Ar Royo, S. P., et al. (2024). *Nurse and Health: Jurnal Keperawatan. 13 (2): 181-191*
http://ejournal-kertacendekia.id/index.php/nhjk/index

Original Research Article

EFFECTIVENESS OF WHATSAPP BOT-BASED EDUCATIONAL MEDIA AND LECTURES ON INCREASING MOTHER'S KNOWLEDGE ABOUT GASTROENTERITIS IN CHILDREN

Sonia Puspita Ar Royo[1], Anis Ika Nur Rohmah[1*], Ika Rizki Anggraini[1], Nur Melliza[1]

[1]University of Muhammadiyah Malang
Malang, Indonesia

***Correspondence:**
Anis Ika Nur Rohmah
University of Muhammadiyah Malang
Malang
Raya Tlogomas No. 246, Malang, East Java, Indonesia 65144
Email: anisikanur@umm.ac.id

Article Info:
Received: June, 25th, 2024
Revised: September, 18th, 2024
Accepted: September, 26th, 2024

DOI:
https://doi.org/10.36720/nhjk.v13i2.663

Abstract

Background: Gastroenteritis is the main cause of death in children under five years of age with symptoms of dehydration, which causes high mortality rates. Gastroenteritis risk factors include poor hygiene, unclean water supplies, and lack of parental knowledge. Providing health education regarding gastroenteritis is very important to increase mother's knowledge. WhatsApp bot and lectures are effective media that can be used in health education.
Objectives: To determine the effectiveness of WhatsApp bot-based educational media and lectures in increasing knowledge of Gastroenteritis among housewives.
Methods: The research method used was quasi-experimental using a two-group design posttest only. The research was conducted in Singosari, Malang, using two different groups with a sample size of 50. Group 01 was given education using WhatsApp bot media, while group 02 was given education using lecture media. The research data was tested using the Mann-Whitney test in SPSS version 25.
Results: The demographic data obtained shows that the average number of respondents is (60%) not working or a housewife. The research results show a difference between giving education using the lecture method and WhatsApp bot media on housewives' knowledge level. Mother's knowledge about gastroenteritis increased after being given education using two different media. The group using lecture media had a better increase in knowledge than the group using WhatsApp bot media.
Conclusion: Health education regarding gastroenteritis based on lecture media is more effective than WhatsApp bot media in increasing mothers' knowledge about preventing gastroenteritis in children.

Keywords: *Gastroenteritis, Knowledge, Lectures, WhatsApp bot*

E-ISSN
2623-2448
P-ISSN
2088-9909

INTRODUCTION

Gastroenteritis is inflammation that occurs in the stomach and results in changes in vital signs (pulse, blood pressure, heart rate) leading to frequent diarrhea and nausea, vomiting (Doris, 2021; Qori Nurul Isnaini,

2021). Gastroenteritis is caused by many factors, including a lack of nutritional intake, a lack of environmental health, and an unclean lifestyle (Yona & Iriani, 2022). Gastroenteritis is the main leading of death in children under five years of age (toddlers) which results in dehydration, triggering high morbidity, and mortality rates (Arsi, Afdhal, & Fatrida, 2021; Khoiriyah, Widjajanegara, & Sjafei, 2021; Nari, 2019; Rachman & Nurjanah, 2019). The World Health Organization (WHO), (2018) reported that gastroenteritis attacks 66 million people in the world with a death rate of around 546,000 in children under five each year, while in Indonesia, the Indonesian Ministry of Health reported that in 2017 gastroenteritis was recorded as occurring 21 times spread across 12 provinces and 17 districts/cities in Indonesia with a total of 1,725 sufferers. Gastroenteritis has also been reported to cause seizures that require hospitalization (Heydarian et al., 2019). In 2021, the prevalence of gastroenteritis in Malang City in the toddler group is 14.1% and in all age groups is 14.8% (Malang City Health Service, 2022). Aditya's research in (Herlina Alvianti Ningsih, Yulia Wardita, 2021) in Malang Regency, Singosari District, it was revealed that 21 babies aged 0-6 months experienced gastroenteritis, as well as phenomena that exist in the Singosari area such as a lack of health education regarding gastroenteritis and a lack of parental knowledge regarding gastroenteritis.

Gastroenteritis can occur because food is not processed properly and the water is contaminated (Rahmawati & Arifiyanti, 2020). There is a relationship between parental practices in providing food and the incidence of gastroenteritis (Siahaan, Aritonang, & Ashar, 2020). In addition, the quality of clean water also has a significant relationship with the incidence of gastroenteritis in toddlers ($p<0.05$)(Rimbawati & Surahman, 2019). There is a relationship between these phenomena, as a Muslim it is very contrary to the word of Allah in the QS Al-Baqarah [2]: 222).

إِنَّ ٱللَّهَ يُحِبُّ ٱلتَّوَّٰبِينَ وَيُحِبُّ ٱلْمُتَطَهِّرِينَ.....

".....Indeed, Allah loves those who repent and those who purify themselves" (QS. Al-Baqarah [2]: 222).

In these words, a Muslim should be able to maintain personal hygiene regarding the environment and food. In this case, there is a relationship between the level of education and a person's hygiene ($p<0.001$) (Ariani, 2022).

The high incidence of gastroenteritis cannot be separated from the role of parents, especially the role of mothers in preventing and treating diseases in children (Komara et al., 2020). The mother's knowledge of gastroenteritis shows that mothers know everything related to the disease so that it can reduce the incidence of gastroenteritis in children (Arianti & Jaya, 2022; Purnamasari & Putri, 2023). Prevention of gastroenteritis through increasing maternal knowledge can be achieved by providing health education through the media (Febiyana, Saputri, Sari, & Sari, 2024). Effective media that can be used are lectures and WhatsApp bots because they provide useful information and services (Dewi, 2022).

Lectures are often used in health education to disseminate information and discuss each other but are also considered boring media (Mutmawardina et al., 2023; Susilowati & Suwarni, 2023). WhatsApp is used in mobile health interventions that utilize automatic chat features to send information (Manji et al., 2021). WhatsApp as a two-way communication platform serves to deliver education and provide users with learning opportunities at any time (Giansanti, 2020; Salam et al., 2021). Chatbot in WhatsApp is a chat system that makes providing information easier and does not limit user consultation (Umma et al., 2024). Several studies have conducted research using lecture and WhatsApp bot methods, but no researchers have compared lectures and WhatsApp bot.

Based on the explanation above, the author initiated a health management innovation by providing education based on

lecture methods and WhatsApp bot media on the number of gastroenteritis sufferers in children and toddlers.

Objective: This research aims to determine the effectiveness of educational media based on WhatsApp bots and lectures in increasing knowledge of Gastroenteritis among housewives.

METHODS

Study Design

The research method was quasi-experimental with two groups posttest-only design. The activity was carried out by providing education using WhatsApp bot media in group 01 and providing education using the lecture method in group 02 at different times.

Settings

The research was conducted on two groups in Singosari District.

Research Subject

The sampling technique used total sampling. Therefore, the sample in this study was the entire population, namely 50 people. In each group, the determination of each sample was not carried out randomly so that it was by the existing population, while the division between the WhatsApp bot experimental and lecture groups was carried out randomly using a random draw. The population taken in this study were all mothers in Group 01 and Group 02 Singosari District, especially mothers who already had children and toddlers with a total sample of 50 mothers.

Instruments

The data collected in this research is primary data collected directly from the data source. The independent variable in the study was gastroenteritis education, while the dependent variable was the level of knowledge. The instrument used was the Mother's Knowledge Level Questionnaire about Gastroenteritis which had been tested for validity and reliability by previous researchers. The statistical test used to analyze the correlation between variables is the Mann-Whitney.

Intervention

This research used two experimental groups, there was no control group and only used posttest in two groups. The intervention was given using different media for each group to compare the two media used. The activity was carried out by starting with providing education using WhatsApp bot media to group 01. Researchers used WhatsApp bot to deliver the material and respondents could immediately try using the WhatsApp bot application. On WhatsApp bot there is an explanation about gastroenteritis starting from the definition, signs, symptoms, causes, risk factors, prevention, and treatment. By saying the keyword "hello mother", WhatsApp will respond to several question codes, after which you can choose a code and then write the appropriate code. WhatsApp bot will provide 10 different codes such as code #01 which means the definition of gastroenteritis so that when responders type #01 a detailed explanation of gastroenteritis will appear along with valid references from the Ministry of Health and the way the other codes work is also the same. Questions on WhatsApp bot are unlimited and users can consult 24 hours a day. In the WhatsApp bot group, the intervention was given twice at different times with a duration of 2 hours.

In the intervention in group 02, education was also provided using the lecture method. After the education about gastroenteritis was completed, a question-answer session was held. In group 02, researchers used the lecture method where the material was delivered orally so that respondents could listen carefully to the material given and the material in the lecture group was also the same as the material in the WhatsApp Bot group. In the lecture group, intervention was given twice at different times

with a duration of 2 hours. The intervention time between group 01 and group 02 is different.

Data Analysis

The measurement process used Statistical Package for Social Science (SPSS) version 25 software.

Ethical Considerations

This research has received approval and permission from the Faculty of Health Sciences, University of Muhammadiyah Malang with research permit number E.5.d/134/PSIK/FIKES-UMM/II/2024. This research has also obtained approval or informed consent from all respondents and has received permission from the village head of the research area.

RESULTS

Respondent Characteristics

From the results of the research conducted, data were obtained in group 01 that 8 people (32%) participated in Gastroenteritis health education activities at the age 21-30 years, 10 people (40%) at the age of 31-40 years, 4 people aged 41-50 years (16%), and aged >50 years 3 people (12%). Regarding gender characteristics, all respondents were women (100%). In terms of educational characteristics, 3 people were elementary school educated (12%), 19 people were junior/high school educated (76%), and 3 people were college educated (12%). In terms of job characteristics, it was found that 1 person worked as a private employee (4%), 3 people worked as self-employee (12%), 6 people worked as traders (24%), and 15 people worked as housewives (60%). Based on the characteristics of many family members in one house, it was found that the number of family members was 2-4 people in one house, 21 people (84%) and the number of family members >5 people in one house was 4 people (16%).

From the results of the research conducted, data was obtained in group 02 that respondents who participated in Gastroenteritis health education activities were aged 21-30 years 1 person (4%), 31-40 years 4 people (16%), aged 41-50 years 14 people (56%), and age >50 years 6 people (24%). Regarding gender characteristics, all respondents were women (100%). In terms of educational characteristics, it was found that 8 people had an elementary school education level (32%), 11 people had a junior/high school education level (44%), and 6 people had a tertiary education level (24%). In terms of job characteristics, it was found that 1 person was unemployed (4%), 4 people were private employees (16%), 1 person was employed as a self-employed person (4%), 2 people were employed as traders (8%), 2 people were employed as laborers. people (8%), and 15 people (60%) work as housewives. Based on the characteristics of many family members in one house, it was found that the number of family members was 2-4 people in one house, 24 people (96%), and the number of family members >5 people in one house was 1 person (4%).

Frequency distribution of knowledge level after being given health education about Gastroenteritis using the lecture method and WhatsApp bot media

The results of the post-test data were obtained after being given health education about gastroenteritis using WhatsApp bot media, 9 people (36%) had a sufficient level of knowledge and 16 people (64%) had a good level of knowledge. While the post-test knowledge data for group 02 using lecture media, the results showed that the overall knowledge level was good for 25 people (100%).

Table 1. Frequency Distribution of Respondent Characteristics Based on Age of Group 01 and Group 02 (N=25)

Group 01			Group 02		
Characteristics	**(f)**	**(%)**	**Characteristics**	**(f)**	**(%)**
Age			**Age**		
<20 years	0	0	<20 years	0	0
21-30 years old	8	32	21-30 years old	1	4
31-40 years old	10	40	31-40 years old	4	16
41-50 years old	4	16	41-50 years old	14	56
>50 years old	3	12	>50 years old	6	24
Total	**25**	**100**	**Total**	**25**	**100**
Education			**Education**		
Elementary school	3	12	Elementary school	8	32
Middle/ High school	19	76	Middle/ High school	11	44
College	3	12	College	6	24
Total	**25**	**100**	**Total**	**25**	**100**
Work			**Work**		
No work	0	0	No work	1	4
Private employee	1	4	Private employee	4	16
Self-employed	3	12	Self-employed	1	4
Trader	6	24	Trader	2	8
Laborer	2	8	Laborer	2	8
Housewife	15	60	Housewife	15	60
Total	**25**	**100**	**Total**	**25**	**100**
Family Member in Same Home			**Family Member in Same Home**		
2-4 persons	21	84	2-4 persons	24	96
>5 persons	4	16	>5 persons	1	4
Total	**25**	**100**	**Total**	**25**	**100**

Table 2. Frequency Distribution of Knowledge Level After Being Given Health Education Using WhatsApp Bot Media in Group 01 and Using the Lecture Method in Group 02 (N=25)

Group 01				Group 02				Comparison of Group 01 and Group 02
Characteristics	**(f)**	**(%)**	**Mean**	**Characteristics**	**(f)**	**(%)**	**Mean**	**Sig**
Post-test				**Post-test**				
Good	16	64	21.00	Good	25	100	30.00	0.001
Enough	9	36		Enough	0	0		
Not enough	0	0		Not enough	0	0		
Total	25	100		Total	25	100		

DISCUSSION

Characteristics of Respondents Regarding Mother's Knowledge

Based on the research results, it was found that the frequency distribution based on age was at most 31-50 years. According to Rita et al., (2020) state that age has a relationship with a person's knowledge.

Age is one factor that influences a person's strength and mindset. As we get older, our strengths, thinking patterns and knowledge also develop and increase. The level of education also influences a person's knowledge because the higher the education, the better the attitude, motivation, and knowledge. Education can change a person's perspective on things, especially through information obtained through education (Padila, Andri, & Andrianto, 2023). Mother education can increase mother understanding of the prevention and treatment of gastroenteritis and maternal behavior can also influence family health so that it can reduce the death rate due to gastroenteritis in children (Momoh et al., 2022; Thiam et al., 2019).

Education level is one of the factors that influences individual knowledge and the results of this research show that the majority of subjects have education up to middle school/high school. These results indicate that there is a relationship between education level and the incidence of gastroenteritis. This research is in line with research by Bayomy et al., (2024); Yuniarti & Vinnata, (2020) which states that education will influence a person's knowledge of preventive measures for gastroenteritis. In other words, the more someone knows the causes, triggers, signs, symptoms, and prevention of gastroenteritis, the greater the chance of avoiding potential gastroenteritis triggers.

In this study, it was found that the majority of mothers' jobs were housewives (59%). For working mothers, the knowledge and information they obtain or find out about children's health and things that can cause gastroenteritis in children is obtained more easily than mothers who don't work (Marianna & Yuli, 2022). This is supported by research by Zulfita et al., (2022) which states that there is a relationship between housewives' knowledge and incidence of gastroenteritis in children (p-value <0.05). The education level and income of working mothers are significantly related to mother's knowledge (Kaçan, Pallos, & Özkaya, 2022).

Mother's level of knowledge after being given Gastroenteritis education

The level of knowledge is divided into three categories, namely good, enough, and not enough. The description of the subjects' knowledge after being given health education in this study was that group 01 obtained a sufficient level of knowledge for 9 subjects (18%) and a good level for 16 subjects (32%), while group 02 obtained a good level of knowledge for 25 subjects (50%).

Knowledge is information combined between understanding and action behavior (Alrafiaah et al., 2022). Behavior is greatly influenced by knowledge. The level of knowledge is one of the factors that influences human behavior (Widyakusuma Putra & Manalu, 2020). Increasing knowledge will affect a person's attitude toward health problems that occur (Aris Widayati et al., 2021).

The effectiveness of providing Gastroenteritis education based on WhatsApp bot and Lectures

The data results show that group 02 which received health education using lecture media was better than group 01 which received education using WhatsApp bot media. From the results of the Mann-Whitney test in the two groups, the p-value was 0.001 or <0.05, which means there is a significant difference between providing education based on WhatsApp bot media and lectures.

Education the learning process is provided to expand knowledge which is expected to lead to implementing a healthy lifestyle. Health education aims to increase public knowledge and awareness to maintain and improve their health (Siti Aisah, Suhartini Ismail, 2021). Health education aims to transform people's knowledge and habits by actively promoting optimal health (Ariyanto & Fatmawati, 2021). Providing education can be more effective if used in the media because it is a tool used in the communication process to convey messages to respondents through certain media. In research by Melo et al., (2022) stated that video and booklet educational media are effective media often used to prevent gastroenteritis.

WhatsApp bot is an automation on Whatsapp by processes incoming messages according to the program flow embedded in it (Dewi, 2022). By developing an effective auto-responder chatbot you can improve services in providing information to users and helping users solve problems Hartling et al., (2023).

Providing education using the lecture method is an educational approach that can significantly increase knowledge toward certain objectives by presenting learning

material through oral narrative (Mulyani & Subandi, 2020). In this study, it was found that the knowledge of mothers who were given education through lectures was mostly at a good level of knowledge so lectures were an effective medium that could be used in providing gastroenteritis education. This is in line with research by Jannah, Salfarina, & Riskawaty, (2024) that lectures have an effective influence on increasing knowledge in providing gastroenteritis education.

Providing adequate information after education about prevention and appropriate treatment can help in anticipating and treating gastroenteritis in children at home (Alghadeer et al., 2021). Gastroenteritis education based on WhatsApp bot and lectures influenced mothers' knowledge as demonstrated by good pretest results after being provided with information on gastroenteritis-related material.

CONCLUSION

Providing Gastroenteritis health education using WhatsApp bot media and lectures given to mothers in Singosari district affects increasing mothers' knowledge in preventing Gastroenteritis in children. There is a significant difference between providing education based on WhatsApp bot media and lectures. Gastroenteritis education using lecture media is more effective than WhatsApp bot media in increasing mothers' knowledge. The follow-up plan for this research has not yet been carried out but it is hoped that for the follow-up plan, respondents will be evaluated once a month with researchers asking again about the mother's knowledge about gastroenteritis via WhatsApp. It is hoped that future researchers will be able to carry out research using the innovations in this research over a long time.

ACKNOWLEDGMENT

Special thanks to the mothers in Singosari District, Malang Regency who participated in this research. Thanks go to expressed to the Faculty of Health Sciences, University of Muhammadiyah Malang, which has supported the research that has been carried out.

DECLARATION OF CONFLICTING INTEREST

There is no conflicting interest on this study.

FUNDING

The authors received financial support for manuscript research from the supervisor.

AUTHOR CONTRIBUTION

Sonia Puspita Ar Royo: Took responsibility for data analysis, interpretation, discussion of results, also writing, and editing manuscript.

Anis Ika Nur Rohmah: Contribution as a supervisor involved in planning and supervision in the completion of a manuscript.

Ika Rizki Anggraini: Contribution as a co-supervisor in reviewing the discussion of the final results of the manuscript.

Nur Melliza: Contribution as a co-supervisor in reviewing the discussion of the final results of the manuscript.

ORCID

Sonia Puspita Ar Royo:
https://orcid.org/0009-0007-0476-8972

Anis Ika Nur Rohmah:
https://orcid.org/0000-0001-8535-1851

Ika Rizki Anggraini:
https://orcid.org/0000-0001-7328-8939

Nur Melliza:
https://orcid.org/0000-0001-5533-2561

REFERENCES

Alrafiaah, AS, Albraikan, A., AlJaafari, A., AlAbbad, A., Alfehaid, H., Alqueflie, S., & Omair, A. (2022). Assessment of Maternal Knowledge and Practices

Regarding Acute Diarrheal Illnesses in Children in Saudi Arabia: A Tertiary Care Center Survey. Cureus, 14(12). https://doi.org/10.7759/cureus.33116

Ariani, D. Praise. (2022). Effectiveness of Counseling on the Level of Knowledge and Attitudes of Mothers of Toddlers Regarding Diarrhea Prevention. Proceedings of the National Seminar, 70–77.

Arianti, M., & Jaya, H. (2022). Socialization and education on the importance of health knowledge about diarrhea in children and adults in the Tanjung Gading area, Bandar Lampung City. Journal of Community Service, 1(1), 41–48. https://doi.org/10.59030/jpmbd.v1i1.14

Aris Widayati, YW, Christasani3, PD, & Titien Siwi Hartayu2. (2021). Health Protocol Education Among Students. 4(3), 423–428.

Ariyanto, A., & Fatmawati, TY (2021). Education on the Prevention of Diarrhea in Children in the Dasawisma Group, Recognize Lower Acid Subdistrict. Journal of Community Health Greetings (JSSM), 2(2), 13–18. https://doi.org/10.22437/jssm.v2i2.13611

Arsi, R., Afdhal, F., & Fatrida, D. (2021). Education for a Healthy and Prosperous Community (EMaSS): Journal of Community Service. Journal of Community Service, 3(2), 1–4.

Bayomy, HE, Almatrafi, HM, Alenazi, SF, Madallah S. Almatrafi, R., Alenezi, M., & Alanazi, WA (2024). Knowledge and Behavioral Practice of Mothers Regarding Childhood Diarrhea in Arar City, Saudi Arabia. Cureus, 16(2), 1–17. https://doi.org/10.7759/cureus.54221

Dewi, RDC (2022). Early Warning System (Use of Whatsapp Bot in the Health Sector). Bureaucracy Journal*; Indonesian Journal of Law and Social-Political Governance, 3(1), 10–19. https://doi.org/10.53363/bureau.v3i1.153

Doris, A. (2021). Nursing Care for Children with a Diagnosis of Gastroenteritis. Cerebral Medika Scientific Journal, 1(1). https://doi.org/10.53475/jicm.v1i1.62

Febiyana, SC, Saputri, MA, Sari, PL, & Sari, WR (2024). Increasing Mothers' Knowledge about Making Tempe Porridge as an Effort to Treat Diarrhea in Toddlers in Ploso Village. 2(1).

Giansanti, D. (2020). WhatsApp in mHealth: an overview on of the potentialities and opportunities in medical imaging. MHealth, 6(3), 1–5. https://doi.org/10.21037/mhealth.2019.11.01

Hartling, L., Elliott, S. A., Munan, M., & Scott, S. D. (2023). Web-Based Knowledge Translation Tool About Pediatric Acute Gastroenteritis for Parents: Pilot Randomized Controlled Trial. JMIR Formative Research, 7. https://doi.org/10.2196/45276

Herlina Alvianti Ningsih, Yulia Wardita, T. F. (2021). The Relationship between Providing Complementary Food for Breast Milk (MPASI) and the Occurrence of Diarrhea in Babies Before the Age of 6 Months in Pasean District. *4*(1), 7–9.

Heydarian, F., E, B., S.H., B., & M, H. (2019). Gastroenteritis Related Seizure with or without Fever: Comparison of Clinical Features and Serum Sodium Level How. 353900(5865), 47–52.

Jannah, R., Salfarina, AL, & Riskawaty, HM (2024). Family education in preventing diarrhea in toddlers. Community Development Journal, 5(1), 355–359.

Khoiriyah, Widjajanegara, H., & Sjafei, F. (2021). Scoping Review: Effectiveness of Giving Synbiotics to Pediatric Patients with Acute Gastroenteritis.

Proceedings of Medicine, 7(1), 783–794.

Komara, IMAN, Jayadi, IPOK, Jayanti, NLPA, Triyasa, P., Manggala, AK, & Sutisna, P. (2020). The relationship between the level of maternal knowledge about preventing diarrhea and the incidence of diarrhea in toddlers in Pemecutan Kelod Village, Denpasar, Bali. Medical Science Digest, 11(3), 1247–1251. https://doi.org/10.15562/ism.v11i3.672

Lisa Hartling, P., Sarah A Elliott, P., Matthew Munan, Ms., & Shannon D Scott, RN, P. (2021). Assessment of Saudi Mother's Knowledge and Attitudes Towards Childhood Diarrhea and Its Management. 25(2).

Manji, K., Hanefeld, J., Vearey, J., Walls, H., & De Gruchy, T. (2021). Using WhatsApp messenger for health systems research: A scoping review of available literature. Health Policy and Planning, 36(5), 774–789. https://doi.org/10.1093/heapol/czab024

Malang City Health Service. (2022). Malang City in 2021. *Malang City Health Service*, *45*, 1–226.

Marianna, S., & Yuli, Utami. (2022). The level of maternal knowledge in serving formula milk influences the incidence of diarrhea in children aged 6-24 months. PROFESSION (Professional Islam), 20(1), 96–108. Retrieved from journals.itspku.ac.id

Melo, ESJ, de Oliveira, BSB, Melo, FM de S., da Silva, MJN, de Oliveira, RKL, Bezerra, JC, … Barbosa, LP (2022). Audiovisual and printed technology to prevent childhood diarrhea: A clinical trial. Public Health Nursing, 39(2), 423–430. https://doi.org/10.1111/phn.12962

Momoh, FE, Olufela, OE, Adejimi, AA, Roberts, AA, Oluwole, EO, Ayankogbe, OO, & Onajole, AT (2022). Mothers' knowledge, attitude and home management of diarrhea among children under five years old in Lagos, Nigeria. African Journal of Primary Health Care and Family Medicine, 14(1), 1–10. https://doi.org/10.4102/phcfm.v14i1.3119

Mulyani, S., & Subandi, A. (2020). Effectiveness of Health Education through Periodic WhatsApp Reminder Groups Using the Lecture Method for Providing Exclusive Breastfeeding to Mothers After Cesarean Sections. Jambi University Scientific Journal of Applied Sciences|JIITUJ|, 4(2), 187–203. https://doi.org/10.22437/jiituj.v4i2.11607

Mutmawardina, Harpiana Rahman, Farihah Muhsanah, Andi Asrina, & Nurul Hikmah B. (2023). Differences in Lecture Methods and Audiovisual Media on Knowledge of Hand Washing with Soap at SD Inpres Binanga 3 Mamuju, West Sulawesi Province in 2022. Window of Public Health Journal, 4(2), 274–285. https://doi.org/10.33096/woph.v4i2.744

Nari, J. (2019). Nursing Care for Children with Acute Gastroenteritis to Fulfill Fluid and Electrolyte Needs in the Children's Room at RSUD Dr. M. Haulussy. 4(3), 131–136.

Padila, P., Andri, J., & Andrianto, MB (2023). Video and Booklet Media Education on Parents' Motivation and Attitudes in Caring for Toddlers with Gastroenteritis. Journal of Telenursing (JOTING), 5(1), 720–731. https://doi.org/10.31539/joting.v5i1.5844

Purnamasari, T., & Putri, A. (2023). Management of Health Education on Mother's Knowledge in Efforts to

Prevent Diarrhea in Children Under Five (0-5 Years) in 2022. Journal of Health, 9(1), 65–73.

Qori Nurul Isnaini, EF (2021). Nursing in Gastroenteritis Patients With Disorders of. 15.

Rachman, DD, & Nurjanah, D. (2019). Ontology Model Based Recommendation System for Providing Diet Recommendations for Diabetes Sufferers. E-Proceedings of Engineering, 6(2), 9569–9584. Retrieved from https://openlibrarypublications.telkomuniversity.ac.id/index.php/engineering/article/viewFile/10002/9858

Rahmawati, NE, & Arifiyanti, AA (2020). Diagnosis of Inflammatory Arthritis Using the Certainty Factor Method. SATIN - Information Science And Technology, 3(1), 42–47. https://doi.org/10.33372/stn.v3i1.215

Rimbawati, Y., & Surahman, A. (2019). The Relationship between Environmental Sanitation and the Incidence of Diarrhea in Toddlers. Journal of 'Aisyiyah Medika, 4, 189–198. https://doi.org/10.36729/jam.v4i0.337

Rita, R., Amir, N., & Suhardi, D. (2020). The Relationship Between Knowledge of Parents of Patients and Handling Diarrhea in the Children's Room at Jayapura Regional Hospital. Sentani Nursing Journal, 3(2), 44–53. https://doi.org/10.52646/snj.v3i2.44

Salam, MA us, Oyekwe, GC, Ghani, SA, & Choudhury, RI (2021). How can WhatsApp® facilitate the future of medical education and clinical practice? BMC Medical Education, 21(1), 1–4. https://doi.org/10.1186/s12909-020-02440-7

Siahaan, YF, Aritonang, EY, & Ashar, T. (2020). Relationship between Infant Feeding Practices and the Incidence of Gastroenteritis. Journal of the Indonesian National Nurses Association (JPPNI), 4(1), 1. https://doi.org/10.32419/jppni.v4i1.171

Siti Aisah, Suhartini Ismail, AM (2021). Health Education Using Animation Video Media: Scoping Review. Indonesian Nursing Journal, 5(1), 641–655. https://doi.org/10.32584/jpi.v5i1.926

Susilowati, IT, & Suwarni, S. (2023). Prevention and Management of Diarrhea and Vomiting through Education on Clean Living Behavior and the Use of Herbal Ingredients. PARAHITA: Journal of Community Service, 3(2), 55–64. https://doi.org/10.25008/parahita.v3i2.78

Thiam, S., Sy, I., Schindler, C., Niang-Diène, A., Faye, O., Utzinger, J., & Cissé, G. (2019). Knowledge and practices of mothers and caregivers on diarrheal management among under 5-year-old children in a medium-sized town of Senegal. Acta Tropica, 194(February), 155–164. https://doi.org/10.1016/j.actatropica.2019.03.013

Umma, N., Sari, NPD, Afifah, RN, Baharudin, MY, Pribadi, P., Santoso, SB, & Latifah, E. (2024). Drug Consultation Prototype Based WhatsApp Bot (Vol. 2022). Atlantis Press SARL. https://doi.org/10.2991/978-2-38476-118-0_137

Widyakusuma Putra, YI, & Manalu, NV (2020). Level of Knowledge and Citizen Behavior in Implementing Health Protocols in the New Normal Corona Pandemic Period. Coping: Community of Publishing in Nursing, 8(4), 366. https://doi.org/10.24843/coping.2020.v08.i04.p04

Yona, CC, & Iriani, R. (2022). Persada Husada Indonesia Journal Nursing Care of Clients Who Experience Lack of Body

Fluid Volume with Gastroenteritis at Budhi Asih Regional General Hospital, Jakarta Nursing Care of Clients Who Experience Lack of Body Fluid Volume with Gastroenter. 9(32), 46–54.

Yüksel Kaçan, C., Palloş, A., & Özkaya, G. (2022). Examining knowledge and traditional practices of mothers with children under five in Turkey on diarrhea according to education levels. Annals of Medicine, 54(1), 674–682. https://doi.org/10.1080/07853890.2022.2044508

Yuniarti, E., & Vinnata, NN (2020). Relationship of Education and Knowledge of Formula Milk Feeding to Diarrhea in Children Aged 0 – 2 Years Relationship of Education and Knowledge of Formula Milk Feeding for. CITRA DELIMA: Scientific Journal of STIKES Citra Delima Bangka Belitung, 4(1), 7–11.

Zulfita, A., Sari, NP, Wardani, S., Yulianto, B., & Hayana, H. (2022). The Relationship Between Housewives' Personal Hygiene and Basic Sanitation Facilities and the Incidence of Diarrhea in Toddlers in the Sapta Taruna Health Center Work Area in 2021. Public Health Media, 2(1), 151–161. https://doi.org/10.25311/kesmas.vol2.iss1.512

Cite this article as: Ar Royo, S. P., et al. (2024). Effectiveness of Whatsapp Bot-based Educational Media and Lectures on Increasing Mother's Knowledge about Gastroenteritis in Children. Nurse and Health: Jurnal Keperawatan, 13 (2), 181-191. https://doi.org/10.36720/nhjk.v13i2.663