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ORIGINAL RESEARCH

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EFFECT OF HEALTH EDUCATION USING VIDEO AND BROCHURE ON MATERNAL HEALTH LITERACY

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Abstract

Background: Fever is manifestation of acute disease on children and contributes to incidence of severe malnutrition and morbidity and the most common reason for parents to deliver children on hospital. Currently, parents still lack knowledge of determination and proper management of fever although intervention of health education has been widely practiced. One obstacle to widespread success of educational intervention is inadequacy of health literacy. Utilization of media with simple and completed information with picture can be developed in communities with low levels of health literacy.

Objective: To understanding the effect of health education using video and brochure on maternal health literacy in the working area of Saptosari Public Health Center, Gunungkidul Yogyakarta, Indonesia.

Methods: This was a quasi-experimental study with pretest and posttest nonequivalent control group design conducted on 15 – 27 May 2017. The questionnaire used was HLS-Asia Q which had been modified. Health education intervention was done using a five minute-duration video about fever management in children preceded by discussion about the content of the video. Cluster sampling technique was applied with mothers who have under five children as the respondent involving 45 respondents for intervention group and 42 respondents in control group. Data analysis used independent sample t-test.

Results: There was an increase in average maternal health literacy provided with video and brochure media compared to the maternal health literacy given with standard treatment. Intervention group mean difference value was 6.6444 ± 9.6086 and value of difference of control group mean equals to -2.4762 ± 12.0674 (p value <0.001).

Conclusion: Health education intervention using video has a higher impact in the development of maternal health literacy compared with the standard intervention using brochure.

Keywords: maternal health literacy; health education; fever management

INTRODUCTION

Fever is manifestation of acute disease on children and contributes to incidence of severe malnutrition and morbidity and the most common reason for parents to delivers children on hospital or other health services. Every year in United States, as many as 60 million children with fever visited to health services and about eight million entry to ED. Similarly

in Indonesia, as many as 16,381 children under five, 74% of children with fever visited health facilities or health workers ([Statistics Indonesia, National Population and Family Planning Board, Ministry of Health, & ICF International, 2012](#); [Wallenstein et al., 2013](#)).

Currently, parents still lack knowledge of determination and proper management of

fever. A research done in RSUP Dr. Kariadi Semarang showed 52% respondents had low level of knowledge about fever and 50% had poor fever management ([Riandita, Arkhaesi, & Hardian, 2012](#); [Walsh & Edwards, 2006](#)). Parents have misperceptions, misinformation and skills constraints about fever and management ([Wallenstein et al., 2013](#)). Parents have limited ability to perform safe care for children with fever at home and lack of knowledge about fever and limited ability to access child fever information and management ([Broome, Dokken, Broome, Woodring, & Stegelman, 2003](#)). Research stating that education increases knowledge of fever, reduces the number of visits to health services and decreases the inaccuracy of antipyretic dose ([Broome et al., 2003](#)). Although this education intervention is successful, parents' fears of fever in their children still exist. One of the obstacles widespread the success of this educational intervention is the inability of health literacy in parent ([Walsh & Edwards, 2006](#)).

Health literacy is a term used to describe an ability to be involved with information and health service ([World Health Organization, 2015](#)). Based on U.S. Department of Health and Human Services, most of adult society (53%) had intermediate health literacy, 22% had basic health literacy, 14% had below basic literacy and only 12% was in proficient category ([U.S. Department of Health and Human Services, 2008](#)). In Indonesia, there has not been found any research related to mother health literacy about fever management, but in a research done in Sleman in DM type 2 patients, from 142 respondents there were 123 people (86.6%) had inadequate level of health literacy ([Nurkhasanah, Guardian, & Madyaningrum, 2015](#)).

People with inadequate health literacy will have 1.2 - 4 times negative health behavior that can affect children's health. Moreover, children with acute and chronicles illness who have caregiver with inadequate health literacy will have twice chance bigger to visit health center. The inadequate health literacy in caregivers is related to the low level of

preventive behavior and children health outcome ([Sanders, Shaw, Guez, Baur, & Rudd, 2009](#)). Based on Orem's perspective, limited ability of mothers to read and understand written information affect mother's ability in choosing proper action, decision making, and performing dependent care in fever management ([Wilson, Baker, Nordstrom, & Legwand, 2008](#)).

The use of media with simple information and picture media can be developed in communities with low levels of health literacy. Pictorial uses such as pictures, graphics and pictograms improve understanding of educational media. In a randomized control trials (RCTs) using an image-based educational program, 76.3% of respondents stated that the image medium is very useful and helps them to understand the information ([Kripalani et al., 2007](#)). The use of image and video education media is recommended for education programs for parents, caregivers and nurses related to fever management in children ([Kripalani et al., 2007](#)).

METHODS

Study design

This study was quasi experiment with pretest and posttest nonequivalent control group design, which was conducted in the working area of Saptosari Public Health Center, Gunungkidul, Yogyakarta on 15 – 27 May 2017.

Sample

Population of study were all mother who had under five children and had experienced fever in work area of Saptosari Public Health Center, Gunungkidul, Yogyakarta as many as 539 toddlers obtained from data visit with fever during 2016. The sampling technique in this study used cluster sampling, which the researcher randomly selected the area to be used as the intervention group and the control group. The number of samples in this study were 44 in each group according to inclusion and exclusion criteria. Inclusion criteria in this study were mothers who have children who

have experienced fever following a series of research from pretest, education and posttest as a whole and willing to be the respondent. Exclusion criteria in this study was the mother who works as a health worker and mother who has family members who work as health workers.

Intervention

Data collection of intervention group was done by giving pretest to know maternal health literacy preceded by giving health education using five minute-duration animated video media. The animated videos were displayed using the screen. After that, respondents were given a brochure and discussed fever management in children. Pretest and health education were provided by researcher and held at Saptosari Public Health. The treatment given to the control group was to use brochure. The posttest for both groups was done one week after education by visiting the respondents' house.

Instrument

Questionnaire used in this study was HLS-Asia Q that had been modified by researchers (Sørensen et al., 2012). The validity and the reliability of the questionnaire were conducted by researcher with r value count by 0.310 – 0.696 and Cronbach's alpha value were 0.932.

The questionnaire consisted of 44 questions and each question item has a choice of 1 = very difficult, 2 = difficult, 3 = easy and 4 = very easy.

Ethical consideration

The ethics committee of the Faculty of Medicine, Gadjah Mada University approved the protocol of study in April, 2017 (KE/FK/04/3/EC/2017).

Data analysis

Independent sample t-test was used to determine the effect of health education with video and brochure to the maternal health literacy.

RESULTS

Characteristics of respondents were analyzed to describe characteristics of respondents including age, education, job, income, utilization of health insurance and information about previous fever. Both intervention group and control group had homogeneous characteristics with $p > 0.05$ that was on characteristic of age, education, income, utilization of health insurance and information about previous fever.

Table 1 Characteristics of the Respondent (n=87)

Characteristics	Group				p	
	Intervention		Control			
	n=45	%	n=42	%		
Education Level	Basic	40	88.9%	36	85.7%	0.431
	Medium	4	8.9%	6	14.3%	
	High	1	2.2%	0	0.0%	
Working Status	Working	31	68.9%	12	28.6%	0.001
	Not Working	14	31.1%	30	71.4%	
Income Level	≥ minimum wage	17	37.8%	19	45.2%	0.480
	<minimum wage	28	62.2%	23	54.8%	
Health Insurance	BPJS	24	53.2%	31	73.8%	0.081
	Jamkesmas	10	22.4%	3	7.1%	
	No Health Insurance	11	24.4%	8	19.1%	
Fever Information Before	Yes	14	31.1%	17	40.5%	0.362
	No	31	68.9%	25	59.5%	
Age	(Mean ±SD)	28.93 ± 7.33		26.26 ± 5.01		0.052

There was one characteristic of different respondents in both groups such as job with p value = 0.001, which 68.9% of respondents in

intervention group had job while in control group 71.4% respondents were not working. The respondents age was mostly in the early

adult category with the average age of respondents in the intervention group was 28.93 ± 7.33 and 26.26 ± 5.01 for control group. The respondents' education was the highest in basic education category, namely elementary school education and junior high school as much as 88.9% in intervention group and 85.7% in control group. Respondents' income was largely below the regional

minimum wage of Gunungkidul District, 62.2% in intervention group and 54.8% in control group. BPJS health is the health insurance most followed by respondents, 53.2% in intervention group and 73.8% in control group. Health information about large-scale fever has never been obtained by respondents, in intervention groups 68.9% and 59.5% in control group (See **Table 1**).

Table 2 Maternal Health Literacy Before and After Health Education in Working Area of Saptosari Health Center, Gunungkidul, Yogyakarta (n= 87)

	Group		P
	Intervention (n=45)	Control (n=42)	
Maternal Health Literacy Before Health Education (Mean ±SD)	113.378 ± 9.18	120.929 ± 7.70	< 0.001*
Maternal Health Literacy After Health Education (Mean ±SD)	120.022 ± 8.38	118.452 ± 8.96	0.401*

*paired t-test

Table 2 shows that the average maternal health literacy rate in the intervention group increased from 113.378 ± 9.18 to 120.022 ± 8.38 after providing health education using

video media. Literacy of maternal deaths in the control group decreased after obtaining education with brochures i.e. 120.929 ± 7.70 to 118.452 ± 8.96 .

Table 3 Maternal Health Literacy Based On HLS-EU Category Before and After Health Education in Working Area of Saptosari Health Center, Gunungkidul, Yogyakarta (n=87)

	Maternal Health Literacy Before Health Education			Maternal Health Literacy After Health Education			Total n(%)
	Inadequate n(%)	Problematic n(%)	Sufficient n(%)	Inadequate n(%)	Problematic n(%)	Sufficient n(%)	
Intervention Group	20(44.44)	25(55.56)	0 (0.0)	7(15.56)	36(80.0)	2(4.44)	45(100)
Control Group	7(16.67)	35(83.33)	0 (0.0)	12(38.57)	29(69.05)	1(2.38)	42(100)

Maternal health literacy in both groups based on health literacy categories according to HLS-EU 2012 was largely in the problematic

category, 55.56% in the intervention group and 83.33% in the control group (see **Table 3**).

Table 4 Mean Difference of Maternal Health Literacy in Intervention and Control Group in Working Area of Saptosari Health Center, Gunungkidul, Yogyakarta (n=87)

Difference of Posttest – Pretest	Mean ± SD	95% CI	p	D
Difference of Intervention Group (n=45)	6.6444 ± 9.6086	4.48 – 13.75	< 0.001	0.836
Difference of Control Group (n=43)	-2.4762 ± 12.0674			

The independent sample t - test was used to examine whether the effect of health education with video media on maternal health literacy, and its results showed $p < 0.001$, which means

that health education with video media had a significant effect on maternal health literacy. And the value of d (Cohen) was 0.836, which indicated that health education using clinical

video media had a significant effect on maternal health literacy improvement (see **Table 4**).

DISCUSSION

Health education with audiovisual media significantly affects the improvement of health literacy about fever in mothers who have children under five in the working area of Saptosari Health Center, Gunungkidul, Yogyakarta. Mothers who get health education interventions with video media have an average increase in health literacy rates compared to those in the control group. This is also proven statistically proven by test results of independent sample t-test obtained p value <0.001 with value 95% CI equal to 4.48 – 13.75.

Simple health education design provides ease and clarity for nurses as educators in explaining child-care with fever. Videos can be provided with brochures that can be brought home by the mother. The provision of health education by using audio visual provides benefits for nurses in terms of time, energy and similarity in providing education ([Alqudah, Johnson, Cowin, & George, 2014](#)). This was also the case in this research, the researchers were saving time and effort as well as in the provision of education have similarities in the three days of educational implementation because the material was delivered in the form of audio visuals whose contents were always the same.

The use of colored and moving images was used to attract respondents. Mothers will be more interested in audio visual media because the media is more attractive, using simple language that comes with animations that support the explanation of the contents of the provided fever material as well as the information obtained will be more memorable by the respondents. Audio visual media can convey messages or information in a more concrete or concrete way than information conveyed through audio or visual media only. Audio visual media also has a creative aspect

that enhances interest from respondents ([Barani, Mazandarani, & Rezaie, 2010](#)). The use of integrated audio and visual media will provide better learning stimuli so that more information can be absorbed. According to research data by Sovocom Company, USA which measures memory ability through various types of media, the highest level of memory ability acquired through video media (audio visual) is 50% ([Chaeruman, 2007](#)).

Animated video media is a great way to deliver complex health messages to people with low literacy rates. The results of the study indicated that education with animated video media could increase memory in the intervention group with the value of $p = 0.02$ ([Meppelink, van Weert, Haven, & Smit, 2015](#)). Research respondents were educated with animated video media considering information as good as high-literate respondents. The provision of educational media with this animated video can bridge the distance of information processing between people with low literacy levels and people with high literacy rates. Educating media by using animated video does not negatively affect participants with high levels of literacy, it can be concluded that information that is acceptable to low-literate people is also well received by people with high literacy.

Maternal health literacy in both groups before health education was largely in the problematic category. According to literature, inadequate and problematic categories included in limited health literacy ([Sørensen et al., 2015](#)), it can be concluded that overall research respondents are in the category of limited health literacy (100%). The limited level of literacy is likely to be caused by many factors among the respondents 'educational level, most of which are basic education, the respondents' income is less than the minimum regional wage of Gunungkidul District and the lack of health information.

The level of mother's education in both groups was largely within the basic education range of elementary school and junior high schools. Low respondents' education is associated with

low levels of literacy so it can affect the low health status ([van der Heide et al., 2013](#)). However, even though the level of education attained and the long education has been closely tied to one's health literacy, one's educational status does not necessarily reflect the level of health literacy ([Kickbusch, 2001](#)), it is also seen in this study, in which a single person with high education, but have health literacy in the problematic category. In addition to education factors, income factors are likely to be the cause of poor health literacy in respondents, economic circumstances that are less related to low health literacy ([Ng & Omariba, 2011](#)). Information about previously unhealthy fever that the respondent has never had is also likely to be a factor affecting the low level of maternal health literacy. Increasing public access to health information and their capacity in using them effectively is crucial in the issue of health literacy ([Santosa, 2012](#)). Good decisions about health issues require comprehensive health information accessible easily as per the individual needs and socio-culture.

CONCLUSION

There was a significant and higher improvement of maternal health literacy after given health education using audio-visual media than health literacy of mothers after health education using brochure. Thus, it is suggested that nurses should continuously give health education using audio-visual media to increase maternal literacy in their practice to prevent the diseases in mothers and their children.

Declaration of Conflicting Interest

None declared.

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Author Contribution

All authors contributed equally in this study.

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