenciones, la mayoría de las participantes de los dos grupos fueron consideradas con autoeficacia elevada para la prevención de la diarrea infantil, de las cuales el 78,4 % pertenecían al grupo video y encuesta motivacional y el 83,0 % al grupo cartilla y encuesta motivacional. Dos meses después de las intervenciones, el promedio de la puntuación de autoeficacia materna aumentó y se redujeron los casos de diarrea infantil en ambos grupos.

Conclusión: Se comprobó que estas tecnologías educativas, junto con la encuesta motivacional breve, aumentaron la autoeficacia para prevenir la diarrea infantil. Por lo tanto, pueden ser utilizadas por los enfermeros que actúan en la atención primaria de salud, como herramienta educativa.

Introduction

Childhood diarrhea, even though it is a preventable and treatable disease, remains a major cause of consultations, hospitalizations, emergency care and deaths in children under five years old. It is estimated that 2.5 billion cases in children of this age group occur annually, leading to 57 deaths per 100,000 inhabitants and accounting for the second largest cause of global morbidity and mortality in children in developing countries.[1-4]

Acute diarrheal disease is associated with multiple factors related to socioeconomic, health, cultural and behavioral conditions.[5,6] In low-income countries, children up to three years old experience, on average, three diarrheal episodes each year. Each episode deprives them of the necessary nutrition for growth, in addition to leading to dehydration, becoming a cycle, since malnourished children are more likely to get sick from diarrhea.[7]

Studies show a reduction in the incidence of diarrhea through incentive to breastfeeding,[8] rotavirus vaccine,[9,10] basic sanitation,[11] maternal behavior.[12] Moreover, educational interventions can contribute to increasing maternal confidence in preventing childhood diarrhea.[12]

It is known that maternal knowledge and appropriate attitudes in the management and treatment of diarrhea are essential to prevent the disease. However, just knowing the factors that cause diarrhea does not mean adherence to desirable behaviors. Even mothers with insufficient knowledge about risk factors, but who believe they can keep their children healthy, are more likely to perform preventive behaviors against the disease.[13,14] Therefore, it is not enough for individuals to know that a certain pattern of behavior can help them achieve a specific objective, they must also feel able to perform it.[15]

Therefore, the role of nurses is essential, since they must implement educational measures aimed at mothers in order to promote health, self-efficacy and prevent childhood diarrhea. In the meantime, self-efficacy is a concept incorporated into the Social Cognitive Theory (SCT), being defined as judgments or beliefs that people themselves make about their abilities to perform actions necessary to obtain a desired result.[16] Furthermore, it is recognized that high levels of self-efficacy identified in mothers through the Maternal Self-Efficacy Scale for Preventing Early Childhood Diarrhea (*Escala de Autoeficácia Materna para a Prevenção da Diarreia Infantil*, abbreviated EAPDI) are protective factors against childhood diarrhea.[17,18]

With this in mind, educational technologies based on SCT were developed in order to increase

maternal self-efficacy to prevent childhood diarrhea.[12,18] It is known that the practice of caring for nurses requires the use of technologies, with an emphasis on relational, since they are essential for greater dialogue and to strengthen a horizontal relationship between professional and patient.[19] An example of this is Motivational Interviewing, which is a brief counseling method, centered on individuals with the objective of achieving their motivations for behavioral changes.[20]

Furthermore, a systematic review found that interventions with technologies associated with Motivational Interviewing are more effective, compared to those carried out in isolation.[20] Thus, it is believed that the use of soft educational technologies, such as Brief Motivational Interviewing, which allow a dialogical relationship between professional and patient, can promote behavioral changes, especially if combined with other technologies, such as educational videos and booklets. Such technologies are able to raise levels of maternal self-efficacy in preventing childhood diarrhea, in addition to assisting nurses in providing guidance to mothers on preventing diarrhea. Thus, they make mothers safer and capable of taking care of their children and, consequently, reducing morbidity and mortality due to this condition.

Therefore, the study aimed to compare the effectiveness of Brief Motivational Interview (BMI) combined with the educational video "Child's diarrhea: You are able to prevent it" and BMI combined with the educational booklet "You are able to prevent diarrhea in your child!" on maternal self-efficacy to prevent childhood diarrhea.

Methods

This is an experimental study, of the type randomized controlled clinical trial in a cluster, registered and approved at the Brazilian Registry of Clinical Trials (*Registro Brasileiro de Ensaio Clínico*, abbreviated Rebec). It has RBR-6974xz register, with two parallel groups, double blind. It was developed with mothers of children under the age of five enrolled at Primary Health Care Units (PHCU) in the city of Fortaleza, state of Ceará, Brazil, between July and September 2015.

Mothers who had at least one child under five years old enrolled at one of the selected PHCU and who had telephone contact were considered eligible. Mothers of children diagnosed with lactose intolerance or with some other pathology whose symptoms were chronic diarrhea were excluded, as well as mothers with apparent cognitive limitations or who could not read. As discontinuity criteria: giving up the mother, changing the phone number and death of the mother or child.

Sample size was based on the premise that, for the chi-square test, the minimum number in each cell should be approximately 10 observations. Bearing in mind that the largest table with the self-efficacy scale versus group was of five categories and two groups, therefore, 10 cells.[21] Thus, 10 x 10=100 individuals were necessary, with an increase of 22%, 122 mothers remained, so that each group was composed of 61 mothers.

A type-I error was fixed at 5%, assuming that the probability of rejecting that the effects of the associated educational technologies are different, when they could be the same, i.e., in this case, would be at most 5%. A type-II error was fixed at 20%, assuming that the probability of accepting that the effects of associated educational technologies, when they could be different, would be at most 20%.

Randomization occurred by cluster. Random allocation of clusters was carried out considering the neighborhoods of Fortaleza, with subsequent simple random allocation through a table of random numbers for the choice of PHCU, as well as for the selection of mothers who composed each group. Accordingly, each mother in each conglomerate could have an equal chance of being part of the study sample. Thus, one conglomerate was part of the intervention group with video and BMI and the other, of the intervention group with booklet and BMI. Therefore, it was avoided that mothers from the same neighborhood compose the two groups, in order to reduce or eliminate sharing of information about the interventions in the groups.[22]

The study was double-blind considering that the researchers in charge of telephone follow-up

were not aware of which group they were calling. Then, blinding was performed for the statistician who performed data analysis.

Data collection took place in three phases: I - first assessment with EAPDI and application of the sociodemographic form (in PHCU); phase II - educational interventions and second EAPDI assessment (at PHCU); phase III - telephone follow-up for 2 months.

Phase I took place at PHCU, where mothers were invited to participate in the study while waiting for childcare, vaccination or other assistance. After acceptance, EAPDI and form were applied in both groups, containing sociodemographic and investigation questions regarding the occurrence of childhood diarrhea. The estimated duration of that moment was approximately 20 minutes, 6 minutes for EAPDI and 14 minutes for the sociodemographic form.

EAPDI is a Brazilian instrument to assess the confidence of mothers and/or caregivers in providing care to prevent childhood diarrhea. The scale consists of 24 items, divided into two domains, general/food practices and family hygiene. The scale scores are classified as low self-efficacy (scores ≤109), moderate self-efficacy (scores between 110 and 114 points) and high self-efficacy (scores ≥115). The Content Validity Index (CVI) of this instrument is 0.96 and Cronbach's α is 0.84.[23]

As for the sociodemographic and health form, maternal age, education, marital status, number of children, number of people in the residence and health and housing conditions were investigated. Regarding the investigation of diarrhea, mothers were asked about the recent occurrence of diarrhea in the child and the maternal management of the disease.

In phase II, which occurred on the same day as phase I, educational interventions were carried out at the PHCU. The mothers of the video and BMI group watched, individually, the educational video entitled "Child's diarrhea: you are able to prevent" through a notebook and headphones. Mothers from the booklet and BMI group were instructed to read the educational booklet individually.

Both technologies (video and booklet) address maternal self-efficacy to prevent childhood diarrhea. They were elaborated based on the Bandura's Self-efficacy theoretical framework[16] and EAPDI items. Then, texts and images are exposed at home and at the PHCU, addressing care for preventing and managing childhood diarrhea.[23] Moreover, the technologies were validated in Brazil by 23 and 30 content judges, respectively, and with the target population.[12,17] The video showed a general CVI of 0.97,[17] and the booklet with a global CVI of 0.88.[12] It was found that the materials were suitable for use in healthcare practice.

After applying the educational technologies, each mother participated in BMI. This has the characteristic of encouraging the individual's autonomy and ability to choose, and can be an intervention to be used in isolation or in association with other technologies.

The BMI for this research was based on the guidelines presented in the video or in the educational booklet, depending on the group and directed to the needs of each participant. BMI focused mainly on the items that mothers achieved the lowest score in the previous application of EAPDI, i.e., on the items that they felt less confident to perform in their daily lives. Thus, BMI's intention was to increase the participants' self-efficacy.

It is also noteworthy that BMI was previously semi-structured so that it could have the same conduct with all participants; we sought to address the four beliefs of self-efficacy (successful experiences, vicarious experiences, verbal persuasion and physiological states); and it was carried out according to this script: 1. presentation, approach and permission; 2. information; 3. initial evocation; and 4. final evocation.

Immediately after the application of technologies and BMI, still at PHCU, the second self-efficacy assessment was carried out through EAPDI.

Phase III started fifteen days after the interventions and consisted of a fortnightly follow-up by telephone contact in both groups over two months after phase I and II. Therefore, for data collection, two instruments were used: EAPDI and the reduced form of investigation of childhood diarrhea.

The results are presented in tables, containing measures of central tendency, Odds Ratios, chi-

square tests and likelihood ratios. Student's t and Mann-Whitney tests were used to compare the means. P <0.05 was adopted as statistically significant. Data were processed using SPSS 20, license number 10101131007.

The study was approved by the Research Ethics Committee of *Universidade Federal do Ceará* (UFC), with Opinion 1,116,855. It was registered and approved at Rebec, with number RBR-6974xz. Ethical principles for research involving human beings were respected in accordance with Resolution 466/12 of the Brazilian National Health Council (*Conselho Nacional de Saúde*). Data collection began by signing the Informed Consent Form (ICF), issued in two copies, one staying with the study participants.

Results

The total study sample consisted of 122 mothers of children under the age of five; they were distributed in two groups, so that 61 composed the intervention group with educational video and BMI; and 61 composed the intervention group with an educational booklet and BMI. Throughout the research, due to the discontinuity criteria, there were some losses in both groups, as shown in figure 1.

Table 1 shows that the sociodemographic and health variables did not show a statistically significant difference at the baseline. Therefore, the two groups were homogeneous with regard to demographic, socioeconomic and health characteristics: education (p=0.196); marital status (p=0.185); number of children (p=0.219); number of people in the residence (p=0.189); type of house (p=1,000); type of floor (p=0.131); garbage destination (p=0.154); type of toilet (p=0.764); and flies at home (p=0.904).

Most mothers in the video and BMI group and in the booklet and BMI group had, respectively, completed high school (54.1%; 65.6%); were married (78.7%; 75.4%); had two or more children (63.9%; 54.2%); lived with more than 4 people in the same residence (80.0%; 68.4%); lived in houses with plaster (93.4%; 93.4%); lived at home with tile floors (70.5%; 57.4%); with the garbage collected by the public service (100%; 96.7%). Table 2 shows the average of the total scale and of the two EAPDI domains, comparing the two study groups.

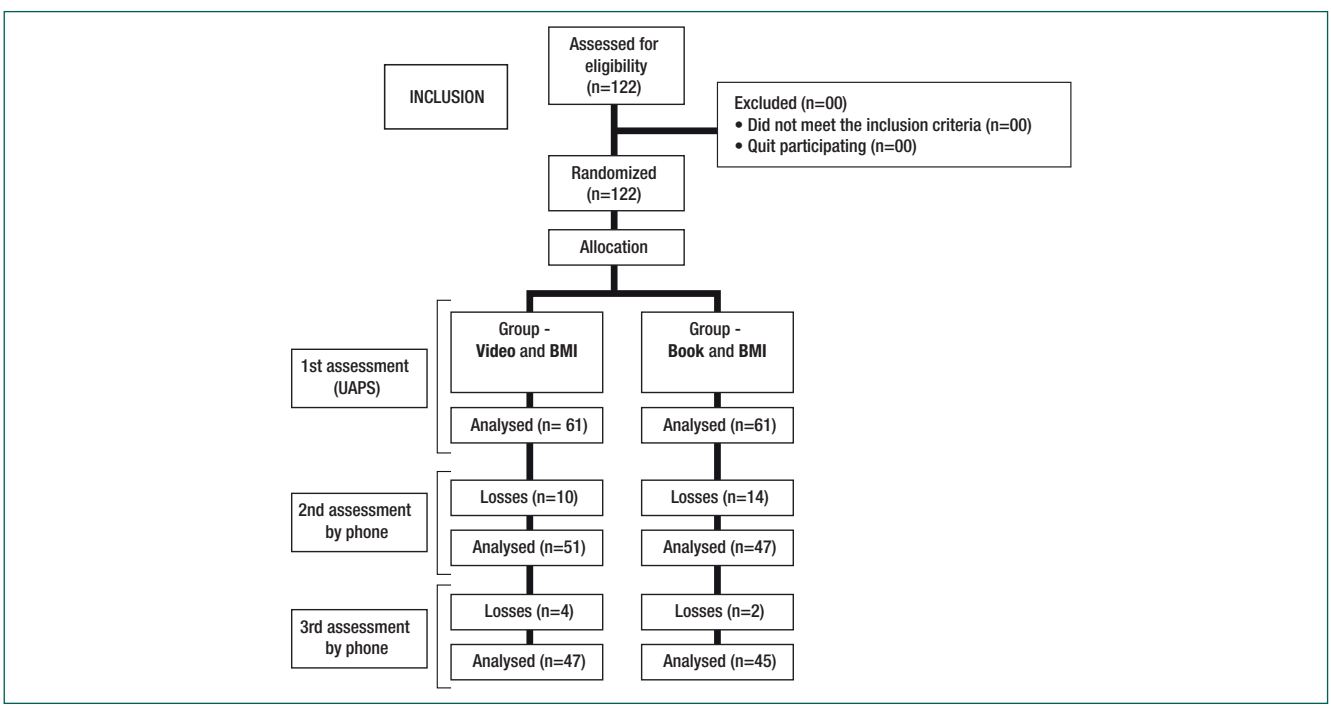

Figure 1. Representative diagram of the flow of mothers in each phase of the study

Table 1. Sociodemographic characteristics of mothers and sanitary households according to the research groups

Sanitary and sociodemographic variables	Groups		p value*
	Video and BMI** n(%)	Booklet and BMI** n(%)	
Education of mothers			0.196
Elementary school	28(45.9)	21(34.4)	
High school	33(54.1)	40(65.6)	
Marital status			0.185
Common-law marriage/married	48(78.7)	46(75.4)	
Single	13(21.3)	15(24.6)	
Number of children			0.219
1	22(36.1)	27(45.8)	
2	18(29.5)	20(33.9)	
3 or more	21(34.4)	12(20.3)	
Number of people in the residence			0.189
2 a 3	11(19.0)	19(31.7)	
4 a 5	33(56.9)	25(41.7)	
6 or more	14(24.1)	16(26.7)	
Type of house			1.000
With pasletring	57(93.4)	57(93.4)	
Without plastering	4(6.6)	4(6.6)	
Type of floor			0.131
Ceramics	43(70.5)	35(57.4)	
Cement	18(29.5)	26(42.6)	
Garbage destination			0.154
Public collection	61(100)	59(96.7)	
Others	0(0)	0(0)	
Type of toilet			0.764
With flush	49(84.5)	51(86.4)	
Without flush	9(15.5)	8(13.6)	
Flies at home			0.904
Yes	46(78)	47(77)	
No	13(22)	14(23)	

*Pearson's chi-square test; **BMI - Brief Motivational Interviewing.

The EAPDI domains refer to general and eating behaviors as well as hygiene to be adopted with the child and family.

Table 2. Comparison between the groups of the averages of the total scale and the domains before and after the intervention

Self-efficacy scores	Groups				p value*
	Video and BMI**		Booklet and BMI**		
	$\bar{X}$	±SD	$\bar{X}$	±SD	
Before the intervention					
Total scale	110.0	±8.7	112.0	±6.6	0.131
General/food practices	40.6	±3.7	41.2	±3.0	0.357
Family hygiene	69.4	±5.0	66.4	±3.9	0.061
1 month after the intervention					
Total scale	116.9	±4.4	116.9	±5.4	0.951
General/food practices	43.8	±1.9	43.7	±2.1	0.731
Family hygiene	73.1	±2.9	73.2	±3.8	0.906
2 months after the intervention					
Total scale	117.4	±4.1	115.9	±6.9	0.253
General/food practices	43.7	±2.2	43.4	±2.5	0.670
Family hygiene	73.7	±2.4	72.5	±4.5	0.132

*Chi-square test; **Brief Motivational Interviewing.

Before the interventions, there is a proximity in the averages of the total scale, with only 2.0 points of difference between the two groups. This minimal difference in the baseline made it possible to say that the groups are similar. Furthermore, in none of the investigated moments was there a statistically significant association between them, confirming this similarity between the groups (Table 2).

One month after the interventions, there was an increase in the average of the EAPDI scores in both groups, in the video and BMI group, as well as in the booklet and BMI group, with an increase of 7 points and 4.9 points, respectively. It can be seen, therefore, that there was a significant increase in EAPDI scores in the video and BMI group compared to the booklet and BMI group. After 2 months, the video and BMI group remained practically with the same score, going from 117.0 to 117.4 points, while that of the booklet and BMI group, decreased from 116.9 to 116.0 points.

Table 3 shows the effect of educational interventions on the occurrence of childhood diarrhea. It is observed that there was no statistically significant association between the occurrence of diarrhea and the groups.

Table 3. Comparison of the effect of educational interventions on the occurrence of diarrheal episodes in children

Diarrheal episode	GROUPS				p-value**
	Video and BMI		Booklet and BMI		
	n(%)	OR* (95% CI)	n(%)	OR* (95% CI)	
Before the intervention					0.835
Yes	34(57.6)	1.04	34(55.7)	0.96	
No	25(42.4)	0.71-1.50	27(44.3)	0.67-1.37	
1 month after the intervention					0.942
Yes	1(1.9)	0.95	1(2.1)	1.05	
No	51(98.1)	0.23-3.85	46(97.9)	0.26-4.28	
2 months after the intervention					0.519
Yes	1(2.1)	0.63	2(4.5)	1.39	
No	46(97.9)	0.12-3.19	42(95.5)	0.60-3.20	

*Odds Ratio/confidence interval; **Chi-square test.

At baseline, more than half of the mothers in each group reported that their child has had diarrhea. Before the intervention, it was noted that the chances of children having diarrhea were 1.04 times higher in the video and BMI group than in the booklet and BMI group. A decrease in diarrhea

cases over the two months was identified in both groups. One month after the intervention, a considerable reduction in diarrheal episodes was observed in both groups. In the video group, only 1.9% of children had diarrhea, and in the booklet group, 2.1%. The low percentages remained in the second month, and only 2.1% of mothers reported the occurrence of diarrhea. Similarly, it occurred with the booklet and BMI group. After the two months of the intervention, only 4.5% of the children had diarrhea. These data indicate that each of the educational interventions associated with the brief motivational interview was able to produce significant results in terms of reducing childhood diarrhea.

Discussion

Childhood diarrhea prevention is closely related to actions taken by children's caregivers, especially mothers, since based on the influence of maternal care provided to this population, their role in reducing rates of child diarrhea is admitted.[24] Thus, it is essential that they are advised on preventing childhood diarrhea and feel able to provide adequate care to their children. It is believed that mothers with high self-efficacy and educated will feel able to recognize the risk factors, to prevent and to take appropriate behaviors in the face of this pathology in children, thus promoting better quality care for their children.

A survey conducted in Ceará, Brazil with mothers of children under five years old, found that socioeconomic, behavioral and maternal knowledge were associated with childhood diarrhea and self-efficacy for prevention.[24]

Corroborating the data in Tables 1 and 2, a randomized clinical trial was conducted in Fortaleza, Ceará, Brazil, with 133 mothers of children under five years old. Seventy were allocated to the comparison group and 63 to the intervention group. It was identified that, after the intervention with educational video, there was an increase in self-efficacy scores in preventing diarrhea and a reduction in diarrheal episodes.[25]

Considering these findings, it is clear the importance of professionals and researchers to develop technologies and educational strategies that strengthen the knowledge and self-efficacy of individuals; and that encourage mothers and/caregivers to adopt healthy behaviors in order to prevent diarrhea in their children.

In line with the results of the present study, a research conducted with the use of educational materials, based on Bandura's Self-efficacy Theory, has shown an increase in self-efficacy with the participating public. For instance, a randomized clinical trial was conducted in Ceará, Brazil, with 2 groups (comparison and intervention) composed of 180 mothers of children under 5 years old. It was found that the group that participated in the educational video intervention had a significant effect on maternal self-efficacy in preventing diarrhea.[17]

A randomized clinical trial was carried out with 153 pregnant women in the city of Miandoab, Iran, in 2015 to 2016, with three groups, one control group and two intervention groups; one received the intervention with the use of the educational booklet and the other with an e-learning, both on the self-efficacy of childbirth. Data analysis showed that the two intervention groups were effective when they showed greater self-efficacy when compared to the control group, with statistically significant findings.[26]

A quasi-experimental study was carried out in Flanders, Belgium, with the aim of assessing the effect of an online video on promoting physical activity and a healthy diet in children and the self-efficacy of parents to promote these practices with their children, in order to prevent overweight or obesity. The intervention group watched the video for 4 weeks and obtained increased parental self-efficacy related to promoting physical activity and a healthy diet for their children, especially among parents of children aged 6 to 9 years old.[27]

From the findings of the present RCT and other investigations, it appears that when mothers feel capable of taking proper care of their children, there is a promotion of children's health and a reduction in their morbidity and mortality, especially due to diarrhea. An individual's belief in their own ability is a good predictor of motivation and behavior change.[16]

Both technologies associated with the brief motivational interview, have brought results for the increase in maternal self-efficacy scores in preventing childhood diarrhea. Although there were no previous studies with educational interventions allied to BMI aimed at preventing diarrhea, another research that incorporated the Motivational Interview attested to the effectiveness of the technique through results that showed improvements in health conditions.[28]

In this sense, it is believed that educational materials such as serial album, booklet, manuals, information leaflets and videos, are hard technologies valid in the transmission of the message between educator and student.[29] However, to be considered effective, they need to present a succinct, relevant, well-designed, attractive and easily understood vocabulary.[30] It is emphasized that regardless of the technological resource chosen to carry out an educational intervention, the content available in the technology must meet the personal demands and the pace of learning of each one.[31] Thus, it is up to professionals to decide which technology is most appropriate and most feasible to be used in their educational activities to promote health according to their audience.

The use of educational technologies associated with Motivational Interviewing strengthens patients' motivation and their commitment to changing behavior.[32] Therefore, hard educational technologies, if combined with soft technologies, with dialogue and health education, will strengthen bonds, patient health, educational process, quality and humanized care; they will also lead to new possibilities for interaction between nurses, patients and their families.[33] It is noteworthy that the motivational interview seems to be more effective when it is adapted to match the level of self-efficacy and readiness for individuals to change their behavior. This was evidenced in the clinical trial that assessed the effect of a telephone intervention on the self-efficacy of puerperal women in the duration and exclusivity of breastfeeding.[34]

Despite the contribution of these educational technologies, nurses must be mediators and facilitators in health education practices.[12] Their presence contributes to a clearer, objective, easy to understand and reality-oriented orientation, corroborating the appropriation and the empowerment of mothers. In relation to a research to validate a hard educational technology, the author suggested associating it with the guidance of health professionals. It should be used in a complementary way as a support tool to reinforce the guidelines and should never overcome the role of nurses in their dialogical relationship with their patients.[35]

In light of this, it is believed that the booklet and the educational video associated with BMI influence mothers to adopt healthy attitudes. When mothers feel more confident, they exhibit appropriate behaviors to prevent diseases and promote the health of their children. Furthermore, in view of these considerations, it can be inferred that combined interventions have been shown to be effective. Both the use of the booklet "You are able to prevent diarrhea in your child!" as the video "Child's diarrhea: you are able to prevent it", combined with the Brief Motivational Interview was considered an effective educational intervention to increase maternal self-efficacy in preventing childhood diarrhea.

The limitation presented by this study is related to the research being single-centered and the difficulty in reestablishing contact with mothers by telephone over time, reducing the sample size.

Conclusion

It became evident that both the educational intervention with video and BMI as well as that of the booklet and BMI can be used effectively in promoting maternal self-efficacy in preventing childhood diarrhea. It has been proven that the use of these two technologies, based on the concept of self-efficacy, was able to raise the self-efficacy scores to prevent childhood diarrhea and reduce diarrheal episodes. Therefore, they can be used by nurses, as an educational tool, in order to provide support for guidance to mothers. It is reinforced, therefore, that interventions that use BMI can influence parents' behavior in relation to preventing diarrhea in their children. Furthermore, it is believed that the combined educational technologies should be instituted in the practices of health professionals, especially

nurses. They should assist them in health education strategies, intending to strengthening and raising maternal confidence in promoting health for their children as well as reducing diarrheal episodes.

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Collaborations

Mendes ERR, Sabino LMM, Almeida PC, Melo ESJ, Penha JC, Rocha SS and Barbosa LP declare that they contributed to the study design, data analysis and interpretation, article writing, relevant critical review of the intellectual content and approval of the final version to be published.

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