DENTINO
JURNAL KEDOKTERAN GIGI
Vol IX. No 2. SEPTEMBER 2024

EFFECTIVENESS OF HEALTH PROMOTION USING ASSEMBLR EDU ON INCREASING KNOWLEDGE AND ATTITUDE OF MAINTAINING DENTAL AND ORAL HEALTH

Amalia Putri[1)], Riky Hamdani[2)], Isnur Hatta[2)], Rosihan Adhani[2)], Deby Kania Tri Putri[3)]
[1)]Faculty of Dentistry, Lambung Mangkurat University, Banjarmasin, Indonesia
[2)] Department of Public Dental Health, Faculty of Dentistry, Lambung Mangkurat University, Banjarmasin, Indonesia
[3)] Department of Biomedic, Faculty of Dentistry, Lambung Mangkurat University, Banjarmasin, Indonesia

ABSTRACT
Background*: The increase dental and oral health problems in children can be caused by an attitude of neglecting dental and oral hygiene which is based on a lack of knowledge. One example is the low attitude and behavior when brushing teeth and dental visit in Banjarmasin City.* ***Purpose****: This study aims To analyze the effectiveness of health promotion using Assemblr Edu on increasing knowledge and attitudes about maintaining oral health in students aged 10-12 years at* SDN Kebun Bunga 4 Banjarmasin. ***Method****: This research uses a type of quasy-experimental design with a nonequivalent control group design and uses non-probability sampling technique as purposive sampling. The population is students aged 10-12 years at SDN Kebun Bunga 4* Banjarmasin. *The sample consisted of 16 people in the Assemblr Edu group and 16 people in the control group. The instrument used in this research is a questionnaire. Data analysis used Wilcoxon test and Mann Whitney test.* ***Results*** *: The Wilcoxon test showed that there were differences in knowledge and attitudes before and after health promotion in the Assemblr Edu intervention group (knowledge : p=0,000; attitudes : p=0,000), in the control group there was no difference in knowledge and attitudes between pretest and posttest (knowledge : p=0,755; attitudes : p=0,290). The results of the Mann Whitney between the intervention and control groups (knowledge : p=0,000; attitudes : p=0,001).* ***Conclusion****: Health promotion using Assemblr Edu is effective in increasing knowledge and attitudes about maintaining oral health.*

Keywords*: Assemblr Edu, Attitude, Health Promotion, Knowledge.*
Correspondence: Amalia Putri; Faculty of Dentistry, Lambung Mangkurat University, Jl. Veteran No. 128B, Banjarmasin, South Kalimantan; e-mail: amalputri233@gmail.com

INTRODUCTION

Dental and oral health problems that are most often experienced by children around the world are tooth decay, cancer sores, and difficulty swallowing.[1,2] The results of Basic Health Research shows the proportion of dental and oral health problems in children aged 10-14 years in South Kalimantan Province reached 58.71% in 2018.[3] Dental and oral health status in children is influenced by various factors such as environment, genetics, health services, and behavior.[4] Behavioral factors are the second biggest influencing factor after environmental factors, which involve knowledge, attitudes, and actions.[4] Children's behavior that can cause dental and oral health problems include consuming sweet foods, the wrong time and method of brushing their teeth, and the lack of awareness of going to the dentist every 6 months.[5] It is known from Basic Health Research in 2018 that only 3.02% of Banjarmasin City residents brush their teeth at the right time, while based on the frequency of going to dental medical personnel every 4-6 months, Banjarmasin City has the lowest proportion value of 0.97%.[3]

One of the efforts that can be made to increase knowledge related to children's dental and oral health is to provide information through health promotion.[6] According to the World Health Organization (WHO) health promotion provides the possibility for a person to control and improve their own health.[7] Implementation of this activity requires appropriate methods and media so that the desired goals can be achieved.[7] One of the effective media as a media for health promotion is electronic media with an audio-visual system in the form of social media. Syafii research (2021) has proven that health promotion using social media such as Instagram, Facebook and WhatsApp is more effective because it can be accessed easily on the public.[8] One of the electronic media developed with an audio-visual system in the form of social media is the Assemblr Edu

application. This application is a type of interactive multimedia based on Augmented Reality (AR) which combines text, images, animation, audio, video images, and AR technology.[9]

SDN Kebun Bunga 4 Banjarmasin is one of the elementary schools located in Kebun Bunga Urban Village, Banjarmasin City. The results of a preliminary study conducted at SDN Kebun Bunga 4 Banjarmasin show that there are still high dental and oral problems in children, especially tooth decay due to caries. The average DMF-T value obtained in children aged 10-12 years was 4.5 which was included in the high category. In addition, it is known that only 30% of children are correct in choosing the time to brush their teeth and only 10% of children had a dental examination at a health facility. The results of interviews with the school stated that dental and oral counseling at SDN Kebun Bunga 4 had not been given for a long time, causing a lack of exposure to information about dental and oral health to students.

METHODS

This research has been declared ethically feasible based on the Ethical Eligibility Letter No. 026/KEPKG-FKGULM/EC/II/2023. The research method uses a type of quasi-experimental research with a nonequivalent control group design. The population in this study were students aged 10-12 years at SDN Kebun Bunga 4 Banjarmasin. The sample size in this study was taken by purposive sampling technique using the unpaired categorical comparative formula and the number of samples was corrected by predicting the percentage of the sample drop out of 10% and obtained 32 samples were obtained which were divided into two groups, 16 people in the intervention group with Edu Assemblr and 16 people in the control group without treatment who met the inclusion and exclusion criteria. Inclusion criteria in this study were students aged 10-12 at SDN Kebun Bunga 4 Banjarmasin, had a gadget or computer that could access the Assemblr Edu application, were willing to take part in the research and parents/guardians who signed the consent form for the research respondents

Knowledge assessment was measured by a questionnaire totaling 12 questions with a Guttman scale. Attitudes were assessed using a questionnaire totaling 12 statements with a Likert scale. The questionnaire used in this study has previously been tested for validity and reliability. The design of the material in the application was made independently by researchers and has been tested for validity on IT experts and psychologists.

The research began with giving an explanation to ask for the respondent's consent through a letter of consent signed by the parent/guardian of the student concerned. Next, the pretest knowledge and attitudes were given to each group. Then, health promotion was given to the intervention group online for 7 days through the Assemblr Edu application. After 7 days, the researcher returned to the school to give a posttest knowledge questionnaire to each group. Health promotion then continues for up to 14 days online with repetition of the same material as the first week. After 14 days, the researcher returned to the school to give the posttest attitude questionnaires to each group.

The data from this research were then subjected to statistical tests with the SPSS application program. The statistical test used is the Wilcoxon test and the Mann Whitney test. The Wilcoxon test was used to see differences between paired data groups before and after health promotion. The Mann Whitney test was used to find out which group was most effective in changing knowledge and attitudes about maintaining oral health

RESULTS

This research was conducted on 32 respondents consisting of 17 male students and 15 female students aged 10-12 years. The distribution of respondents based on age shows that the most respondents in both groups are respondents who are 11 years old.

Table 1. Results of Knowledge Measurement of Maintaining Dental and Oral Health Before and After Health Promotion in the *Assemblr Edu* and Control Groups.

Variable	Group	Score	Mean	SD
Knowledge	Assemblr Edu	Pretest	8.44	1.825
		Postest	11.81	0.403
	Control	Pretest	8.25	1.949
		Postest	8.56	1.750
Attitude	Assemblr Edu	Pretest	40.19	3.082
		Postest	50.13	5.524
	Control	Pretest	41.63	4.145
		Postest	42.37	4.965

The measurement of knowledge before health promotion in the Assemblr Edu intervention group has a mean of 8.44. The control group that was not given the intervention had a mean knowledge of 8.25. The measurement of knowledge after health promotion in the group that was given the intervention in the form of Assemblr Edu has a mean value of 11.81. The control group that was not given the intervention had a mean of 8.56.

The measurement of attitudes before health promotion in the group that was given the intervention in the form of Assemblr Edu has a mean of 40.19. The control group without intervention had a mean of 41.63. Measurement of attitudes after health promotion in the intervention group in the form of Assemblr Edu has a mean of 50.13. The control group without intervention had a mean of 42.37.

Table 2. Data Analysis of Differences in Knowledge and Attitudes in Maintaining Dental and Oral Health Before and After Health Promotion in the *Assemblr Edu* and Control Groups with the Wilcoxon Test

Variable	Group	Score	Mean±SD	*P* Value
Knowledge	Assemblr Edu	Pretest	8.44±1.825	0,001
		Postest	11.81±0.403	
	Control	Pretest	8.25±1.949	0,755
		Postest	8.56±1.750	
Attitude	Assemblr Edu	Pretest	40.19±3.082	0,001
		Postest	50.13±5.524	
	Control	Pretest	41.63±4.145	0,290
		Postest	42.37±4.965	

Analysis of knowledge measurement data using the Wilcoxon test in the Assemblr Edu intervention group showed a significance value of 0.001 (p <0.05) which indicated that the H_0 decision was rejected, which means that there was a difference in knowledge of maintaining oral health before and after health promotion. In the control group, the Wilcoxon test showed a sig6nificance value of 0.755 (p>0.05) indicating that the decision H_0 was accepted, which means that there was no difference in knowledge of maintaining oral health.

Attitude measurements in the Assemblr Edu group showed that the Wilcoxon test analysis yielded a significance value of 0.001 (p <0.05) indicating that the H_0 decision was rejected, which means that there were differences in attitudes towards maintaining oral health before and after health promotion. In the control group, the Wilcoxon test showed a significance value of 0.290 (p>0.05), which means that there was no difference in attitudes towards maintaining oral health between the initial measurement and the final measurement.

Table 3. Data Analysis of Differences in Knowledge and Attitudes in Maintaining Dental and Oral Health Before and After Health Promotion in the *Assemblr Edu* and Control Groups with the Mann Whitney Test

Variable	Mean±SD	*P* Value
Knowledge		
Difference in Knowledge Value of the Assemblr Edu Group	3.38±1.857	0,000
Difference in Knowledge Value of the Control group	0.31±0.704	
Attitude		
Difference in Attitude Value of the Assemblr Edu Group	9.94±7.514	0,001
Difference in Attitude Value of the Control Group	0.75±2.595	

Measurement of knowledge with the Mann Whitney test showed a significance value of 0.000 (p <0.005), which means that there was a difference in knowledge between the intervention and control groups after health promotion. The results of the analysis of attitude measurement using the Mann Whitney test obtained a significance value of 0.001 (p <0.005) indicating that the H_0 decision was rejected or there were differences in attitudes between the Assemblr Edu group and the controls after health promotion.

DISCUSSION

The results of the pretest showed that the results of knowledge in the intervention group had a mean of 8.44, while the control group had a mean of 8.25. This result is in line with Ramadhania research (2022) which showed that the level of knowledge of students before health education was carried out had a mean of 6.5.[10] This can happen because of the role of knowledge as memory of materials that have been studied before and involves the process of recalling a set of theories using memory.[11] Preliminary studies that have been conducted by researchers also mention that dental and oral health promotion has been given previously to students. at SDN Kebun Bunga 4 Banjarmasin but for a long time.

Posttest results in the intervention group showed an mean increase in knowledge after health promotion. Increased knowledge in the intervention group was obtained from learning outcomes through audio-visual media given during health promotion. Audio-visual media utilizes the ability of the senses, namely hearing and sight, so that it makes it easier for students to receive and remember information.[12] Edgar Dale theory states that by seeing and hearing, a person can remember material up to 50%.[12] The results in the control group showed an increase in knowledge in the high category. The increase in knowledge scores in the control group can be influenced by the level of education, curiosity, experience and exposure to information submitted by other people or obtained from pretest questionnaires, books, mass media, or electronic media.[13,14]

The pretest results showed that the attitude of the respondents in the intervention group with Assemblr Edu had a mean of 40.19, while in the control group it had a mean of 50.13. In line with Arisany research (2023) which showed a mean pretest of student attitudes of 44.94 in the intervention group and 49.96 in the control group.[15] Cognitive social theory states that individuals can learn from the social environment, the existence of individual interactions with their environment starting from something that can be seen to what is done by others allows individuals to behave based on exposure that has been received before.[16]

Posttest results in the intervention group showed an increase in the average attitude after health promotion. The increase in attitude in the *Assemblr Edu* group was due to the increase in knowledge gained from learning outcomes during health promotion. The information provided can shape attitudes, which if received pleasantly will be able to encourage good behavior changes. Exposure to information received by

a person is able to influence knowledge and shape attitudes.[17] Posttest results in the control group showed an increase in attitude in the high category. Fadlilah research (2022) stated that the increase in attitude scores in the control group could be due to respondents still remembering the questions during the pretest and looking for answers. Experience when answering pretest questions became the basis for respondents to increase their confidence when answering the posttest questionnaire.[14]

Data analysis using the Wilcoxon test in the intervention group showed that there were differences in knowledge before and after health promotion, which meant that health promotion using Assemblr Edu with an audio-visual system was effective in increasing knowledge. Audio-visual media makes delivering and receiving material easier because 83% of human knowledge is transmitted through sight and 11% through hearing.[18] Analysis of the Wilcoxon test data in the control group showed that there was no difference in knowledge before and after the measurement. Prativi research (2022) stated that there was no significant increase in knowledge in the control group because there was no intervention given to students.[19]

The results of the Wilcoxon test analysis in the intervention group showed that there were differences in attitudes before and after health promotion was carried out, so that it can be said that health promotion using Assemblr Edu with an audio-visual system is effective in increasing attitudes towards maintaining oral health. The results of the Wilcoxon test analysis in the control group showed no difference in attitude before and after the measurement. This result is in line with Fadlilah research (2022) which showed that there was no significant difference between the pretest and posttest in the control group which was not given intervention.[14] This relates to the existence of factors that play a role in achieving the goals of health promotion to influence a person's attitude, including the method factors, material or messages conveyed, educators or those who deliver messages, as well as the tools or media used.[20]

The results of the Mann Whitney test data analysis showed that there were differences in knowledge between the intervention and control groups after health promotion. The results of the data analysis are in accordance with the research hypothesis that health promotion using Assemblr Edu is effective for increasing knowledge of maintaining oral health. In line with Sugiarto (2021), it is easier for students to understand subject matter using Assemblr Edu because there are moving pictures and seem more alive. Students easily understand the material and can be creative in learning so that student learning motivation is higher because of a sense of being impressed and happy in learning so that student knowledge also increases.[21,22]

Analysis of the Mann Whitney test data showed that there were differences in attitudes between the intervention and control groups after health promotion, so it can be concluded that Assemblr Edu was effective in increasing attitudes towards maintaining oral health. This result relates to the existence of three components that support the formation of attitudes namely cognitive, affective, and conative. The increase in attitude values in this study indicates that children have a belief in the importance of maintaining healthy teeth and mouth and is influenced by increased knowledge obtained from health promotion using Assemblr Edu.[23] The higher the level of individual trust in the source of the message, the easier it will be to influence changes in his attitude.[24] These results are also supported by Padang research (2021) which proves that the use of Assemblr Edu is able to optimize student learning motivation due to the display of real, interactive, and 3-dimensional images. High motivation will also have an impact on students' knowledge, skills, and attitudes which will also increase.[21,25] The results showed an increase in knowledge and attitudes in the intervention group after health promotion was carried out using Assemblr Edu, whereas in the control group which was not given treatment there was only an average but not significant increase with the Wilcoxon test. Data analysis using the Mann Whitney test showed that there were differences in the average knowledge and attitudes in the Assemblr Edu group and the control group, so that it can be concluded that health promotion using Assemblr Edu was effective in increasing knowledge and attitudes about maintaining oral health in students aged 10-12 years at SDN Kebun Bunga 4 Banjarmasin.

REFERENCES

1. Ndoen EM, Ndun HJN. Perbaikan Kesehatan Gigi dan Mulut melalui Pemberian Cerita Audiovisual dan Simulasi pada Anak. J Pengabdi Masy LPPM Undana. 2021;13:1–7.
2. Andalia Roza SN. Faktor Faktor Yang Mempengaruhi Kesehatan Gigi dan Mulut. Menara Ilmu. 2017;11(78):152–66.
3. Kementerian Kesehatan R. Laporan riskesdas Provinsi Kalimantan Selatan 2018. Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan RI. Kementerian Kesehatan Republik Indonesia; 2018. 1689–1699 p.
4. Pakpahan M, Siregar D, Susilawaty A, Tasnim, Mustar, Dkk. Promosi Kesehatan dan Perilaku Kesehatan. 2021. 1–150 p.
5. Nugraheni H, Sadimin S, Sukini S. Determinan Perilaku Pencegahan Karies Gigi Siswa Sekolah Dasar Di Kota Semarang. J Kesehat Gigi. 2019;6(1):26.
6. Abdullah N. Hubungan Status Kesehatan Gigi Dan Mulut Anak Sekolah Dengan Pelaksanaan UKSG (Usaha Kesehatan Gigi Sekolah) Di Sekolah Dasar dan Sederajat Se Kota Makassar. J Media Kesehat Gigi. 2018;17(1):32–3.
7. Belinda NR, Surya LS. Media Edukasi Dalam Pendidikan Kesehatan Gigi dan Mulut Pada Anak-Anak. J Ris Interv Pendidik. 2021;3(1):55–60.
8. Syafii AI. Promosi Kesehatan Melalui Media Sosial Sebagai Strategi Edukasi Digital Pandemi Covid-19.

Pros Semin Nas STARWARS IKM UM. 2021;19:118–23.
9. Setiawan H, Adi S. Pengembangan Multimedia Interaktif Autoplay Sebagai Media Promosi Kesehatan Tentang Kesehatan Gigi Dan Mulut Pada Siswa Kelas V SDN Percobaan 02 Kota Malang. Prev Indones J Public Heal. 2017;2(2).
10. Ramadhania F, Purnamayanti CM, Pertiwi R, Yulianti YT, Sebayang SK. The Effectiveness of Covid-19 Health Posters Using Symbols of Indonesian Traditional Fairy Tales on Knowledge , Attitude , and Behaviour. J Promkes Indones J Heal Promot Heal Educ. 2022;10(2).
11. Boihaqi. Analisis Tingkat Pengetahuan Siswa SMA Negeri 12 Terhadap Materi Pencak Silat. Serambi Konstr. 2020;3(1):1–9.
12. Pitoy AD, Wowor VNS, Leman MA. Efektivitas Dental Health Education Menggunakan Media Audio Visual dalam Meningkatkan Pengetahuan Siswa Sekolah Dasar. e-gigi. 2021;9(2):243–9.
13. Nuryati S, Yanti RD. Efektivitas Penggunaan Media Sosial Terhadap Peningkatan Pengetahuan Perawatan Nifas dan Kepatuhan Kunjungan Ulang Pada Ibu Nifas di Kota Bogor. J Bidan. 2017;3(01):52–9.
14. Fadlilah S, Dede C, Nekada Y, Maturbongs FM. Pendidikan Kesehatan Meningkatkan Pengetahuan dan Sikap Pencegahan Covid - 19 pada Siswa SMP. J Pengabdi Masy. 2022;5(1):63–74.
15. Arisani G, Wahyuni S. The Effectiveness of Peer Group WhatsApp on Adolescent Knowledge and Attitudes about Risky Sexual Behavior. J Promkes Indones J Heal Promot Heal Educ. 2023;11(1).
16. Indah API, Gamayanti, Indria Laksmi Widyatama R. Efektivitas Pencegahan Adiksi Video Game Menggunakan Ludo Game untuk Siswa Sekolah Dasar. BKM J Community Med Public Heal. 2016;32(9):317–22.
17. Mualifah L, Pangastuti N. Pendidikan Kesehatan dapat Mempengaruhi Pengetahuan , Sikap Pra Remaja Menghadapi Menarche. J Holist Nurs Sci. 2019;6(2):74–84.
18. Andriani DA. Pengaruh Pendidikan Kesehatan Dengan Media Audio Visual Terhadap Pengetahuan Dan Sikap Anak Usia Sekolah Tentang Penyakit Demam Berdarah. J Med (Media Inf Kesehatan). 2020;7(1):65–72.
19. Pratiwi PKGP, Mahirawatie IC, Isnanto. Perbedaan Pengetahuan Tentang Karies Gigi Sebelum dan Sesudah Promosi Kesehatan Menggunakan Media Instagram (Study di SMAN 1 Menganti Kabupaten Gresik tahun 2022). J Ilm Keperawatan Gigi. 2022;3(3):376–81.
20. Alini, Indrawati. Efektifitas Promosi Kesehatan Melalui Audio Visual Dan Leaflet Tentang Sadari (Pemeriksaan Payudara Sendiri) Terhadap Peningkatan Pengetahuan Remaja Putri Tentang Sadari di SMAN 1 Kampar Tahun 2018. J Ners. 2018;2(2):1–9.
21. Nugrohadi S, Anwar MT. Pelatihan Assembler Edu untuk Meningkatkan Keterampilan Guru Merancang Project-based Learning Sesuai Kurikulum Merdeka Belajar. Media Penelit Pendidik J Penelit dalam Bid Pendidik dan Pengajaran. 2022;16(1):77–80.
22. Sugiarto A. Penggunaan Media Augmented Reality Assemblr Edu Untuk Meningkatkan Pemahaman Konsep Peredaran Darah. Madaris J Guru Inov. 2022;1–13.
23. Nubatonis MO. Promosi Kesehatan Gigi dengan Menggunakan Media Leaflet Terhadap Pengetahuan, Sikap, dan Status Kebersihan Gigi dan Mulut Siswa Sekolah Dasar Kota Kupang. J Kesehat Gigi. 2019;6(2):57–70.
24. Sumiati SA, Marsofely RL. Penggunaan Leaflet Terhadap Peningkatan Pengetahuan Dan Sikap Keluarga Baru. J Media Kesehat. 2017;10(3):052–7.
25. Padang FAL, Ramiawati, Yunus SR. Media Assemblr Edu Berbasis Augmented Reality Untuk Meningkatkan Hasil Belajar Materi Sistem Organisasi Kehidupan Makhluk Hidup. Diklabio J Pendidik dan Pembelajaran Biol. 2022;6(1):38–46.