



EFFECT OF EDUCATIONAL VIDEO ABOUT MATERNAL SELF-EFFICACY AND OCCURRENCE OF CHILDHOOD DIARRHOEA: RANDOMIZED CLINICAL TRIAL

KEYWORDS

Children, Health promotion, Public health.

EmanuellaSilva Joventino

PhD in Nursing.University of international integration of African-Brazilian Lusophony, Abolição Avenue, 3, Centro, 62.790-000, Redenção, Ceará, Brazil

JardelinyCorrêa da Penha

PhD student in Nursing. Department of Nursing, Federal University of Ceará, Alexandre Baraúna Street, 1115, Rodolfo Teófilo, 60430-160, Fortaleza, Ceará, Brazil

Lorena Barbosa Ximenes

PhD in Nursing.Professor of Promotion Health. Department of Nursing, Federal University of Ceará, Alexandre Baraúna Street, 1115, Rodolfo Teófilo, 60430-160, Fortaleza, Ceará, Brazil

Regia Christina Moura Barbosa Castro

PhD in Nursing.Professor of Promotion Health. Department of Nursing, Federal University of Ceará, Alexandre Baraúna Street, 1115, Rodolfo Teófilo, 60430-160, Fortaleza, Ceará, Brazil

Ana LúciaAraújo Gomes

PhD student in Nursing. Department of Nursing, Federal University of Ceará, Alexandre Baraúna Street, 1115, Rodolfo Teófilo, 60430-160, Fortaleza, Ceará, Brazil

Paulo César de Almeida

PhD in Health Public. Professor of Biostatistics. University of the State of Ceará, Dr. Silas Munguba Avenue, 1700, Itaperi, 60.714.903, Fortaleza, Ceará, Brazil

ABSTRACT *The aim of this study was to evaluate the effect of "ChildhoodDiarrhoea: you are able to prevent it" video in the intervention and comparison groups according to maternal self-efficacy and the occurrence of childhood diarrhoea. A randomized clinical trial conducted in Fortaleza, Brazil, from April to July 2013. 180 mothers of children aged up to five years participated, each group has 90. At moment 2 in comparison group, the odds ratio was 4.5 for children from mothers with moderate self-efficacy had diarrhoea compared to children from those with high self-efficacy. At moment 3 in intervention group, this ratio was 2.4. Comparing the two groups at moment 2, the chance of childhood diarrhoea occurs in comparison group was 1.5 times higher than the intervention group. The video was able to reduce the occurrence of diarrhoea during the investigation in children from high self-efficacy mothers and / or the intervention group.*

INTRODUCTION

The acute diarrhoeal disease (ADD) is a major cause of morbidity and mortality in children under five years old (Mamo & Hailu, 2014). In global context, approximately 1.2 million children in this age group die due to diarrhoea (United Nations Children's Fund, 2012). In Brazil, 39,421 deaths and 1,505,800 hospitalizations associated with ADD in children under one year, between 1995 and 2005 were recorded only in the public health services (Oliveira & Latorre, 2010).

Therefore, we observed that the ADD is a serious public health problem, and child health a major challenge to be addressed by health systems around the world (Kumar, Singh & Rai, 2013). Meanwhile, child mortality reduction was proposed as one of the Millennium Development Goals, and the proposed target is to reduce it by two-thirds (75%) up to 2015; and the World Health Organization, along with the United Nations Fund for Children, advocated for 2025, reduce the diarrhoea mortality in children under five years to less than 1 per 1,000 live births and the incidence of severe diarrhoea in 75%, compared to 2010 levels (World Health Organization, 2013).

In Brazil, a reduction in infant mortality in children less than one year occurred: 47.1 deaths per 1,000 births in 1990 to 19 in 2008 and, the goal to reduce it to 17.9 deaths

per 1,000 live births by 2025. The Northeast was the region that showed greater fall in deaths of children up to five years (Programa das Nações Unidas para o Desenvolvimento, 2012).

Because of it and to achieve the goals proposed above, strategies to promote child health and, consequently, prevent injuries, such as ADD should be effective in practice of health services. Among these strategies, we mention educational interventions, such as video "Childhood Diarrhoea: you are able to prevent it" (Joventino, 2013), capable to strengthen maternal self-efficacy in the child care context. This is because self-efficacy is a moderator and also a facilitator factor when there is a personal sense of control and people believe they are effective in performing certain behaviors (Bandura, 1997). This is a concept that can and should be considered in the management of individuals everyday situations by health professionals, considering health promotion actions are aimed at the adoption of healthy behaviours.

This study aimed to evaluate the effect of the educational video "Childhood Diarrhoea: you are able to prevent it" (Joventino, 2013), within the intervention and comparison groups according to maternal self-efficacy and occurrence of childhood diarrhoea.

METHODS

Design

Randomized clinical trial (RCT), conducted with two groups, intervention and comparison.

Scenario

The study was conducted in two districts (PV and M) belonging to the territories ascribed to two different teams of the Family Health Strategy, working in a Unit of Primary Health Care (Unidade de Atenção Primária à Saúde - UAPS) from Regional Executive Secretariat V (SER V) in Fortaleza (CE), located in North-eastern of Brazil. Both neighbourhoods have low Human Development Index (HDI), between 0.338 and 0.446, with poor profiles of basic social devices, such as adequate housing, sanitation, education, employment and income (Secretaria Municipal de Saúde, Célula de Vigilância Epidemiológica, 2013).

Participants

The study participants were mothers of children under five years. The inclusion criteria were: mothers with at least one child under five years, residents in the neighbourhoods, and registered and monitored in routine visits at UAPS; and exclusion criteria: mothers possessing some cognitive limitations that prevent them from participating in the educational intervention or responding to the scale used, and did not have a telephone contact.

The formula for studies with comparative groups of two experimental averages with bilateral test (Arango, 2009) was used to determine the sample size obtaining a sample of 150 people, to which was added a security percentage of 20%, resulting 180 participants.

After that, we performed a randomization, leaving the residents mothers in the PV district in the comparison group, and mothers from the M district in the intervention group.

Within each group, mothers were pre-selected through an instrument prescribed by the Ministry of Health (Ministério da Saúde, 2004) for families' registration in UAPS. Thus, mothers were previously invited by community health workers to attend the UAPS on certain days. For blinding the study the two groups attended the site in different weeks (Figure 1).

Figure 1 about here.

Intervention

The study happened in four moments: M0 (first meeting), M1 (one month after the first meeting), M2 (two months) and M3 (three months). In all of them the Self-efficacy Scale for Prevention of Infant Diarrhoea (Escala de Autoeficácia Materna para Prevenção da Diarreia Infantil - EAPDI) (Joventino, Ximenes, Almeida & Oriá, 2013) and a reduced form to investigate the occurrence of childhood diarrhoea were applied, the M0 was in the UAPS and the other by phone. The instruments application was performed by nurses and nursing students without knowing which group mothers belonged.

In the intervention group, in M0, the educational video "Childhood Diarrhoea: you are able to prevent it" was used (Joventino, 2013). This educational tool was developed based on the principles of the Theory of Self-efficacy (Bandura, 1997). It emphasizes some care to be taken by mothers in their daily lives to improve maternal self-efficacy, so that they would be able to accomplish, despite some adverse life situations, acts to prevent diarrhoea in their children.

The educational video lasts 16 minutes and its application occurred in a private room in the UAPS by the lead researcher using a portable DVD player and a 21-inch TV. Each session was composed at most by 10 spectators, who did not receive additional guidance related to preventing childhood diarrhoea.

Outcome measures

The study outcomes were: increased of maternal self-efficacy in the prevention of childhood diarrhoea and decreased of this occurrence. The first was measured from EAPDI a Likert scale, composed of two domains: family hygiene, with 15 items, and food / general practice, with 9. This scale has five options, from strongly disagree to strongly agree, and can range 24-120 points, considering low self-efficacy 24-109, moderate self-efficacy 110-114 and high self-efficacy 115-120 (Joventino, Ximenes, Almeida & Oriá, 2013).

The second, decreased the occurrence of childhood diarrhoea was measured through a reduced form investigating the occurrence of childhood diarrhoea. If the child presents diarrhoea, the characteristics of stool, additional symptoms as well as signs and symptoms of dehydration, demand for health care facilities, children's admission, use of medication, performing homemade recipes; use and preparation of oral rehydration serum and guidance provided by health professionals were questioned.

Statistical analysis

To calculate the odds ratios, as acute point (medium or high) for scale in all moments the median was adopted, with a value equal 110 instead of the average, considering this did not show normal distribution (Kolmogorov-Smirnov test) at all moments. We considered a significance level of 5%. The data were processed using SPSS 20.0 License No. 10101131007.

Ethical considerations

This study was approved by the Ethics Committee of the Federal University of Ceará, with Opinion No. 106/12.

RESULTS

Table 1 shows the evaluation of the odds ratio for the occurrence of childhood diarrhoea according to moderate and elevated maternal self-efficacy to prevent childhood diarrhoea. Although not statistically significant, the comparison group, in M2, the chances of children of mothers with moderate self-efficacy presenting diarrhoea was 4.5 times more than children of those with high self-efficacy. In the intervention group and in M3, the chance of children of mothers with moderate self-efficacy in EAPDI having diarrhoea was 2.4 higher than children of those with high self-efficacy for preventing diarrhoea. We also found that in the comparison group the CR grew following moments, but decreasing in M3, whereas in the intervention group this growth was from M0 to M3.

Table 1 – Assessment of odds ratio for the occurrence of childhood diarrhoea, according to maternal self-efficacy and moments. Fortaleza, Ceará, Brazil. 2014.

Occurrence of childhood diarrhoea / group	Maternal self-efficacy for preventing childhood diarrhoea				RC (IC 95%)
	moderate		high		
	N	%	N	%	
Comparison					

M0					0,47*
Yes	51	75	19	86,4	(0,12 – 1,8)
No	17	25	3	13,6	
M1					0,59*
Yes	8	17	9	25,7	(0,20 – 1,73)
No	39	83	26	74,3	
M2					4,50*
Yes	9	20,9	2	5,6	(0,90 – 22,38)
No	34	79,1	34	94,4	
M3					0,76*
Yes	2	4,5	2	5,9	(0,10 – 5,70)
No	42	95,5	32	94,1	
Intervention					
M0					0,73*
Yes	44	71	20	76,9	(0,25 – 2,12)
No	18	29	6	23,1	
M1					0,88*
Yes	7	18,9	10	20,8	(0,30 – 2,60)
No	30	81,1	38	79,2	
M2					1,02*
Yes	4	12,5	5	9,8	(0,22 – 4,61)
No	28	87,5	46	90,2	
M3					2,36*
Yes	5	13,9	3	6,4	(0,52 – 10,63)
No	31	86,1	44	93,6	

*p-value > 0,05 (Pearson's Chi-square test).

In Table 2, the effect of educational video in the occurrence of childhood diarrhoea is presented, according to both groups. It was observed that there was no statistically significant difference of occurrence childhood diarrhoea between the groups. However the chance childhood diarrhoea happen in the comparison group was 1.5 times higher than the intervention group, two months after the application of educational video.

Table 2 – Effect of educational video in the occurrence of childhood diarrhoea among the intervention and comparison groups in the three moments. Fortaleza, Ceará, Brasil. 2014.

Occurrence of childhood diarrhoea	Groups				RC (IC 95%)	p-value*
	Comparison		Intervention			
	N	%	N	%		
M0						
Yes	70	77,8	64	72,7	1,313	0,435
No	20	22,2	24	27,3	(0,663-2,600)	
M1						
Yes	17	20,7	18	20,7	1,003	0,995
No	65	79,3	69	79,3	(0,476-2,111)	
M2						
Yes	12	14,8	9	10,5	1,488	0,397
No	69	85,2	77	89,5	(0,591-3,746)	
M3						
Yes	4	4,9	9	10,6	0,439	0,176
No	77	95,1	76	89,4	(0,130-1,485)	

*Pearson's Chi-square test.

It can be seen that, when considering the odds ratio, the use of educational video mentioned can reduce the chances of occurrence of childhood diarrhoea, especially two months after intervention.

DISCUSSION

Through this study, it is possible to mention that the educational video "Childhood Diarrhoea: you are able to prevent" (Joventino, 2013) contributes to reduce the incidence of diarrhoea in children of mothers with high self-efficacy in both groups.

Moreover, in comparison group, the odds ratio rose from M0 to M2, being this the moment when the chances of children of mothers with moderate self-efficacy presenting diarrhoea was higher when related to those children with high self-efficacy. In the M3, the odds ratio declined. Furthermore, in the intervention group in four times was observed a gradual increase of the odds ratio for occurrence of diarrhoea in children of mothers with moderate self-efficacy compared to those with high self-efficacy.

In the correlation between the groups occurred no statistical significance, but there was a decrease in the occurrence of childhood diarrhoea in the two groups during different phases of monitoring of participants. The odds ratio rose from M0 to M2; so that in the latter, two months after the application of the educational video, it was higher, i.e., the chances of children from the comparison group mothers had diarrhoea was the highest compared to those from mothers in the intervention group.

Behaviours adopted by mothers during the children health-disease process are important for maintaining health and reduce their children morbidity and mortality (Punia, Dahia, Aggarwal, Sheoran & Punia, 2012). Thus, high self-efficacy mothers are able to adopt behaviours that prevent diarrhoea. In Bolivia, research conducted with 4,383 mothers of children under five years, found that those who had high levels of maternal agency, one of the concepts of the Theory of Self-efficacy were less likely to report episodes of diarrhoea in their children than to those with lower levels (Caruso, Stephenson & Leon, 2010).

In a descriptive correlation, conducted by the International Centre for Diarrhoeal Disease Research Bangladesh, Dhaka, with 107 mothers of children aged less than five years and hospitalized for diarrhoea, significant correlation existed between maternal perceptions and preventive behaviours in relation to diarrhoea in children was found (Kundu, Prateepchaikul & Sen-Ngam, 2010).

Regarding the educational video, it was chosen because the sources of self-efficacy as a vicarious experience that can be enhanced through active learning strategies, and verbal persuasion, since it also considers that when a person sees others individuals like yourself performing certain tasks with success, their self-efficacy tends to rise (Eidman, 2011). Thus, this educational intervention is a component capable of enhancing maternal self-efficacy for prevention of childhood diarrhoea and thereby reduce the incidence of this disease.

Video on the management and prevention of childhood dehydration, dealing with the causes of diarrhoea, was applied in rural Bangalore, 60 mothers of children under five years to assess the knowledge and practice of the same. Thus, it was possible to verify that before the video 35

(58.3%) mothers had inadequate knowledge about the management and prevention of dehydration, and after the intervention, 37 (61.7%) had adequate knowledge; regarding the practice also improved since before the video 18 (30%) of the mothers were considered poor practice and after in 30 (50%) of them was good practice to prevent dehydration in their children. It turned out that this video was also effective, as there was a significant improvement in knowledge and practice of the participants from the application of the video, but there is no mention of self-efficacy(Banik, 2012).

Other educational interventions combined or not with the use of video can be used with the goal of preventing diarrhoea. Educational activity directed at mothers of 96 children, proposed in a study in Cuba, addressed the primary care related to diarrhoea. So, the intervention group went through an interview with a pediatrician; watched a one-hour video; participated in debate; and received guided tours to detect and correct situations of family environment that could show risk factors for diarrhoea. Eight months after the completion of the activity, we compared the mothers' knowledge before and after the intervention, revealing that there were significant changes in the habits of the mothers. Thus, the prevention program applied proved to be able to impart knowledge so that mothers properly assimilate the information, in the same way change the habits of them(Díaz&Díaz, 2008).

In a Cameroon village, it was noted that the multi traditional health education strategies development, with emphasis on reflective practice directed at women and children, in cultural awareness and community development to change health behaviours, led efficient to the participants. Furthermore, it was observed that at the beginning of study in 2006, 16% of children had diarrhoea in the two weeks prior to data collection, while in 2009 this figure decreased to 11%, and women have become multipliers of knowledge acquired health with families from neighbouring villages(Chaponniere, Cherup& Lodge, 2013).

This study helps to confirm the importance of using health education interventions for promoting child health as well as prevention of childhood diseases. It also adds the use of an educational video that deals with maternal self-efficacy for preventing diarrhoea, since according to a survey conducted on Video Home System (VHS) five cataloged-videos found in Oswaldo Cruz Foundation (FIOCRUZ): Breastfeeding and diarrhoea, 1992; Diarrhoea and ARI, 1997; *El uso exitoso de la terapia de rehidratación*, 1987; This recipe is worth a life, 1990; We end up with diarrhoea, 1996(Fundação Oswaldo Cruz, 2008); two in Educational Video Laboratory of the Federal University of Rio de Janeiro (UFRJ): oral hydration (Carakushansky,Warth& Oliveira, 1982)and Diarrhoea: weapon that injures and kills(Carvalho, 1987); which do not mention self-efficacy for behavioural changes.

Moreover, those videos are more than ten years old, a fact that probably reflects the need for them to be updated and to modernize the recording system.

CONCLUSION

The educational intervention using the video "Childhood Diarrhoea: you are able to prevent" was able to reduce the occurrence and diarrhoea along research in children of mothers with high self-efficacy and / or the intervention group. Thus, it appears that the mentioned video is a facilitator of care provided by health professionals.

Although the findings of this research have been carefully assessed and measured by means of statistical tests recommended by the scientific community, to prove its consistency to practice in promoting maternal self-efficacy in prevention of childhood diarrhoea, limitations exist, they are: short time of maternal self-efficacy evaluation and to monitor the occurrence of childhood diarrhoea, just three months; and difficulty in re-establishing contact with the mothers by telephones. These are situations that can be conducted differently in subsequent research.

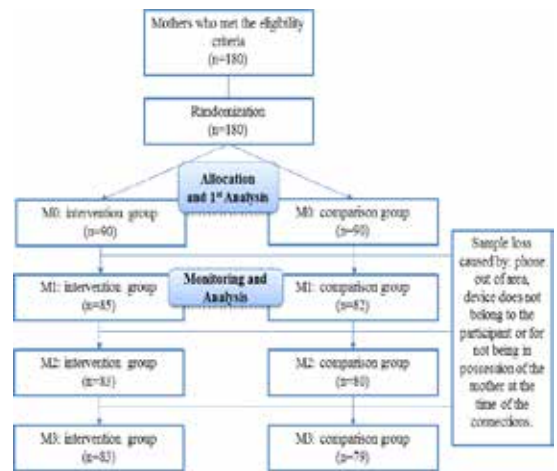


Fig. 1.Flowchart CONSORT.

REFERENCE

1. Mamo, A., & Hailu A. (2014). Assessment of Prevalence and Related Factors of Diarrhoeal Diseases among Under-Five Year's Children in Debrebirehan Referral Hospital, Debrebirehan Town, North Shoa Zone, Amhara Region, Ethiopia. *Open Access Library Journal*, 1, 1-14. | 2. United Nations Children's Fund (UNICEF). (2012). Situação mundial da infância 2012: crianças no mundo urbano. Nova Iorque: UNICEF. | 3. Oliveira, T. C. R., & Latorre, M. R. D. O. (2010). Trends in hospital admission and infant mortality from diarrhoea: Brazil, 1995-2005. *Rev. Saúde Pública*, 44(1), 102-111. | 4. Kumar, C., Singh, P. K., & Rai, R. K. (2013). Coverage gap in maternal and child health services in India: assessing trends and regional deprivation during 1992-2006. *J Public Health (Oxf)*, 35(4), 598-606. | 5. World Health Organization (WHO). (2013). Ending Preventable Child Deaths from Pneumonia and Diarrhoea by 2025: The integrated Global Action Plan for Pneumonia and Diarrhoea (GAPPD). Geneva: WHO. | 6. Programa das Nações Unidas para o Desenvolvimento (PNUD). (2012). Reduzir a mortalidade na infância. Resourcedocument. PNUD. <http://www.pnud.org.br/ODM4.aspx> | 7. Joventino, E. S. (2013). Elaboração e validação de vídeo educativo para promoção da autoeficácia materna na prevenção da diarreia infantil [tese]. Fortaleza: Departamento de Enfermagem; Universidade Federal do Ceará. | 8. Bandura, A. (1997). Self-efficacy: toward a unifying theory of behavioral change. *Psychol. Rev.*, 84(2), 191-215. | 9. Secretaria Municipal de Saúde, Célula de Vigilância Epidemiológica/CIEVS/SIMDA. (2013). Consolidado das notificações de casos de diarreia aguda por Secretaria Executiva Regional. Resourcedocument. Secretaria Municipal de Saúde. <http://tc1.sms.fortaleza.ce.gov.br/simda/notifica/graficoSerano=2012&ser=&agra vo=A09> | 10. Arango, H. G. (2009). Bioestatística: teórica e computacional. 3. ed. Rio de Janeiro: Guanabara Koogan. | 11. Ministério da Saúde. (2004). Sistema de Informação da Atenção Básica – SIAB. Brasília: Ministério da Saúde. | 12. Joventino, E. S., Ximenes, L. B., Almeida, P. C., & Oriá, M. O. B. (2013). The Maternal Self-efficacy Scale for Preventing Early Childhood Diarrhoea: Validity and Reliability. *Public Health Nurs.*, 30(2), 150-158. | 13. Punia, A., Dahia, B. R., Aggarwal, H. S., Sheoran, B., & Punia, M. S. (2012). Health Seeking Behaviour of Mothers for Their Infants Having Diarrhoea in Peri-Urban Areas Of Rohtak City. *Indian Journal of Maternal and Child Health*, 14(1). | 14. Caruso, B., Stephenson, R., & Leon, J. S. (2010). Maternal behavior and experience, care access, and agency as determinants of child diarrhoea in Bolivia. *Rev. Panam Salud Pública*, 28(6), 429-439. | 15. Kundu, T. R., Prateepchaikul, L., & Sen-Ngam, K. (2010). Relationship between Maternal Perceptions and Preventive Behaviors Regarding Acute Diarrhoea of Children in Bangladesh. In: Proceedings of the 2nd International Conference on Humanities and Social Sciences, 2010, Songkhla, Thailand. Songkhla: Faculty of Liberal Arts, Prince of Songkla University. | 16. Eidman, C. K. (2011). Enhancing Breastfeeding Self-Efficacy through Prenatal Education [dissertation]. Master of Arts in Nursing Theses, St. Catherine University. | 17. Banik, P. (2012). A study to evaluate the effectiveness of video assisted teaching program on knowledge and practice regarding prevention and home management of dehydration among the mothers of under five children in a selected rural area of Bangalore [dissertation]. Bangalore: Rajiv Gandhi University of Health Sciences. | 18. Diaz, J. A. C., & Diaz, M. C. (2008). Influencia de la educación sanitaria para la prevención de las diarreas agudas en niños. *Mediciego*, 14(supl.2). | 19. Chaponniere, P. A., Cherup, S. M., & Lodge, L. (2013). Measuring the Impact of Health Education Modules in Cameroon, West Africa. *Journal of Transcultural Nursing*, 24(3), 254-262. | 20. Fundação Oswaldo Cruz (FIOCRUZ). (2008). Serviço de Produção e Distribuição de Audiovisuais em Saúde. Catálogo de Vídeos. Rio de Janeiro: Instituto de Comunicação e Informação Científica e Tecnológica em Saúde (ICICT), FIOCRUZ. | 21. Carakushansky, G., Warth, S., & Oliveira, N. A. (1982). Hidratação oral [vídeo]. Rio de Janeiro: Núcleo de Tecnologia Educacional para a Saúde, Universidade Federal do Rio de Janeiro. 15min. | 22. Carvalho, M. R. (1987). Diarreia: arma que fere e mata [vídeo]. Rio de Janeiro: Núcleo de Tecnologia Educacional para a Saúde, Universidade Federal do Rio de Janeiro. 12min. |