



## THE EFFECT OF QUESTION CARD MEDIA EDUCATION ON THE IMPROVEMENT OF TOOTH BRUSHING SKILLS IN ELEMENTARY SCHOOL STUDENTS

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**Abstract Background:** The 2018 Basic Health Research highlighted a significant gap in oral hygiene practices among Indonesian children, with only 2.1% demonstrating correct tooth brushing techniques. To address this issue, the effectiveness of Question Cards as an educational tool in improving children's tooth brushing skills was investigated

**Objectives:** This study aims to see the effect of Question Cards media on improving children's tooth brushing skills.

**Method:** This pre-experimental study with a one-group pretest-posttest design involved 32 grade 5 students of SDN 024 Coblong Bandung City who were taken by simple random sampling. The variables in this study are Question Cards media and tooth brushing skills. Question Cards have been tested and declared feasible by media and material experts. Hypothesis testing using the Wilcoxon sign rank test.

**Results:** The Positive Ranks value shows 25 respondents experienced an increase in brushing skills after education, while the Ties value shows 7 respondents did not experience an increase in skills. Based on the Wilcoxon test, the p-value is 0.001 or  $p(0.001) < (0.05)$  suggesting that the use of Question Cards had a positive impact on the students' ability to brush their teeth correctly.

**Conclusion:** Education through Question Cards media can improve tooth brushing skills. Primary school children become more skilled at brushing their teeth properly, which improves oral health.

Keywords: *Question Cards*, *Education*, *Tooth Brushing Skills*

## BACKGROUND

The results of the National Basic Health Research in 2018 show that the most common oral health problem in Indonesian society is caries with a prevalence of 45.3%. The prevalence of dental caries in children aged 10-14 reached 41.4%. The proportion of damaged/perforated/diseased teeth in the age range of 10-14 in West Java province was recorded at 39.80%. This data shows that the proportion of the incidence of dental and oral problems, especially dental caries or cavities, is high both nationally in the age range of children 10-14 years old. The high rate of dental caries is caused by the poor tooth brushing behaviour of the Indonesian population.<sup>1</sup>

The daily tooth brushing behaviour of the Indonesian population is 94.7%, but only 2.8% brush their teeth with the correct time. Proper tooth brushing behaviour among children aged 10-14 years was found to be lower than the national figure, at only 2.1%.<sup>1</sup> The inaccuracy of brushing time can be influenced by the lack of knowledge of children in maintaining oral health, therefore it is necessary to be accurate in time, techniques that are in accordance with the guidelines for brushing.<sup>2,3</sup>

Brushing teeth should be done twice a day, in the morning after breakfast and at night before bed according to FDI guidelines. One approach to improve tooth brushing skills is to provide tooth brushing education. Education to improve tooth brushing skills needs to be supported by the media to help motivate children to brush their teeth.<sup>4</sup> One of the interesting ways to learn is to use Question Cards.

*Question Cards are cards that contain several questions, using this media can foster a sense of responsibility, healthy competition, cooperation and activeness in the learning process*<sup>5</sup>. According to Nurhasanah's research (2023), Question Cards media provides high capture power to children because question card media is able to spur the sense of touch, sense of sight, and sense of hearing of respondents. This research shows that Question Cards media provides high capture power to children because question card media is able to spur the respondent's sense of touch, sense of sight, and sense of hearing.<sup>5</sup> Gunarta's research (2019) shows the effect of learning using Question Cards media on the atmosphere of learning that is fun and not boring.<sup>6</sup> Another study conducted by Putri (2019) showed that Question Cards media is one of the cooperative learning models that can involve students' activeness directly in the learning process in class.<sup>7</sup> The difference between research and previous research in the use of Question Cards media is educational material about tooth brushing skills that is adapted for use by elementary school students. This study aims to determine the effect of education using Question Cards media on improving tooth brushing skills in elementary school students.

## **METHODS**

### ***Study setting and design***

The type of research used is pre-experimental with a One Group Pretest-Posttest Design.

### ***Study population and sampling procedure***

The population of this study were students of SDN Coblong 024 grades 5A, 5B, 5C and 5D with a total of 114 students. The sample size was taken based on the formula developed by Isaac and Michael with an error rate of 5%.<sup>8</sup> The sampling technique used simple random sampling. The results of the sample calculation obtained as many as 32 elementary school students.

### ***Data Collection and Variable measurement***

The independent variable in this study is Question Cards media and the dependent variable is tooth brushing skills. Primary data was obtained through research instruments in the form of a check list and Question card media (Figure 1). Measurement of the level of brushing skills was measured through a checklist sheet containing an assessment of the methods and techniques of brushing teeth in elementary school students.

Question card media and materials used have been tested for feasibility by media experts and material experts, using the media and material feasibility test presentation formula. The eligibility category is based on the following criteria 1) <21% = not very feasible, 2) 21-40% = not feasible, 3) 41-60% = quite feasible, 4) 61-80% = feasible and 5) 81-100% = very feasible. The assessment of the feasibility test results by 3 material experts and Question card media experts in this study received a score of 87%, meaning that it is very feasible to use.



Figure 1 Question Cards

This study was conducted for 21 days to see an improvement in tooth brushing skills consisting of 3 stages: the 1st stage assesses tooth brushing skills before being given an intervention (pre-test) followed by education on how to brush teeth through Question Cards media about tooth brushing skills. The 2nd stage reassesses tooth brushing skills after being given an intervention using Question card media. Stage 3 conducted an assessment on day 21 to see any improvement in tooth brushing skills after 21 days. The Question Cards media design given to respondents can be accessed at the following link: <https://acesse.one/MediaQuestionCards>

This study used the Wilcoxon Sign Rank Test for the hypothesis test to see the effect of the Question card media intervention on brushing skills.

### ***Ethic Consideration***

This study received ethical approval with Ethical Approval number No. 72/KEPK/EC/II/2024 which was approved by the ethics team at the researcher's institution.

## **RESULT AND DISCUSSION**

This study analyses the effect of education using Question Cards media on improving tooth brushing skills. The study was conducted on grade 5 students at SDN 024 Coblong, Bandung for 21 days. Table 1 shows the demographic characteristics of respondents in grade 5 students of SDN 024 Coblong, Bandung city based on the age of the most respondents aged 11 years as many as 27 people (84.4%) the most gender is male respondents as many as 17 people (53.1%).

***Tabel 1 Frequency Distribution of Respondent Characteristics by Gender and Age***

Characteristic	Frequency	Presentation
<b>Gender</b>		
Male	17	53.1
Female	15	46.9
<b>Total</b>	<b>32</b>	<b>100</b>
<b>Age</b>		
10 Years	3	9.4
11 Years	27	84.4
12 Years	2	6.3
<b>Total</b>	<b>32</b>	<b>100</b>

The results of measuring the behaviour of tooth brushing skills in respondents before being given education using Question Cards media are as follows:

**Tabel 2 Frequency Distribution of Improvement in Respondents' Tooth Brushing Skills Before and After Being Given Question Cards Media Education**

Toothbrushing Skills	Intervention of Media Question Cards	
	Before	After
Less Skilled	18 [56%]	0 [0%]
Moderately Skilled	14 [43,7]	19 [59,4%]
Skilled	0 [0%]	13 [40,4%]
Total	32	32

Table 2 shows the behaviour of tooth brushing skills before being given education using Question Cards media in respondents with less skilled criteria as many as 18 people (56.3%) and quite skilled as many as 14 people (43.7%). There was an increase in tooth brushing skills in respondents after being given education through Question Cards with moderately skilled criteria as many as 19 people (59.4%) and skilled as many as 13 people (40.6%).

**Tabel 3 The Effect of Education Using Question Cards Before and After Intervention on Improving Tooth Brushing Skills**

Variable	Group		N	Mean Rank	Sum of Ranks	Z	P value
Toothbrushing skills	Posttest- Pretest Intervention	Negative Ranks	0 <sup>a</sup>	0	.00	-4.667 <sup>b</sup>	0,001
		Positive Ranks	25 <sup>b</sup>	13,00	325,00		
		Ties	7 <sup>c</sup>				

Table 3 shows a negative rank or negative difference in the value of 0 both in the N value, Mean Rank, and Sum Rank. So that this value of 0 indicates that there is no decrease from the Pretest value to the Posttest value. The Positive Ranks value of 25 positive data (N) indicates that 25 respondents experienced an increase in training skills after education, while the Mean Rank or average increase was 13.00 and the number of positive ranks or Sum of Ranks was 325.00. There is a Ties value from the study of 7, this shows 7 respondents did not experience an increase in skills. Based on the Wilcoxon test, the p-value is 0.001 or  $p(0.001) < (0.05)$ , which means that there is an effect of education using Question Cards media on improving the teeth brushing skills of 5th grade students of SDN 024 Coblong Bandung City.

## DISCUSSION

School age is an important time for children's physical growth and development, at this time children begin to develop habits that tend to remain until adulthood.<sup>9,3</sup> A habit that must be instilled in children is maintaining oral health. Efforts to maintain oral health can be done, such as dental health education for students in schools as an effective environment for teaching and learning activities<sup>10,11</sup>.

Researchers used media to improve respondents' tooth brushing skills behaviour. Efforts to improve tooth brushing skills can be provided through counselling, one of which is by using Question Cards media. The results of this study showed the effect of using Question Cards media for 21 days there was an increase in respondents' tooth brushing skills with appropriate criteria, namely quite skilled and skilled. However, there are still respondents with moderately skilled criteria that do not improve their brushing skills, this can be due to internal and external factors from the respondent.

A 21-day Question Cards education programme that involves interaction between extension workers and respondents can increase motivation and enthusiasm for learning toothbrushing skills.<sup>12</sup> A well-designed and implemented 21-day programme can also increase the likelihood of changes in respondents' tooth brushing behaviour and their habits in the long term.<sup>3</sup> This study is consistent with Sitinjak's research (2022) on the Analysis of the Effect of the Success of the 21-Day Toothbrushing Program that there is a change towards the better, after brushing teeth for 21 days and in accordance with the theory of "Behavior Change".<sup>13</sup>

Behavioural change over 21 days can be divided into three stages that form the memory and command the mind and body to perform the new habit. In the first stage is the introduction to the habit, in the next second stage it enters the repetition phase to get used to what is being done.<sup>14</sup> The more often the child does the activity, the easier the child memorises and then the last stage is more towards the reinforcement phase which leads to stabilisation. Tooth brushing behaviour can be formed permanently and become a persistent habit.<sup>15,16</sup>

Based on the results of hypothesis testing using the Wilcoxon Signed Ranks Test, the p value  $(0.001) < (0.05)$  shows that there is an effect of increasing tooth brushing skills using Question Cards media, but Ties (the same paired data) in the Wilcoxon test results show 7 respondents get the same results. Ties can occur due to internal disturbances such as lack of motivation of respondents in learning and external disturbances such as the environment around students that is less conducive. According to Yeni (2015), it is the internal and external factors of respondents that cause children's difficulties in participating in normal learning.<sup>17</sup> Internal and external disturbances that respondents experience can cause less than optimal respondents in participating in learning.<sup>18</sup>

Education using Question Cards media is proven to improve tooth brushing skills because this media can be adapted easily to the material and target group specifically in improving tooth brushing skills. The use of interactive Question Cards media can also help students easily remember information about proper tooth brushing techniques better.<sup>4</sup> Also according to Nurhasanah (2023) there is an increase in the behaviour of tooth brushing skills after being given education using Question Cards media has a significant effect on changes in attitudes and actions of respondents.

Referring to Situngkir (2023), Question Cards media is the right choice because this media features its ease of use in the classroom thanks to its minimalist dimensions, and the design that can be adjusted to the learning objectives makes the implementation time of the card media also does not take a long time and the message can be conveyed and can be received by respondents.<sup>19</sup> Nurhasanah (2023) stated that education using card media is an extension method to maximise the absorption of knowledge gained by children so that it can improve children's skills. The improvement of respondents' tooth brushing skills that are

influenced by education using Question Cards media can be used as a means for learning in schools.

Question Cards is one of the interactive media that involves students in delivering promotive information about dental health, especially about improving tooth brushing skills that can be provided by teachers to students at school.<sup>6</sup> Question card can also make it easier for students to understand the material presented so that they can focus more on improving their tooth brushing skills. Therefore, these media can be used by educators as a tool to educate on improving tooth brushing skills, which will support the improvement of oral health status in primary school children.<sup>20</sup>

## CONCLUSION

Education through Question Cards media can improve tooth brushing skills. Primary school students become more skilled in performing proper tooth brushing so that the degree of oral health becomes better.

## COMPETING INTERESTS

All authors had none to declare

## AUTHOR'S CONTRIBUTION

Fadly conceived of the presented idea, data collection and analysis, and drafting the manuscript; Dewi Sodja Laela was in charge of data analysis; and writing manuscript. All authors contributed to the final manuscript.

## REFERENCES

1. Kemenkes RI. Badan Penelitian dan Pengembangan Kesehatan. Riset Kesehatan Dasar (RISKESDAS). 2018.
2. Melo P, Malone S, Rao A, Fine C. A 21-day school-based toothbrushing intervention in children aged 6 to 9 years in Indonesia and Nigeria: Protocol for a two-arm superiority randomized controlled trial. *JMIR Res Protoc*. 2020;9(2):1–10. <https://doi.org/10.2196/14156>
3. Heriyanto Y, Laela DS, Mulyanti S. Relationship Between School Dental Health Education Program Through Video and Interactive Calendar Against Changes in Tooth Brushing Behavior in Elementary School-aged Children at SDN ArcamanikEndah and SDN Mekarjaya in Bandung City and Their Families. *Proceeding 1st Int Conf Interprofessional Heal Collab Community Empower* [Internet]. 2018;(December):399–401. Available from: <https://conference.juriskes.com/index.php/IC/article/view/49>
4. Raisah P, Fatimah S, Amly DA. Edukasi Cara Menyikat Gigi yang Benar Guna Meningkatkan Pengetahuan Siswa Tentang Kesehatan Gigi dan Mulut. *Surya Abdimas*. 2023;7(3):522–30.
5. Kholipah N, Surindra B, Forijati R. Penerapan Media Qestion Card dalam Model Pembelajaran Problem-Based Learning untuk Meningkatkan Kualitas Pembelajaran. *PINUS J Penelit Inov Pembelajaran*. 2022;8(1):43–52. <https://doi.org/10.29407/pn.v8i1.18626>
6. Gunarta IG. Pengaruh Model Pembelajaran TGT Berbantuan Media Question Card Terhadap Hasil Belajar IPA. *J Pedagog dan Pembelajaran*. 2019;1(2):112. <https://doi.org/10.23887/jp2.v1i2.19338>

7. Putri NKIP, Murda N, Sudana DN. Pengaruh Model Pembelajaran Group Investigation Berbantuan Media Questions Card Terhadap Pemahaman Konsep \ dan Keterampilan Berpikir Kritis IPA. *Think Ski Creat J*. 2019;1(2):46. an Keterampilan Berpikir Kritis IPA. *Thinking Skills and Creativity Journal*, 1(2), 46. <https://doi.org/10.23887/tscj.v1i2.20492>
8. Sugiyono. Metode Penelitian Kuantitatif, Kualitatif, Dan R&D. Alfabeta. 2020;
9. Pay MN, Widiati S, Sriyono NW. Identifikasi Faktor Yang Mempengaruhi Perilaku Anak Dalam Pemeliharaan Kebersihan Gigi Dan Mulut: Studi pada Pusat Pengembangan Anak Agape Sikumana Kota Kupang, Nusa Tenggara Timur, Indonesia. *Maj Kedokt Gigi Indones*. 2017;2(1):27. <https://doi.org/10.22146/maikedgiind.9900>
10. Yuniarly E, Amalia R, Haryani W. Hubungan Tingkat Pengetahuan Tentang Kesehatan Gigi Dan Mulut Dengan Tingkat Kebersihan Gigi Dan Mulut Anak Sekolah Dasar. *J Oral Heal Care*. 2019;7(1):01–8. <https://doi.org/10.29238/ohc.v7i1.339>
11. Wijayanti HN, Rahayu PP. Membiasakan Diri Menyikat Gigi Sebagai Tindakan Utama Dalam Upaya Peningkatan Kesehatan Gigi Dan Mulut Pada Anak. *Jurnal Pemberdayaan Masyarakat Mandiri Indonesia*. (Indonesian J Indep Community Empower. 2018; <https://doi.org/10.35473/jpmmi.v1i1.19>
12. Tedjasulaksana R, Nyoman Wirata I, Efektivitas Penyuluhan Dalam Jaringan Terhadap Pengetahuan Pemeliharaan Kebersihan Gigi Dan Mulut Serta Keterampilan Menyikat Gigi Siswa Smk Pariwisata Kertayasa Singakerta Ubud. *Dent Heal J* [Internet]. 2022;9(2):2022. <https://ejournal.poltekkes-denpasar.ac.id/index.php/JKG/article/view/2059/834>
13. Sitinjak LM, Erawati S, P. A. Y. Ariescha. Analisa Pengaruh Kebersihan Program 21 Hari Sikat Gigi Terhadap Standar Oral Higiene Index Symplified (OHIS) Pada Peserta Didik Sekolah Dasar Negeri 084087 Kota Sibolga Tahun 2020. *Jurnal Kajian Kesehatan Masyarakat*,. 2022. <http://ejournal.delihusada.ac.id/index.php/JK2M>
14. Melo P, Fine C, Malone S, Taylor S. Impact of the Brush Day & Night Programme on Well-Being, Plaque, and Dental Caries in Children. *Int Dent J* [Internet]. 2021;71:S15–30. <https://doi.org/10.1016/j.identj.2021.01.018>
15. Fatmasari D, Dyah Utami WJ, Supriyana S. Edukasi dan Pendampingan Selama 21 Hari dengan Mogigu Meningkatkan Perilaku Menggosok Gigi dengan Benar pada Anak dan Orang Tua SD Bulusan Semarang. *J Kesehatan Gigi*. 2020;7(1):29–34. <https://doi.org/10.31983/jkg.v7i1.5661>
16. Suryani L. Gambaran Menyikat Gigi Terhadap Tingkat Kebersihan Gigi Dan Mulut Pada Murid Kelas V Di Min 9 Kecamatan Ulee Kareng Kota Banda Aceh. *Biot J Ilm Biol Teknol dan Kependidikan*. 2018;5(2):149. <https://doi.org/10.22373/biotik.v5i2.3024>
17. Setiani N, Wakinah W, Nurazizah S, Andriani E. Kesulitan Belajar Matematika di Sekolah Dasar. *Mutiara Multidiciplinary Sci*. 2024;2(8):634–8.
18. Fajar Rizqi A, Adilla BL, Sulistiyawati E, Taufiqurrohman. Analisis Kesulitan Belajar Matematika Pada Siswa Sekolah Dasar Dan Alternatif Pemecahannya. *J Pendidik Dasar Flobamorata*. 2023;4(1):481–8. <https://doi.org/10.51494/jpdf.v4i1.588>
19. Nauli Situngkir S, Lubis W, Masri Perangin-angin L, Pgsd P. Pengembangan Media Question Card Berbasis Model Time Token untuk Meningkatkan Keterampilan Berbicara Siswa Sekolah Dasar. *J Pendidik Tambusai*. 2023;7(3):21415–26.
20. Daniati,N, Della Restu Apriliani, Anang. Media Question Card Towards Knowledge of Dental and Oral Health in Elementary School Age Mentally Retarded Children. *Incisor (Indonesian J Care's Oral Heal*. 2022;6(2):269–80. <https://doi.org/10.37160/theincisor.v6i2.27>