

Knowledge Criteria for Dental Cavity Material Before, After, and Differences Using Flip Charts for Class V Students of Madrasah Ibtidaiyah Darussalam Ulujami Pesanggrahan District, South Jakarta

Pudentiana Rr RE^{1*}, Siti Nurbayani T.², Ita Yulita³, Ita Astit K.⁴, Eka Anggreni⁵, Lestin⁶

^{1,2,3,4,5,6}Health Polytechnic, Ministry of Health, Jakarta I, Indonesia

E-mail: roro_okechoi@yahoo.com

Abstract

Tooth cavity disease in Indonesia has a DMF-T index of 4.6 with respective values: Decay component 1.6; Missing component 2.9; and Filling component 0.08; which means tooth decay for the Indonesian population is 460 teeth per 100 people. To reduce the experience index of dental cavities, efforts are being made to increase knowledge (promotional) services so that awareness, motivation, and willingness to change attitudes and behavior in the habit of maintaining dental hygiene increases. After collecting complete data and then processing the statistical analysis, it is hoped that the results will increase the knowledge criteria regarding dental cavities before and after counseling using flip charts for class V students. Researchers used descriptive methods with a cross-sectional design. The data used is primary data using a questionnaire sheet instrument for each respondent, a student at Madrasah Ibtidaiyah Darussalam, Ulujami Village, Pesanggrahan District, South Jakarta. The sample in this study was class V students who were registered as students at Madrasah Ibtidaiyah Darussalam Ulujami, Ulujami Village, Pesanggrahan District, South Jakarta a total of 40 people were divided into 2 groups consisting of 20 people in 1 group or total sampling. The results of the study showed that class V students were given counseling about dental cavities using flip chart print media from initially having poor knowledge criteria (55%) to reaching good knowledge criteria (82.5%) and there was a difference after the intervention to prevent The occurrence of dental and oral diseases in children is therefore a team of dental health workers together with related parties so that services continue and are sustainable in various community groups, including promotive, preventive, curative and rehabilitative efforts and are a very meaningful contribution to the health of the Indonesian people.

Keywords: *Dental Cavity, Counselling, Madrasah Ibtidaiyah Darussalam Ulujami, Flip Chart.*



A. INTRODUCTION

According to Law of the Republic of Indonesia Number 17 of 2023, Article 4 states that everyone has the right to receive information and education about health in a balanced and responsible manner. According to Notoatmodjo, all health workers, both in terms of type and level, are Health Educators. Ages 10 to 12 years are also expected to be more *representative* (representative) of the population of students in grades V and VI as a whole at that level. Elementary School, besides classes V and VI, is an urgent elementary school level and it is more useful to be given knowledge about dental health before leaving elementary school (Alqarni et al., 2023). Efforts to increase

knowledge are through health education. Counseling with diverse objectives places a stronger focus on supporting marginalized groups among school children. The school setting serves as an extension of the family and plays a vital role in establishing healthy behaviors for students. Furthermore, considering that the school-age population, comprising children aged 6-12 years, constitutes 40%-50% of the overall community, prioritizing health education efforts for this demographic is of utmost importance. The 2013 RISKESDAS results show the Indonesian DMF-T Index of 4.6 with the respective values: DT=1.6; MT=2.9; FT=0.08; which means tooth decay for the Indonesian population is 460 teeth per 100 people (Stratford et al., 2020).

Efforts to increase knowledge are through health education. Health education in schools is integrated into the School Health Business (UKS) program (Kumanyika, 2019). Education can be delivered to children through lectures or direct demonstrations with models and efforts to maintain oral health should be carried out from an early age. There are many types of extension media, including teaching aids. Visual aids will be very helpful in providing education so that health messages can be conveyed more clearly and precisely, and thanks to the aid of visual aids, people can better understand health facts that are considered complicated, so that they can appreciate how valuable health is for life (Gagnom et al., 2020).

This research was conducted to obtain the results of knowledge criteria before and after counseling on dental cavity material and the difference using a *Flip Chart* for respondents, namely class V students of Madrasah Ibtidaiyah Darussalam, Ulujami Village, Pesanggrahan District. Previously, the target had signed a consent form as a respondent, and data collection was carried out using a questionnaire instrument containing 20 questions before and after (*post-test*) regarding the intervention carried out in the form of a counseling activity entitled dental cavities using a *Flip Chart* visual aid. This research uses an observational design. The observation approach is a study in which variables including effects are observed twice at different times and observed based on *pre-test* and *post-test data* (before and after) counseling about cavities in class V students of Madrasah Ibtidaiyah Darussalam and looking for the difference scores.

B. LITERATURE REVIEW

1. Knowledge

Knowledge arises from curiosity and is shaped by sensory processes, with a particular emphasis on the eyes and ears when interacting with specific objects. It plays a pivotal role in shaping one's behavior and fostering openness. Knowledge, in essence, is the product of a person's sensory interaction with an object through their five senses, which encompass sight, hearing, smell, taste, and touch. The acquisition of knowledge is significantly influenced by the level of attention and perception devoted to the object in question. It is worth noting that a substantial portion of an individual's knowledge is primarily acquired through the senses of hearing and sight (Ritonga, 2020).

Formal education factors exert a significant influence on knowledge and share a strong correlation with it. The expectation is that higher education will broaden one's

knowledge base. Nevertheless, individuals with limited formal education do not necessarily possess minimal knowledge. The expansion of knowledge isn't solely dependent on formal education; it can also be enriched through non-formal education. When it comes to understanding an object, knowledge encompasses both positive and negative aspects. These dual aspects contribute to shaping an individual's attitude. The greater the awareness of positive aspects and objects, the more likely it is that positive attitudes will be fostered towards specific objects (Al-Kurdi et al., 2020).

As per Notoatmodjo, an individual's understanding of an object can be categorized into varying intensities or degrees. In a broad sense, this classification comprises six distinct levels of knowledge, namely:

a. Know

Knowing is defined as the ability to retrieve or recollect previously stored memories after encountering a specific stimulus or reviewing previously studied materials. This level of knowing is considered the most basic. The verbs used to gauge whether individuals truly know what they have learned include the capacity to mention, describe, identify, state, and similar actions (Lang et al., 2019).

b. Comprehension

Comprehending an object extends beyond mere knowledge and simple recognition. It entails the ability to accurately interpret the object in question. Individuals who possess a deep understanding of objects and materials should be capable of providing explanations, offering examples, drawing informed conclusions, and predicting the behavior or outcomes associated with the studied object (Lake & Murphy, 2023).

c. Application

Application is characterized by the capability of an individual, who comprehends the relevant object, to utilize or apply the underlying principles to different situations or conditions. It can also be described as the practical implementation or utilization of laws, formulas, methods, principles, and program plans in various contexts (Kurilovas & Kubilinskiene, 2020).

d. Analysis

Analysis refers to an individual's proficiency in describing or dissecting a known object or problem, with a focus on identifying connections and relationships among its components. A clear sign that a person's knowledge has reached this level is their ability to discriminate, segregate, categorize, and create visual representations such as charts or diagrams to represent the knowledge related to the object (Dmytriyev et al., 2021).

e. Synthesis

Synthesis is the capacity of an individual to consolidate and establish a coherent connection among the various components of their existing knowledge. In simpler terms, it involves the ability to generate fresh formulations by building upon pre-existing formulations (Eriksson et al., 2020).

f. Evaluation

Evaluation encompasses the capacity to provide a rationale or evaluate a particular object. This assessment is guided by criteria or norms that are either self-established or conform to societal standards (Mumbardó-Adam et al., 2023)

2. Dental and Oral Health

Dental and oral health pertains to the overall condition of the oral cavity, encompassing aspects such as cleanliness, general well-being, and the presence of any disorders or abnormalities within the oral region. The mouth consists of upper and lower lips, gums, tongue, inner cheeks, and palate. The layers of the gums, cheeks, and palate are always wet and slimy, therefore the surfaces of these membranes are called mucous membranes, so there are mucous membranes of the gums, palate, and cheeks. The duties of the teeth are: 1) To speak; 2) To chew food, according to the shape of the teeth, incisors cut and cut food, canine teeth shred food, molars grind and grind food; 3) For beauty or goodness. Inside the mouth, some gums cover the necks of the teeth and jaw bones (Sedghi et al., 2021).

Enhancing dental health necessitates the implementation of health education, among other strategies. Firstly, it involves bringing about shifts in the behaviors of individuals, families, and communities to promote and sustain healthy practices and create a health-supportive environment. Active engagement in the pursuit of optimal health is crucial. Secondly, it entails cultivating healthy lifestyles in individuals, families, and communities, encompassing physical, mental, and social well-being, with the aim of reducing morbidity and mortality rates. Lastly, as outlined by the World Health Organization (WHO), the primary objective of health education is to instigate changes in the health-related behavior of individuals and/or communities (Ramkissoon, 2020).

The concept of health education can be articulated as an endeavor to inspire individuals, groups, or communities to adopt and practice healthy behaviors. In practical terms, health education involves activities aimed at offering and enhancing people's knowledge, attitudes, and practices in the context of maintaining and enhancing their health. Overall, oral health is significantly impacted by the level of cleanliness in the teeth and mouth (Rock et al., 2020).

Dental and oral hygiene or oral hygiene often has a different meaning for each person. However, oral hygiene is a condition where the teeth in the oral cavity are clean, free from plaque and other dirt on the surface of the teeth such as debris, tartar, and food remains and there is no bad smell in the mouth. The mouth is an ideal place for the development of bacteria. If it is not cleaned properly, food residue stuck with bacteria will remain attached to our teeth and will increase in number, which can produce acid. If not removed by brushing your teeth, the acid will destroy tooth enamel and eventually cause cavities (Mueller et al., 2022).

Prevents cavities or caries, gingivitis, and periodontitis and also prevents bad breath. By cleaning the teeth and mouth from food residue left between the teeth, good

dental and oral hygiene can be achieved. To prevent the occurrence of dental and oral diseases, it is necessary to maintain oral hygiene by adjusting diet, chemical action, and mechanical action (toothbrushing) in the form of cleaning the oral cavity and teeth from food residue, bacteria, and metabolic products (Rowińska et al., 2021).

3. Dental Cavity

Dental caries is a process of local destruction of calcified tissue which begins on the surface of the tooth through the process of decalcification of the tooth enamel layer which is followed by enzymatic lysis of organic structures so that a cavity (hole) is formed which, if allowed to remain, will penetrate the enamel and dentin and can affect the pulp structure. Dental caries is a process of tooth decay that starts from the enamel and continues to the dentin. This process occurs due to several factors (multiple factors) in the oral cavity that interact with one another. These factors include dental factors, microorganisms, substrate, and time (Meerbeek et al., 2020).

Dental caries can develop due to four primary factors: teeth, substrate, microorganisms, and time. Specific types of carbohydrate-rich foods, such as sucrose and glucose, can be fermented by particular bacteria, resulting in acid production that can lower plaque pH to below 5 within 3-5 minutes. Repeated reductions in pH levels over a certain period lead to demineralization of the tooth surface. The caries process commences when plaque accumulates on the tooth's surface. Plaque is comprised of a mixture of saliva components like mucin, remnants of oral tissue cells, leukocytes, lymphocytes, food debris, and bacteria. Initially, this plaque takes a liquid form but gradually transforms into a gel-like substance, providing a suitable environment for bacterial growth (Voidaru et al., 2020).

In addition to plaque, dental caries can also be attributed to sucrose from food remnants, which becomes a substrate for bacteria. Over time, these bacteria convert sucrose into lactic acid, leading to a reduction in the mouth's pH to a critical level (5.5). This drop in pH initiates enamel demineralization, which eventually progresses to form dental caries. The internal demineralization slowly advances toward the dentin through a focal point but has not yet resulted in cavity formation. Cavity formation occurs only when the dentin is involved in the process. However, in some cases, so much mineral loss occurs at the lesion's core that the surface becomes vulnerable to mechanical damage, leading to visible cavities (Chen et al., 2020). In the case of incipient dentin caries, only the fourth layer is observable, which is a transparent layer comprising sclerotic dentin. This layer might form a protective barrier against microorganisms and their enzymes. Additionally, the fifth layer, an opaque layer, contains fat within the tubules, which could be indicative of degeneration in the odontoblast branches. Bacterial penetration into the tooth structure only occurs after cavitation has transpired. In the most advanced carious processes, there are no layers three (demineralization layer, a narrow region where partial dentin is affected), four, or five (Boutsioukis & Arias-Moliz, 2022).

4. Flip Chart

The use of media helps create a good atmosphere in the teaching and learning process. One medium that can teach reading comprehension that supports a child's condition and abilities is a flip chart. Indriana Dina explains the flip chart as follows: A flip chart is a sheet of paper in the form of an album or calendar that is quite large as a flipbook, which is arranged in a sequence tied at the top (Rahmatullah & Ghufron, 2021). Sheets of paper can be used as a media board for teaching and learning and may be considered as a substitute for a blackboard or whiteboard if the teaching process is outside the classroom. If the sheets have been filled with teaching messages, then the sheets can be turned over, and then the sheets behind them which are still empty can be filled with the next teaching message (Ahmed & Opoku, 2022).

Flip charts can be an alternative learning media used in learning activities. In line with the thoughts above, Subana explains "flip charts are a medium consisting of several sheets whose tops are clamped so they can be easily flipped." Each sheet of paper is filled with writing or pictures regarding the points to be discussed." Apart from that, Susilana and Riyana also stated that a flip chart is a smaller sheet that resembles an album or calendar measuring 50x75 cm or a smaller size of 28x21 cm as a flipbook arranged in a binder at the top. Flip charts can be used as an alternative learning medium (Schnürer et al., 2020).

Based on the several definitions above regarding flip charts that have been put forward, it can be concluded that flip charts are media consisting of several pieces of paper whose size is determined according to needs, and the writing and images are also adjusted to the material provided; which has a hole on top and a hook so that it can be turned back and forth when used (Zhu et al., 2020).

C. METHOD

This research method was meticulously conducted by employing a quantitative approach, which allowed for a systematic analysis of the data. The population used in this research were all class V students of Madrasah Ibtidaiyah Darussalam, Ulujami Village, Pesanggrahan District, South Jakarta, while the sample in this research was class V students who were registered as students in the current year, there were 40 people divided into 2 groups, each. The group consists of 20 students. Researchers chose class V as respondents, totaling 40 people, which was the total sampling. Preparatory activities through various approaches to related parties. The researcher was interested in the target school of Madrasah Ibtidaiyah Darussalam Ulujami because previously there had been a good cooperative relationship and research in class V as a target entitled knowledge criteria before, after counseling on dental cavities and the difference using a flip chart. This research was conducted on respondents by collecting pre-test and post-test questionnaire data with a total of 20 questions for 40 people consisting of 23 (57.5%) men and 42.5% women (42.5%) people. Preparations for carrying out counseling activities on dental cavities material that has been prepared in advance include preparing lesson units using flip chart tools in class V. Data collection before counseling uses questionnaire sheets (pre-test) and then

respondents are given material services in the form of counseling and post activities test.

D. RESULT AND DISCUSSION

1. Criteria for Respondents' Knowledge Before Counseling

From the research results, it is known that the criteria for respondents' knowledge before being given counseling on dental cavities are as follows:

Table 1. Frequency Distribution of Dental Cavity Knowledge Criteria Among Respondents Before Receiving Counseling

No	The Number of Students Who Answered the Question (Correct)	Percentage	Knowledge Criteria
1	2 students	5%	Good
2	16 students	40%	Enough
3	22 students	55%	Poor
Total	40 Students	100%	-

Table 1 shows that of the 40 respondents, 2 people (5%) knew about dental cavities, namely the good criteria, while 16 people (40%) had Enough knowledge of the criteria and there were 22 people (55%) with the Poor criteria.

2. Criteria for Respondents' Knowledge After Counseling

From the research results, it is known that the criteria for respondents' knowledge after being given counseling on dental cavities are as follows:

Table 2. Frequency Distribution of Knowledge Criteria Among Respondents After Dental Cavity Counseling

No	The Number of Students Who Answered (Correct)	Percentage	Knowledge Criteria
1	33 Students	82.5%	Good
2	7 Students	17.5%	Enough
3	0 Students	0%	Poor
Total	40 Students	100%	

Table 2 shows that of the 40 respondents, 33 people (82.5%) knew about tooth cavities, namely the good criteria, while there were 7 people (17.5%) who knew about tooth cavities, which included the Enough criteria and there were no respondents who knowing includes the criteria of Poor.

3. Difference in Respondents' Knowledge Criteria Before and After Counseling

Based on the results of research on knowledge criteria before and after counseling on dental cavities as presented in the following table:

Table 3. Difference in Calculation of Criteria for Knowledge of Cavities Before and After Counseling

No	N 40	Percentage Before and after		Difference
1	Before Counseling	Knowledge Criteria		Good 77.5% Enough 22.5% Poor 0%
			(5%) Good	
			(40%) Enough	
√	(55%) Poor			
2	After Counseling	Knowledge Criteria		
		√	(82.5%) Good	
			(17.5%) Enough	
	(0%) Poor			

Table 3 shows that 2 people (5%) had good knowledge criteria before counseling, while 16 people (40%) had enough knowledge criteria and 22 people (55%) had poor knowledge criteria, and after counseling it showed that Of the 40 respondents, there were 33 (82.5%) knowledge about dental cavities, Good criteria and 7 people (17.5%) had enough knowledge about dental cavities and there were no respondents who knew the criteria Poor, so the difference was Respondents have Good Knowledge criteria, namely 77.5%, Respondents have Good Knowledge criteria. Respondents have Enough Knowledge criteria, namely 22.5%, and there are no more Respondents who have Poor Knowledge criteria.

The results of this research were to obtain the criteria for students' knowledge about dental cavities before, and after, and the difference between the two, which increased. At the data collection stage through a questionnaire containing 20 questions for each of the 40 students in class V before counseling about cavities, the results obtained were that 2 students had Good knowledge criteria 16 students had Fair knowledge criteria 22 students had Knowledge criteria: Less. After class V students were given counseling about dental cavities, the *post-test results showed* that 33 students had good knowledge criteria 7 students had sufficient knowledge and there were no more respondents who had poor knowledge.

In this research, the results showed that after the counseling was carried out the effect on the knowledge criteria of class V students at MI Darussalam Ulujami was better than before the counseling was carried out, namely using the lecture method with question and answer evaluation which achieved an increase in the respondents' knowledge criteria. The combination of lectures is the objective of this research where lectures are used to convey informative messages, and questions and answers provide an opportunity for respondents to express opinions so that feedback occurs from respondents. This is following Chasanah's opinion with research regarding the description of the lecture method and demonstration method of increasing knowledge of dental and oral hygiene of fourth-grade students at Lempuyangan I Elementary School, Yogyakarta, which stated that counseling affected knowledge about dental and oral health with good knowledge criteria before being given counseling. as many as 6 respondents (40%). After being given the counseling, it was discovered that the

majority of respondents had good knowledge of the criteria, namely 12 respondents (80%), apart from that, according to Permadi in 2012 in his research about the description of changes in knowledge about how to maintain dental and oral health in class III students at SDN 3 Rangkasbitung Timur before and after the counseling. shows that counseling can increase students' knowledge with good criteria knowledge before being given counseling as many as 7 respondents (12.7%) while after being given counseling the knowledge of students with good criteria 22 respondents (38.2%), This research supports research that It was carried out at MI Darusalam Ulujami that there was an increase in the knowledge of class V MI Darusalam students about cavities.

E. CONCLUSION

This research found that before providing knowledge education services regarding dental cavities using a flip chart, respondents in this study had insufficient knowledge criteria. After providing knowledge education services regarding dental cavities using a flip chart, the respondents in this study increased their knowledge criteria to a good range. The difference between the two is that the gap that existed before the respondents were given exposure to material about cavities in the form of counseling activities compared to after it proved successful thanks to the awareness, motivation, and willingness of each respondent to improve their attitudes and daily habits to maintain dental hygiene to prevent cavities and immediately Even if a cavity occurs, you will go to the nearest dental clinic to your house. The difference in knowledge criteria scores before and after is due to the intervention of researchers, including compiling Study Units, and providing wholehearted outreach activities services according to the proper mechanism and the results of the scores for each respondent totaling 40 people, there is no longer a gap in knowledge of dental cavity materials in that one class.

REFERENCES

1. Ahmed, V., & Opoku, A. (2022). Technology supported learning and pedagogy in times of crisis: the case of COVID-19 pandemic. *Education and information technologies*, 27(1), 365-405.
2. Al-Kurdi, O. F., El-Haddadeh, R., & Eldabi, T. (2020). The role of organisational climate in managing knowledge sharing among academics in higher education. *International Journal of Information Management*, 50, 217-227.
3. Alqarni, A. S., Pasay-an, E., Saguban, R., Cabansag, D., Gonzales, F., Alkubati, S., ... & Mostoles Jr, R. (2023). Relationship between the Health Literacy and Self-Medication Behavior of Primary Health Care Clientele in the Hail Region, Saudi Arabia: Implications for Public Health. *European Journal of Investigation in Health, Psychology and Education*, 13(6), 1043-1057.
4. Boutsioukis, C., & Arias-Moliz, M. T. (2022). Present status and future directions—irrigants and irrigation methods. *International Endodontic Journal*, 55, 588-612.

5. Chen, X., Daliri, E. B. M., Chelliah, R., & Oh, D. H. (2020). Isolation and identification of potentially pathogenic microorganisms associated with dental caries in human teeth biofilms. *Microorganisms*, 8(10), 1596.
6. Dmytriyev, S. D., Freeman, R. E., & Hörisch, J. (2021). The relationship between stakeholder theory and corporate social responsibility: Differences, similarities, and implications for social issues in management. *Journal of Management Studies*, 58(6), 1441-1470.
7. Eriksson, T., Bigi, A., & Bonera, M. (2020). Think with me, or think for me? On the future role of artificial intelligence in marketing strategy formulation. *The TQM Journal*, 32(4), 795-814.
8. Gagnon, K., Young, B., Bachman, T., Longbottom, T., Severin, R., & Walker, M. J. (2020). Doctor of physical therapy education in a hybrid learning environment: reimagining the possibilities and navigating a "new normal". *Physical Therapy*, 100(8), 1268-1277.
9. Kumanyika, S. K. (2019). A framework for increasing equity impact in obesity prevention. *American Journal of Public Health*, 109(10), 1350-1357.
10. Kurilovas, E., & Kubilinskiene, S. (2020). Lithuanian case study on evaluating suitability, acceptance and use of IT tools by students—An example of applying Technology Enhanced Learning Research methods in Higher Education. *Computers in Human Behavior*, 107, 106274.
11. Lake, B. M., & Murphy, G. L. (2023). Word meaning in minds and machines. *Psychological review*, 130(2), 401.
12. Lang, S., Gan, L. S., Alrazi, T., & Monchi, O. (2019). Theta band high definition transcranial alternating current stimulation, but not transcranial direct current stimulation, improves associative memory performance. *Scientific reports*, 9(1), 8562.
13. Meerbeek, B. V., Yoshihara, K., Van Landuyt, K., Yoshida, Y., & Peumans, M. (2020). From Buonocore's Pioneering Acid-Etch Technique to Self-Adhering Restoratives. A Status Perspective of Rapidly Advancing Dental Adhesive Technology. *Journal of Adhesive Dentistry*, 22(1).
14. Mueller, M., Schorle, S., Vach, K., Hartmann, A., Zeeck, A., & Schlueter, N. (2022). Relationship between dental experiences, oral hygiene education and self-reported oral hygiene behaviour. *PloS one*, 17(2), e0264306.
15. Mumbardó-Adam, C., Andrés-Gárriz, C., Sánchez-Pedroche, A., & Balboni, G. (2023). Differences in self and proxy assessments of self-determination in young people with intellectual disability: The role of personal and contextual variables. *Behavioral Sciences*, 13(2), 156.
16. Rahmatullah, A. S., & Ghufro, S. (2021). The Effectiveness Of'facebook'as Indonesian Language Learning Media For Elementary School Student: Distance Learning Solutions In The Era Of The Covid-19 Pandemic. *Multicultural education*, 7(04), 27-37.

17. Ramkissoon, H. (2020). COVID-19 Place confinement, pro-social, pro-environmental behaviors, and residents' wellbeing: A new conceptual framework. *Frontiers in Psychology, 11*, 2248.
18. Ritonga, F. (2020). The Relationship of Knowledge Level and Adolescents About Reproductive Health with Adolescent Reproductive Health Behavior. *Jurnal Aisyah: Jurnal Ilmu Kesehatan, 5*(2), 209-213.
19. Rock, C. L., Thomson, C., Gansler, T., Gapstur, S. M., McCullough, M. L., Patel, A. V., ... & Doyle, C. (2020). American Cancer Society guideline for diet and physical activity for cancer prevention. *CA: a cancer journal for clinicians, 70*(4), 245-271.
20. Rowińska, I., Szyperska-Ślaska, A., Zariczny, P., Paślawski, R., Kramkowski, K., & Kowalczyk, P. (2021). The influence of diet on oxidative stress and inflammation induced by bacterial biofilms in the human oral cavity. *Materials, 14*(6), 1444.
21. Schnürer, R., Dind, C., Schalcher, S., Tschudi, P., & Hurni, L. (2020). Augmenting printed school atlases with thematic 3D maps. *Multimodal Technologies and Interaction, 4*(2), 23.
22. Sedghi, L., DiMassa, V., Harrington, A., Lynch, S. V., & Kapila, Y. L. (2021). The oral microbiome: Role of key organisms and complex networks in oral health and disease. *Periodontology 2000, 87*(1), 107-131.
23. Stratford, B., Cook, E., Hanneke, R., Katz, E., Seok, D., Steed, H., ... & Temkin, D. (2020). A scoping review of school-based efforts to support students who have experienced trauma. *School Mental Health, 12*, 442-477.
24. Voidarou, C., Antoniadou, M., Rozos, G., Tzora, A., Skoufos, I., Varzakas, T., ... & Bezirtzoglou, E. (2020). Fermentative foods: Microbiology, biochemistry, potential human health benefits and public health issues. *Foods, 10*(1), 69.
25. Zhu, S., Sun, G., Jiang, Q., Zha, M., & Liang, R. (2020). A survey on automatic infographics and visualization recommendations. *Visual Informatics, 4*(3), 24-40.