



Impact of a Novel Irene Donuts Application on Maternal Behavior and Children's Dental Hygiene Status

Reca Reca^{1*}, Linda Suryani¹, Eka Sri Rahayu¹, Cut Aja Nuraskin¹, Teuku Salfiyadi¹, Ainun Mardiah¹,
Salikun Salikun²

¹ Department of Dental Health, Politeknik Kesehatan Aceh, Aceh Besar 23231, Indonesia

² Department of Dental Health, Politeknik Kesehatan Semarang, Semarang 50239, Indonesia

Corresponding Author Email: reca@poltekkesaceh.ac.id

<https://doi.org/10.18280/ijdne.180228>

ABSTRACT

Received: 9 February 2023

Accepted: 29 March 2023

Keywords:

Irene donuts application, behavior and child's dental, hygiene status, Indonesia, dental health

The Irene Donuts application is an interactive computer program that aims to make students aware of the risk factors for dental health. This program provides an understanding of caries risk factors early on and how to prevent caries, has a visual picture of caries risk, and empowers parents to maintain dental health, especially at school. This study aimed to determine the effect of the application of Irene donuts in family dental nursing care on changes in maternal behavior and children's dental hygiene status in Gampong Ateuk Jawo, Banda Aceh, Indonesia. The method that has been used in this study is quasi-experimental. The experimental design is an equivalent control group design with pre-test and post-test. This study's sample was 60 children and their mothers as respondents, divided into two groups, i.e., intervention and control. The results did not show any difference in the mean values of knowledge, attitudes, and actions of mothers and children dental and the oral hygiene status of children (PHP-M children) before the intervention in the treatment group, and a control group which was statistically significant. Statistically, there is a difference in knowledge, attitudes, and actions of mothers and dental and PHP-M children immediately after and two weeks after the intervention between the treatment group and the control group. Finally, from this study is families should improve their children's dental and oral health, it is necessary to increase knowledge, attitudes, and positive practices of mothers as provisions in educating children by giving examples to their children on how to maintain dental health.

1. INTRODUCTION

Dental and oral health are closely related to behavior. The behavior of maintaining good oral and dental health will play a very important role in determining the degree of dental health. Dental caries remains a health problem for children [1-3]. Caries can have various effects on the growth and quality of life of children [4-7]. WHO in 2016 stated that the incidence of caries in children was still 60-90%. Based on the results of the 2018 Basic Health Research Indonesian survey, it was reported that the proportion of the population with dental health problems in the last 12 months in the Aceh region was 55% and the proportion of brushing teeth correctly in people aged > 3 years was only 2.8%. According to the results of dental and oral examinations for the 3-5 year age group in Banda Aceh (Indonesia) during the school dental health efforts or "Usaha Kesehatan Gigi Sekolah" (UKGS) activity, it showed that 78% of the children suffered from caries. One of the innovations for early prevention of dental caries is to use an android application.

Several studies in developed and developing countries state that the use of technology as non-invasive as android-based applications can improve knowledge, attitudes, and practices for the better [8, 9]. Android applications that are often used to prevent caries since preschool age are dental caries risk simulator or Irene's Donut. The application of Irene's Donuts

as part of UKGS is a caries risk simulator program of Irene's Donuts as an embodiment of the motivation interview technique. The caries risk simulator of Irene's Donuts is an interactive program in the form of a computer program or a manual version [10]. To successfully implement the Irene's Donuts application, parental participation is required. The participation of parents is very necessary to guide, provide understanding, remind, and provide facilities for children so that children can maintain healthy teeth and mouth. Additionally, parents also have a significant role in preventing plaque accumulation and caries in children. Parental knowledge is very important in underpinning the formation of behaviors that support or do not support children's dental and oral hygiene [11].

Parents must teach their children about the importance of maintaining oral health, such as reducing sweet, fat and sugary foods to reduce the emergence of dental and oral diseases in children [12-14]. Mother's knowledge, attitudes, and behavior toward dental and oral health will determine the dental health status of children in the future. Mothers must know how to take care of their children's teeth and mothers must teach their children how to take good care of their teeth.

The preliminary results of this study found that there was no dental health education and that the application of Irene donuts in family nursing care caused children to be independent and brush their teeth correctly and correctly daily. The family

dental and oral nursing care program that has been carried out so far has not been optimal. Education must be done using the Irene Donuts application in family dental nursing care. Therefore, the purpose of this study was to determine the effect of the application of Irene Donuts in family dental nursing care on changes in maternal behavior and child dental hygiene status in Gampong Ateuk Jawo, Banda Aceh, Indonesia. Education must be done using the Irene Donuts application in family dental nursing care.

Therefore, the purpose of this study was to determine the effect of the application of Irene Donuts in family dental nursing care on changes in maternal behavior and child dental hygiene status in Gampong Ateuk Jawo, Banda Aceh, Indonesia. Education must be done using the Irene Donuts application in family dental nursing care. Therefore, the purpose of this study was to determine the effect of the application of Irene Donuts in family dental nursing care on changes in maternal behavior and children's dental hygiene status in Gampong Ateuk Jawo, Banda Aceh, Indonesia.

2. METHODOLOGIES

This experimental research in this study has been quasi experimental. The research design was the equivalent control group design with pre-test and post-test. The method of this study was to determine the effect of the application of Irene donuts in family dental nursing care on changes in maternal behavior and child dental hygiene status in Gampong Ateuk Jawo, Banda Aceh, Indonesia. The intervention used the application of Irene donuts in family dental nursing care to change mother's behavior and the child's dental hygiene status.

2.1 Population and sample

The population in this study was all families in Ateuk Jawo, Banda Aceh (Indonesia) which were included in the inclusion criteria as respondents. The calculation of the sample size in this study uses the sample size formula to test the two-sided hypothesis of the average population including 60 children and their mothers as respondents. 30 children and their mothers as the intervention group and 30 children and their mothers as the control group. The sampling technique used in this research is the purpose of sampling from Creager [15]. This sampling method was chosen to collect data efficiently, and the target population can also be achieved.

2.2 Data collection technique

The tools used in this research consist of caries risk simulator instruments and questionnaires. During the first visit, initial observation was performed as a pre-test to measure the child's dental hygiene status with a set diagnosis and disclosing solution. Then measured, parents' knowledge, attitudes, and actions were to determine the extent of the respondent's understanding of the maintenance of oral health as a pre-test using a questionnaire in both groups.

The treatment group explained the use of the Irene donuts application in family dental nursing care so that the respondents became enthusiastic and interested in using the Irene donuts application in family dental nursing care, especially in terms of maintaining dental health, including guiding and training children in brushing their teeth. At least twice a day regularly. The second visit II, administered as an

intervention, took the form of problem-based counseling by assessing risk factors for dental caries through the application of the Irene Donuts simulator to assess the risk of dental caries in the treatment group.

Interventions are given alternately, and stages of risk factor assessment with applications consisting of the preparation stage includes providing teeth report cards, parents preparing Android-based cellphones, and setting up accessible internet networks for needy parents. Next, the implementation stage is to apply the Irene Donut application, which begins with registration until you get the results of dental caries risk child factors. At the caries risk assessment stage with the application, the researcher provides education or verbal explanations regarding risk assessment and discussions regarding children's dental problems to their mothers. The time required by the mother is in the range of 30 minutes. The completion stage is by evaluating and filling out the follow-up plan.

Meanwhile, no intervention was carried out in the control group, but only modules on family dental health maintenance were distributed. Immediately after the intervention, a post-test was carried out in the treatment and control groups. For two weeks, the mother will be given a list of tasks to carry out the agreed suggestions as a follow-up at home. Then, after two weeks, the third visit was conducted for post-test II, which was to re-measure the child's dental hygiene status and measure the mother's knowledge, attitudes, and actions toward the maintenance of her child's dental and oral health by using a questionnaire in the treatment group and the control group.

Finally, data analysis using bivariate analysis, with statistical test paired sample t-test and independent t-test. This research has undergone ethical approval, with number no.LB.02.03/7141/202.

3. RESULT

3.1 Analysis of paired samples t-test

The mean difference from pre-test to post-test I, post-test I to post-test II, and pre-test to post-test II, knowledge of mothers as respondents in the intervention group and control group is presented in the following Table 1. It can be seen that the intervention group significantly affects the knowledge of the mother compared to the control. The introduction of the dental hygiene status of children to the parents can be continued to provide awareness of students' dental health of the students. This is presumably because the parents at the research site listen to good advice regarding their child's health.

The mean difference from pre-test to post-test I, post-test I to post-test II, and pre-test to post-test II, the attitude of mothers as respondents in the intervention group and control group is presented in Table 2. It can be seen that the intervention group significantly affects the attitude compared to the control. This is likely due to more interesting dental health education, such as using applications and more attractive color pictures so that child respondents are interested in following it [16].

The mean difference from pre-test to post-test I, post-test I to post-test II, and pre-test to post-test II, the mother's actions as respondents in the intervention group and control group are presented in the following Table 3. It can be seen that the intervention group has significantly more action compared to the control. The extent of the t-set value in the intervention treatment group stated that this treatment had a significant

impact on the actions taken by the respondents in maintaining the health of their teeth. This shows that the intervention with this method changed the perception of the respondent's action.

Table 1. Statistically of mother's knowledge as respondents in the intervention and control group

Group	Data	Value	t-test	p-value
Intervention	Pre-test to Post-test I	3.27±1.20	-14.90	0.001*
	Post-test I to Post-test II	3.40±1.04	-17.90	0.001*
	Pre-test to Post-test II	0.13±0.73	-1.00	0.033*
Control	Pre-test to Post-test I	-1.57±1.97	-4.34	0.58
	Post-test I to Post-test II	-1.83±2.02	-4.98	0.72
	Pre-test to Post-test II	-27.0±1.02	-1.44	0.92

* = significant

Table 2. Statistically of respondent's Attitude as respondents in the intervention and control group

Group	Data	Value	t-test	p-value
Intervention	Pre-test to Post-test I	2.60±1.35	-10.50	0.001*
	Post-test I to Post-test II	2.37±1.79	-7.24	0.001*
	Pre-test to Post-test II	0.23±0.89	1.42	0.045*
Control	Pre-test to Post-test I	-0.43±0.73	-3.30	0.084
	Post-test I to Post-test II	-0.33±0.96	-1.90	0.069
	Pre-test to Post-test II	0.10±0.55	1.0	0.088

* = significant

Table 3. Statistically of respondent action as respondents in the intervention and control group

Group	Data	Value	t-test	p-value
Intervention	Pre-test to Post-test I	3.53±1.22	-15.80	0.001*
	Post-test I to Post-test II	3.37±1.47	-12.50	0.001*
	Pre-test to Post-test II	0.17±0.65	-0.41	0.047*
Control	Pre-test to Post-test I	-1.07±1.53	-3.82	0.065
	Post-test I to Post-test II	0.10±0.40	1.361	0.092
	Pre-test to Post-test II	-0.97±1.63	-3.25	0.095

* = significant

The mean difference from pre-test to post-test I, post-test I to post-test II, and pre-test to post-test II children's caries risk scores in the intervention group and control group is presented in the following Table 4. In the end, the respondents with interventions will experience dental and oral hygiene significantly in statistical tests.

Table 4. Statistically of children's PHP-M scores as respondents in the intervention and control group

Group	Data	Value	t-test	p-value
Intervention	Pre-test to Post-test I	16.9±13.7	6.75	0.001*
	Post-test I to Post-test II	20.0 ± 13.9	7.83	0.001*
	Pre-test to Post-test II	3.07±6.2	2.69	0.012*
Control	Pre-test to Post-test I	18.6 ± 10.42	9.79	0.58
	Post-test I to Post-test II	22.5±10.66	11.5	0.62
	Pre-test to Post-test II	3.83±6.11	3.43	0.181

* = significant

3.2 Analysis of independent t-test

The results of the analysis of mother's knowledge as respondents between the intervention group and the control group are shown in Table 5. Further tests on significant intervention parameters found notable differences in mother knowledge before the pre-test and in the post-test. This reinforces that the Irene Donuts application can help parents know about the health and hygiene of their children's teeth and mouth.

Table 5. Statistically test of respondent knowledge between the intervention group and the control group

Mother's Knowledge	Group	Value	t-test	p-value
Pre-test	Treatment	4.47±4.47	-0.87	0.389
	Control	4.67±4.67		
Post-test I	Treatment	7.73± 7.73	4.36	0.005*
	Control	6.23 ± 6.23		
Post-test II	Treatment	7.87 ± 7.87	4.43	0.004*
	Control	6.50±6.50		

* = significant

The results of the analysis of the mother's attitude as a respondent between the intervention group and the control group are as follows Table 6. Further tests on significant intervention parameters found notable differences in respondent's attitude before the pre-test and in the post-test. This shows that there were significantly different attitudes before and after the intervention treatment.

Table 6. Statistically test of respondent's attitude between the intervention group and the control group

Respondent's attitude	Group	Value	t-test	p-value
Pre-test	Treatment	4.27±1.38	-0.19	0.848
	Control	4.33±1.29		
Post-test I	Treatment	6.87±0.57	7.81	0.001*
	Control	4.77±1.36		
Post-test II	Treatment	6.63±1.13	6.06	0.001*
	Control	4.67±1.37		

* = significant

The results of the mother's actions as respondents between the treatment group and the control group are as follows Table 7. Further tests on significant intervention parameters found notable differences in respondent's action before the pre-test

and in the post-test. This shows that there was a significantly different response action before and after the intervention treatment.

The results of the analysis of the child's caries risk score between the treatment group and the control group are as follows Table 8. Additional studies on major intervention parameters revealed distinguishable variations in PHP-M before and after the pre-test and post-test. This indicates that the PHP-M before and after intervention treatment were significantly different.

Table 7. Statistically test of respondent's action between the intervention group and the control group

Respondent's action	Group	Value	t-test	p-value
Pre-test	Treatment	3.43±1.28	-0.38	0.702
	Control	3.57±1.41		
Post-test I	Treatment	6.97±0.56	6.18	0.006*
	Control	4.63 ±1.99		
Post-test II	Treatment	6.80±0.93	5.45	0.001*
	Control	4.53±2.09		

* = significant

Table 8. Statistically test of PHP-M between the intervention group and the control group

PHP-M	Group	Value	t-test	p-value
Pre-test	Treatment	44.8±12.8	-0.73	0.468
	Control	47.0±9.97		
Post-test I	Treatment	27.9 ± 4.59	-0.50	0.042*
	Control	28.4 ± 2.14		
Post-test II	Treatment	24.8±6.84	0.17	0.046*
	Control	24.5±7.05		

* = significant

4. DISCUSSION

Based on the results of intergroup analysis between the intervention group and the control group, the mean value of the knowledge level of the mother as a respondent before the intervention showed that there was no significant difference between the treatment group and the control group, obtained $p > 0.05$.

However, immediately and 2 weeks after the intervention, the results showed that there was a significant difference in maternal knowledge after test I and post-test II, this was statistically shown at $p < 0.05$. Based on the results of the analysis by analyzing the difference in differences (paired sample t test) in the control group, it shows the value of maternal knowledge from pre-test to post-test I, from post-test I to post-test II and from pre-test to post-test II there was no statistically significant difference in the mean value of maternal knowledge ($p > 0.05$). This is because in the control group, no intervention or treatment was carried out, namely problem-based counseling by assessing dental caries risk factors through the Irene donuts application / dental caries risk assessment simulator through family dental nursing care with home visit services.

Although the knowledge value of mothers in the intervention group from pre-test to post-test I, from post-test I to post-test II and from pre-test to post-test II, there was a statistically significant difference in the mean value of maternal knowledge ($p < 0.05$). These results indicate an increase in knowledge, which proves that the application of

Irene's of method s Donuts can effectively increase mother's knowledge, this is because mothers are given the opportunity to raise problems regarding their child's dental and oral health. Irene's Donuts also displays a large visual picture of the caries risk faced and the possible improvement along with pictures that can attract the attention of parents/students. This knowledge can be obtained naturally or in a planned manner, that is, through the education process [17].

In terms of the aspect of the mother's attitude in maintaining children's dental health based on the results of the intergroup analysis between the intervention group and the control group, it was found that the average value of the mother's attitude as a respondent before the intervention showed that there was no significant difference between the treatment group and the control group, $p > 0.05$. However, immediately and 2 weeks after the intervention, the results showed that there was a significant difference in the attitudes of mothers after test I and post-test II, this was statistically shown to be $p < 0.05$. Based on the results of the analysis by analyzing the differences in the difference (paired sample t-test) in the control group, it shows the value of the mother's attitude from pre-test to post-test I, from post-test I to post-test II and from pre-test to post-test II there was no statistically significant difference in the mean value of maternal knowledge ($p > 0.05$).

This is because in the control group no intervention or treatment was carried out. Meanwhile, the mother's attitude score in the intervention group from pre-test to post-test I, from post-test I to post-test II and from pre-test to post-test II, there was a statistically significant difference in the mean value of maternal attitudes ($p < 0.05$). This shows that with family dental nursing care (home visit services), it can generate parental participation, increase children's behavior toward dental health, there is support from parents who always control and monitor children in maintaining oral and dental hygiene [18, 19].

These results indicate that there is an increase in the mother's belief in the importance of maintaining children's dental and oral health, and counseling can provide changes in attitudes. As in knowledge, attitudes also experience changes in values after the application of the Irene Donuts method. The increase in the attitude value is due to the mother's good knowledge, where after the mother has a sufficient level of knowledge about the child's dental health, the mother will judge positively or negatively on this knowledge. The evaluation process can be positive or negative. The results of this study are in accordance with Budiharto's opinion, which states that attitudes are seen as the result of learning, not the result of development or something that is passed down. This belief emerged after the participants gained knowledge of dental and oral health [20, 21].

The results of this analysis prove that the application of the Irene Donuts method can effectively improve maternal attitudes. This is because the application of the Irene's Donuts method provides material that is more memorable and interesting so as to form a good understanding that can influence the mother's attitude towards the maintenance of her child's dental and oral health.

In the aspect of mother's actions in Maintaining Child's Dental Hygiene. Based on the results of the intergroup analysis between the intervention group and the control group, the average results of the mother's actions as respondents before the intervention showed that there was no significant difference between the treated group and the control group,

$p > 0.05$. However, immediately and 2 weeks after the intervention, the results showed that there was a significant difference in the actions in after test I and post-test II, this was statistically shown at $p < 0.05$. This shows that there is a trend towards positive practice changes after the application of the Irene's Donuts method. This is because Irene's Donuts uses a computer program that shows pictures and illustrations so that the mother feels interested in the material provided and the mother also considers the material beneficial for her child's dental health and by being given verbal explanations that make the counseling more interesting, memorable, and effective. not boring, so easy to remember and easy to apply. Based on the results of the analysis by analyzing the difference in differences (paired sample t-test) in the control group, it shows the value of the mother's actions from pre-test to post-test I, from post-test I to post-test II and from pre-test to post-test. Test II found that there was no statistically significant difference in the mean value of mother's knowledge ($p > 0.05$). This is because in the control group no intervention or treatment was carried out.

Meanwhile, the value of mother's actions in the intervention group from pre-test to post-test I, from post-test I to post-test II and from pre-test to post-test II, there was a statistically significant difference in the mean value of maternal actions ($p < 0.05$). These results indicate that family dental nursing care (home visit service) can improve the actions of children and their parents because the acceptance of the material presented is easy to remember and practiced directly by children and their parents so that it becomes a positive habit for their child's dental hygiene.

The Irene's Donuts program can train mothers to prevent caries in their children so that it can become a positive habit to maintain their children's dental and oral health. On the aspect of PHP-M Children, the results of the analysis were also known between the groups between the intervention group and the control group. There was no significant difference between the treatment group and the control group, $p > 0.05$. However, immediately and 2 weeks after the intervention, the results showed that there was a significant difference in children's dental and oral hygiene status after test I and post-test II, this was statistically shown statistically $p < 0.05$. These results indicate that there is a tendency after the implementation of the Irene's Donuts method, there is a change in the status of dental and oral hygiene towards good.

Based on the results of the analysis by analyzing the difference in differences in the control group, it shows the dental hygiene status of children from pre-test to post-test I, from post-test I to post-test II, and from pre-test to post-test. - test II there were no statistically significant differences in the mean dental hygiene status of children ($p > 0.05$). This is because in the control group no intervention or treatment was carried out. While the dental hygiene status of the children in the intervention group from pre-test to post-test I, from post-test I to post-test II and from pre-test to post-test II, there was a statistically significant difference in the mean dental hygiene status of the children. ($p < 0.05$). These results indicate that with family dental nursing care (home visit services), parents pay more attention to their child's dental hygiene in regular brushing and can show better results. The application of the Irene Donuts method in principle can make parents aware of risk factors for caries in children to provide an understanding of how to prevent caries and empower mothers to maintain children's dental health [22-24].

5. CONCLUSIONS

There are no differences in the mean value of knowledge, attitudes, and actions of mothers and children about the dental and oral hygiene status of children before the intervention in the treatment group, and the control group which was statistically significant. There is a difference in the average value of knowledge, attitudes, actions of mothers, and dental and oral hygiene status of children immediately after the intervention and 2 weeks after the intervention between the treatment group and the control group, which was statistically significant. There is a change in the average value of knowledge, attitudes, actions of mothers and dental and oral hygiene status of children after application of the Irene donut application in family dental nursing care in Gampong Ateuk Jawo, Banda Aceh (Indonesia) in the treatment group was statistically significant. There is no change in the average value of knowledge, attitudes, actions of mothers and children dental and oral hygiene status of children after done the application of the Irene donuts application in family dental nursing care in Gampong Ateuk Jawo, Banda Aceh (Indonesia) in the control group, which was statistically significant.

REFERENCES

- [1] Manton, D.J. (2018). Child dental caries—a global problem of inequality. *EClinicalMedicine*, 1: 3-4. <https://doi.org/10.1016/j.eclinm.2018.06.006>
- [2] Kidd, E. (2011). The implications of the new paradigm of dental caries. *Journal of Dentistry*, 39: S3-S8. <https://doi.org/10.1016/j.jdent.2011.11.004>
- [3] Jaime, R., Carvalho, T., Bonini, G., Imparato, J., Mendes, F. (2015). Oral health education program on dental caries incidence for school children. *Journal of Clinical Pediatric Dentistry*, 39(3): 277-283. <https://doi.org/10.17796/1053-4628-39.3.277>
- [4] Hayden, C., Bowler, J.O., Chambers, S., Freeman, R., Humphris, G., Richards, D., Cecil, J.E. (2013). Obesity and dental caries in children: a systematic review and meta-analysis. *Community Dentistry and Oral Epidemiology*, 41(4): 289-308. <https://doi.org/10.1111/cdoe.12014>
- [5] Bönecker, M., Cleaton-Jones, P. (2003). Trends in dental caries in Latin American and Caribbean 5-6-and 11-13-year-old children: a systematic review. *Community Dentistry and Oral Epidemiology*, 31(2): 152-157. <https://doi.org/10.1034/j.1600-0528.2003.00009.x>
- [6] Ivančić Jokić, N., Bakarčić, D., Janković, S., Malatestinić, G., Dabo, J., Majstorović, M., Vuksan, V. (2013). Dental caries experience in croatian schoolchildren in Primorsko-Goranska county: A pilot study. *Central European Journal of Public Health*, 21(1): 39-42. <https://doi.org/10.21101/cejph.a3752>
- [7] Pitts, N., Zero, D., Marsh, P., Ekstrand, K., Weintraub, J., Ramos-Gomez, F., Tagami, J., Twetman, S., Tsakos, G., Ismail, A. (2017). Dental caries *Nat Rev Dis Primers* 3: 17030.
- [8] Albert, D., Barracks, S.Z., Bruzelius, E., Ward, A. (2014). Impact of a web-based intervention on maternal caries transmission and prevention knowledge, and oral health attitudes. *Maternal and Child Health Journal*, 18: 1765-1771. <https://doi.org/10.1007/s10995-013-1421-8>
- [9] Sitorus, A. Bulan, R. (2020). Non-invasive moisture

- content measurement system based on the ESP8266 microcontroller. *Bulletin of Electrical Engineering and Informatics*, 9(3): 924-932. <https://doi.org/10.11591/eei.v9i3.2178>
- [10] Cregan-Reid, V. (2018). *Primate Change: How the World We Made Is Remaking Us*: Hachette UK.
- [11] Wyne, A.H. (2007). Oral health knowledge in parents of Saudi cerebral palsy children. *Neurosciences Journal*, 12(4): 306-311.
- [12] Naidu, R., Nunn, J., Forde, M. (2012). Oral healthcare of preschool children in Trinidad: a qualitative study of parents and caregivers. *BMC Oral Health*, 12: 1-14. <https://doi.org/10.1186/1472-6831-12-27>
- [13] Kasihani, N.N. Purnama, T. (2021). Determinants of parental behavior in maintaining deciduous teeth in early childhood: A cross sectional study. *European Journal of Molecular & Clinical Medicine*, 8(2): 1248-1255.
- [14] Sitorus, A., Muslih, M., Cebro, I.S., Bulan, R. (2021). Dataset of adulteration with water in coconut milk using FTIR spectroscopy. *Data in Brief*, 36: <https://doi.org/10.1016/j.dib.2021.107058>
- [15] Creager, J.A. (1968). *General Purpose Sampling in the Domain of Higher Education*. <https://eric.ed.gov/?id=ED029552>.
- [16] Kiyak, H.A. Reichmuth, M. (2005). Barriers to and enablers of older adults' use of dental services. *Journal of Dental Education*, 69(9): 975-986. <https://doi.org/10.1002/j.0022-0337.2005.69.9.tb03994.x>
- [17] Surya Kecana, I.G., Artawa, I., Gejir, I.N., Nuratni, N.K. (2020). A Survey on dental cartoon animation on oral hygiene improvement of children with special needs. *International Journal of Innovative Research in Science, Engineering and Technology*, 9(2): 13459-13464.
- [18] Lee, H., Lomazzi, M., Lee, A., Bedi, R. (2018). Global oral health in the framework of the Global Charter for the Public's Health. *Journal of Public Health Policy*, 39: 245-253. <https://doi.org/10.1057/s41271-018-0121-4>
- [19] Wiyatini, T. Fatmasari, D. (2021). Increasing teeth brushing skills for mentally retarded children with application of "educational media modification puzzle" 3D Gosgi. *European Journal of Molecular & Clinical Medicine*, 8(03): 2021.
- [20] Manzoli, F., Castelfranchi, Y., Gouthier, D., Cannata, I. (2006). Children's perceptions of science and scientists. A case study based on drawings and story telling. *Science and Technology*, 2(3): 1-10.
- [21] Amin, M.S. Harrison, R.L. (2009). Understanding parents' oral health behaviors for their young children. *Qualitative Health Research*, 19(1): 116-127. <https://doi.org/10.1177/1049732308327>
- [22] Binkley, C.J. Johnson, K.W. (2013). Application of the PRECEDE-PROCEED planning model in designing an oral health strategy. *Journal of Theory And Practice of Dental Public Health*, 1(3).
- [23] Naidu, R., Nunn, J., Irwin, J.D. (2015). The effect of motivational interviewing on oral healthcare knowledge, attitudes and behaviour of parents and caregivers of preschool children: an exploratory cluster randomised controlled study. *BMC Oral Health*, 15: 1-15. <https://doi.org/10.1186/s12903-015-0068-9>
- [24] Ismail, A.I., Tellez, M., Pitts, N.B., Ekstrand, K.R., Ricketts, D., Longbottom, C., Eggertsson, H., Deery, C., Fisher, J., Young, D.A. (2013). Caries management pathways preserve dental tissues and promote oral health. *Community Dentistry and Oral Epidemiology*, 41(1): e12-e40. <https://doi.org/10.1111/cdoe.12024>