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Knowledge and perception of dental profession students about the selection of mouthwash for recurrent aphthous stomatitis (RAS) therapy

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ABSTRACT

Recurrent aphthous stomatitis (RAS) is a recurring ulcer on the oral mucosa with no known cause and without association with systemic diseases. Dental profession students are expected to have adequate knowledge and positive perceptions regarding the use of mouthwash for RAS therapy. This study aimed to describe the levels of knowledge and perception of dental students about the selection and use of mouthwash for managing RAS. The study involved 90 students from the Dental Profession Study Programme at the Faculty of Dental Medicine, Universitas Airlangga, Surabaya. Data were collected through an online questionnaire comprising 18 questions, divided into two categories: (1) knowledge of mouthwash brands, active ingredients, usage duration, and timing, and (2) perceptions regarding the importance, safety, and effectiveness of mouthwash for RAS. The responses were tabulated and presented in percentages. The results revealed that 95.56% of respondents demonstrated good knowledge of mouthwash for RAS therapy. Perceptions of the importance, safety, and effectiveness of mouthwash were 87.78%, 98.89%, and 94.44%, respectively, with an overall positive perception rate of 92.22%. In conclusion, dental profession students at Universitas Airlangga possess a high level of knowledge and positive perceptions about the use of mouthwash for RAS therapy.

INTRODUCTION

Recurrent aphthous stomatitis (RAS) is an ulcer that appears on the oral mucosa, without a known cause, that is persistent or recurring periodically without systemic disease.[1–3] The prevalence of RAS reaches 25% of the total population of the world with a recurrence rate of 50% within three months, and it generally occurs in women.[4] The triggers for recurrency are multifactorial and can vary between individuals. These can include nutritional deficiencies, local trauma, stress, hormonal influences, allergies and genetic predispositions.[5]

The healing process for RAS is a complex process that includes phases of inflammation, granulation and cell regeneration.[6] Treatment of RAS is generally focused on relieving pain symptoms and preventing secondary infection. [5,6] Therapy in cases of RAS can take the form of systemic therapy, such as prednisone, colchicine, pentoxifylline and azathioprine given in cases with high recurrence rates.[7] Topical therapy in the form of mouthwash can be applied to the lesion to prevent infection by bacteria and viruses, both of which can appear as predisposing factors in RAS patients.[8,9] Anti-inflammatory mouthwash can contain active ingredients, such as hyaluronic acid or *Aloe barbadensis extract*, causing the properties of the mouthwash to accelerate the healing process.

Mouthwash is a solution created to freshen breath, and its ingredients also clean the oral cavity from plaque and organisms that can cause gingival infections.[10] In addition, mouthwash can be used as the main treatment for RAS.[9] In Indonesia, different types of mouthwash are sold in the market with various ingredients and can be purchased at an affordable price without a prescription from a doctor. Based on its active ingredients, mouthwash can be divided into antiseptic, analgesic and anti-inflammatory mouthwash.[11] However, it is evident that most

people do not fully understand the main purpose of each type, so they may not experience the optimal benefits of their purchase.

Knowledge comes from understanding.[12] Perception is a cognitive ability in humans that is formed from the long-term evolutionary influence of the external environment, which is measurable in its structure and capabilities.[13] Perception itself is the viewpoint of each individual, making it a strong driving force for action, where understanding and past experiences allow a person to have different insights into various things.

The general public's knowledge and perception of mouthwash as RAS therapy is still low compared with its use as a plaque remover or to treat other oral diseases, such as halitosis, gingivitis and periodontitis.[14] Most people still have a limited understanding of how mouthwash can be used, which may be caused by various factors. In addition, dentistry students have a knowledge gap; not all students have the correct knowledge or perceptions about mouthwash. However, dentistry students, especially those in the dental profession, should be more aware of the importance of maintaining good dental and oral health than the public.[15] In addition, dental profession students play an important role in the promotion of dental and oral health, so they need to have adequate knowledge regarding this matter. This study aims to analyse the knowledge and perceptions of mouthwash as RAS therapy for students of the dental profession in the Faculty of Dental Medicine at Airlangga University, Surabaya.

METHOD

Study design

A descriptive study with qualitative research was carried out using an online questionnaire distributed to respondents that assessed their knowledge and perceptions of mouthwash as RAS therapy.

Study participants

Ethics approval was obtained from the Ethical Clearance of Health Experiment Committee from the Faculty of Dental Medicine at Universitas Airlangga, Surabaya, with the registered number 338/HRECC.FODM/VII/2020. Of the obtained respondents, 90 were students of the first, second- and third-year classes of the Dental Profession Study Programme, Faculty of Dental Medicine, who had entered the clinical stages of the Oral Surgery Department, Periodontics Department or Oral Medicine Department.

Questionnaire format

This research was conducted online in November 2020 by means of a self-reported questionnaire using Google form media, and it was distributed by contacting the respondents directly. The questionnaire consisted of 18 questions, which were divided into two main parts: knowledge and perception of mouthwash. The questionnaire regarding the knowledge of mouthwash had a total of 14 questions with references from research journals that had been tested for validity and reliability.The assessment was given with a score of 0 (zero) for wrong answers and 1 (one) for correct answers. Respondents were stated to have good levels of knowledge about the use of mouthwash if they received a score in the range of 8–14, and their levels were poor if their score was in the range 0–7. The perception portion of the questionnaire had four questions with references from research journals.[14,16,17] The assessment was given with a score of 0 (zero) for wrong answers and 1 (one) for correct answers. Respondents were stated to have good levels of perception if they received a score in the range of 3–4, and poor levels if they scored in the range of 0–2.

Statistical analysis

Data analysis to classify the levels of student knowledge and perception regarding mouthwash for RAS therapy was carried out with tabulating using Microsoft Excel Professional Plus 2019, followed by a description and interpretation, from which a conclusion will be drawn, based on this analysis.

RESULTS AND DISCUSSION

Table 1. Frequency distribution of demographic data on dental profession student respondents in batch first year, second year, and third year.

Characteristics	N (%)
Gender	
Male	13 (14.44%)
Female	77 (85.56%)
Age	

20 years old	1 (1.11%)
21 years old	5 (5.56%)
22 years old	32 (35.56%)
23 years old	41 (45.56%)
24 years old	7 (7.78%)
25 years old	3 (3.33%)
26 years old	1 (1.11%)
Batch	
Third year	32 (35.56%)
Second year	54 (60.00%)
First year	4 (4.44%)
Total	90 (100.00%)

N = number of participants

Respondents in this study were students of the first, second- and third-year Dental Profession Programme classes, who had conducted patient care with guidance at Rumah Sakit Gigi dan Mulut Universitas Airlangga, so they knew about RAS therapy and mouthwash. Based on Table 1, most of the respondents obtained were female (85.56%), while 14.4% were male. From the age distribution, it was found that the dominant ages were 23 (45.56%) and 22 years old (35.56%), followed by 24 (7.78%), 21 (5.56%) and 25 years old (3.33%), and the rest were either 26 (1.11%) or 20 years old (1.11%). From these respondents, the batches obtained were from 2017 (4.44%), 2018 (60%) and 2019 (35.56%).

Knowledge and experience of dental profession students of oral ulcers

Table 2. Knowledge and experience of oral ulcers

Question	Responses	N(%)
Experience of experiencing oral ulcers	Yes	89 (98.89%)
	No	1 (1.11%)
Frequency of oral ulcers within 1 year	1x	33 (36.67%)
	2-4x	44 (48.89%)
	5-8x	12 (13.33%)
	>8x	1 (1.11%)
Experience of experiencing persistent oral ulcers	Yes	4 (4.44%)
	No	86 (95.56%)
Parents or siblings experience on experiencing persistent oral ulcers	Yes	27 (30.00%)
	No	63 (70.00%)
Oral ulcers causes	Scratched in brushing the teeth	29 (32.22%)
	Bitten	64 (71.11%)
	Being exposed to chemicals	0 (0.00%)
	Scratched by orthodontic appliance (if using)	25 (27.78%)
	Menstruation	13 (14.44%)
	Smoking	0 (0.00%)
	Stress	22 (24.44%)
	Lack of sleep	6 (6.67%)
	Less fruit and vegetable intake	16 (17.78%)
	Less water intake	9 (10.00%)
Experience on fever symptoms before oral ulcers	Yes	1 (1.11%)
	No	89 (98.89%)
Experience the symptoms of oral ulcers followed by skin sores	Yes	1 (1.11%)

	No	89 (98.89%)
Experience of increased frequency of oral ulcers as a student	Yes	29 (32.22%)
	No	61 (67.78%)
Experience going to the dentist for oral ulcer therapy	Yes	0 (0.00%)
	No	90 (100.00%)
Experience treating oral ulcers on their own	Yes	26 (28.89%)
	No	64 (71.11%)
Experience using mouthwash to treat oral ulcers	Yes	43 (47.78%)
	No	47 (52.22%)

N = number of participants

The students' knowledge of and experience with oral ulcers is described in Table 2. Most of the respondents had experienced oral ulcers (98.89%), 1.11% never experienced them, 48.89% experienced 3–4 occurrences of oral ulcers and 36.67% had the experience repeated only once. Those who had a non-persistent oral ulcer location totalled 95.56%, and 70% of them had a parent or sibling who had never experienced a persistent oral ulcer. Most of the oral ulcers were caused by biting (71.11%) or scratching while brushing (32.22%).

Another characteristic that most respondents did not suffer from when experiencing an oral ulcer is that they rarely caused fever (98.89%) or skin sores (98.89%). In addition, after studying to become dental students, only a small proportion experienced an increase in the occurrences of oral ulcers (32.22%).

In treating oral ulcers, none of the respondents went to a dentist (100%), some respondents treated it themselves (28.89%) and some respondents used mouthwash for treatment (47.78%).

Knowledge of dental profession students of mouthwash

Table 3. Description of knowledge about mouthwash brands

Question	Response	N (%)
Mouthwash with the brand Aloclair	Antiseptic	6 (6.66%)
	Analgesic	35 (38.89%)
	Anti-inflammation	49 (54.44%)
Mouthwash with the brand oral-b	Antiseptic	87 (96.67%)
	Analgesic	0 (0.00%)
	Anti-inflammation	3 (3.33 %)
Mouthwash with the brand listerine	Antiseptic	90 (100%)
	Analgesic	0 (0.00%)
	Anti-inflammation	0 (0.00%)
Mouthwash with the brand minosep	Antiseptic	56 (62.22%)
	Analgesic	11 (12.22%)
	Anti-inflammation	23 (25.56%)
Mouthwash with the brand colgate	Antiseptic	83 (92.22%)
	Analgesic	4 (4.44%)
	Anti-inflammation	3 (3.33%)

N = number of participants

The knowledge of the dental profession students regarding mouthwash brands is described as follows, based on Table 3. Examples of mouthwash brands presented in this study were Aloclair, Oral-B, Listerine, Minosep

and Colgate. Of the 90 students from the Dental Profession Study Programme that were respondents in this study, the majority described Aloclair as an anti-inflammatory mouthwash (54.44%), Oral-B as an antiseptic mouthwash (96.67%) and Listerine as an antiseptic mouthwash (100%). Minosep was described as an antiseptic mouthwash (62.22%) and Colgate was described as an antiseptic mouthwash (92.22%).

Table 4. Overview of knowledge regarding the active ingredients of mouthwash

Question	Response	N(%)
Reading the main ingredients of mouthwash	Yes	72 (80.00%)
	No	18 (20.00%)
Povidone iodine properties as a mouthwash	Antiseptic	85 (94.44%)
	Analgesic	2 (2.22%)
	Anti-inflammation	3 (3.33%)
Hyaluronic acid properties as a mouthwash	Antiseptic	15 (16.67%)
	Analgesic	17 (18.89%)
	Anti-inflammation	58 (64.44%)
Aloe vera extract properties as a mouthwash	Antiseptic	7 (7.78%)
	Analgesic	17 (18.89%)
	Anti-inflammation	66 (73.33%)
Chlorhexidine gluconate properties as a mouthwash	Antiseptic	72 (80.00%)
	Analgesic	5 (5.55%)
	Anti-inflammation	13 (14.44%)
Benzydamine hydrochloride properties as a mouthwash	Antiseptic	37 (41.11%)
	Analgesic	32 (35.56%)
	Anti-inflammation	21 (23.33%)
Chlorine dioxide properties as a mouthwash	Antiseptic	46 (51.11%)
	Analgesic	16 (17.78%)
	Anti-inflammation	25 (27.78%)

N = number of participants

The description of the knowledge of dental profession students regarding the active contents of mouthwash can be described as follows, based on Table 4. The results showed that 80% of the dental profession students would learn the contents of mouthwash by reading the ingredients first before buying, while 20% of the respondents would not read them before buying.

The active contents in mouthwash have different properties. The majority of dental profession students responded that the povidone-iodine content has antiseptic properties (94.44%), the hyaluronic acid content has anti-inflammatory properties (64.44%), the content of aloe vera extract has anti-inflammatory properties (73.33%), the content of chlorhexidine gluconate has antiseptic properties (80.00%), the content of benzydamine HCl has antiseptic properties (41.11%) and the chlorine dioxide content has antiseptic properties (51.11%).

Table 5. Overview of knowledge regarding the duration and time of use of mouthwash

Question	Response	N(%)
Duration of gargling using mouthwash as RAS therapy	<30 seconds	9 (10.00%)
	30-60 seconds	81 (90.00%)

The right time to use mouthwash as RAS therapy	After brushing teeth	54 (60.00%)
	After eating	36 (40.00%)

N = number of participants

For the duration of using mouthwash, as shown in Table 5, most of the dental profession students responded that it should take about 30–60 seconds (90%) to rinse with mouthwash if using it as RAS therapy, while the rest stated that it can be rinsed for less than 30 seconds (10%).

Table 6. The level of knowledge and perceptual of mouthwash on batch first year, second year, and third year, Dental Profession Student, Faculty of Dentistry, Universitas Airlangga

Batch	Level of knowledge		Level of perceptual	
	Good (%)	Good (%)	Bad (%)	Bad (%)
First year	3 (75.00%)	4 (100%)	0 (0%)	1 (25.00%)
Second year	51 (94.44%)	49 (90.74%)	5 (9.26%)	3 (5.56%)
Third year	32 (100%)	30 (93.75%)	2 (6.25%)	0 (0.00%)
Total	86 (95.56%)	83 (92.22%)	7 (7.78%)	4 (4.44%)

The results shown in Table 6 indicate that most dental profession students believe that the best time to use mouthwash as RAS therapy is after brushing (60%), while 40% think that the best time is after eating.

Table 7. Perceptual overview of mouthwash

Question	Response	
	Yes	No
	N (%)	N (%)
The importance of using mouthwash in RAS therapy	79 (87.78%)	11 (12.22%)
Safety of using mouthwash in RAS therapy	89 (98.89%)	1 (1.11%)
Effectiveness of mouthwash in reducing pain in RAS	85 (94.44%)	5 (5.55%)
Effectiveness of mouthwash in healing RAS	77 (85.55%)	13 (14.44 %)

N = number of participants

The level of knowledge in this study is considered good if the respondent, namely the dental profession students from the first, second and third year classes, receives a total score in the range of 8–14, and poor if the respondent scores in the range of 0–7. Most of these respondents were shown to have good levels of knowledge about mouthwash (95.56%), but some of them had poor levels of knowledge (4.44%), as shown in Table 7. Most of the respondents from the 2017 batch of dental profession students were shown to have good levels of knowledge about mouthwash (75%), while the rest had poor levels (25%). Most of the respondents from the 2018 batch of dental profession students indicated having good levels of knowledge about mouthwash (94.44%), while the rest were shown to have poor knowledge (5.56%). All respondents from the 2019 batch of dental profession students were proven to have good levels of knowledge about mouthwash (100%).

Perception of dental profession students of mouthwash

The depiction of the perceptions of the dental profession students regarding mouthwash is described as follows, based on Table 7. Mouthwash is an item with its use aimed at maintaining the health of the oral cavity. Of the 90 students of the dental profession programme that were respondents to this study, most of them said that they consider mouthwash to be important in treating RAS (87.78%), and a small proportion of them indicated that they do not believe mouthwash is important for this treatment (12.22%). As dental profession students, most of them were shown to consider mouthwash safe to use for treating RAS (98.89%), whereas only one person indicated that they do not believe mouthwash is safe for this use (1.11%).

Most respondents indicated that mouthwash could help reduce pain due to RAS (94.44%), whereas a small proportion of them stated that mouthwash cannot be used to reduce pain from RAS (5.55%). Most of them stated that they consider mouthwash as a potential, effective cure for RAS (85.55%), whereas only a small proportion of them indicated that mouthwash cannot cure RAS (14.44%).

The level of perception in this study is considered good if the respondent, namely, the dental profession students from the first, second and third year classes, receives a total score in the range of 3–4, and poor if the respondent scores in the range of 0–2. Most of these respondents were shown to have good levels of perception about mouthwash (92.22%), and a small portion had poor levels of perception (7.78%), as shown in Table 6. All respondents from the 2017 batch of dental profession students had good levels of perception about mouthwash (100%). Most of the respondents from the 2018 batch of dental profession students had good levels of perception about mouthwash (90.74%), while a small amount had poor levels of perception (9.26%). Most of the respondents from the 2019 class of dental profession students had good levels of perception about mouthwash (93.75%), while the rest had poor levels of perception (6.25%)

DISCUSSION

Dental profession students are trained to treat oral tissue. One of the common diseases of the oral cavity is RAS. The healing process for RAS is a complex process that includes inflammation, granulation and cell regeneration.[6] Treatment of RAS itself is generally focused on relieving pain symptoms and on preventing secondary infection using drugs that have antiseptic, analgesic and anti-inflammatory properties.[5]

Therapy in cases of RAS can be in the form of topical therapy, which can be given in cases with low recurrence rates, or systemic therapy, which can be given in cases with high recurrence rates.[4] Generally, topical therapies to treat RAS include mouthwash or topical preparations. Mouthwash is one of the easiest topical therapies to obtain because it can be purchased in the market at an affordable price without a prescription from a doctor and it comes in many varieties.[18] Based on the active ingredients it contains, mouthwash can be divided into antiseptic, analgesic and anti-inflammatory mouthwash.[11]

Antiseptic mouthwash usually contains active components that have antibacterial properties, such as chlorhexidine gluconate, povidone-iodine or chlorine dioxide, and these properties can help inhibit bacteria that are predisposed to RAS.[9,19–22] Analgesic types of mouthwash may contain active ingredients, such as benzydamine HCL, and the properties of this mouthwash can help relieve pain in the oral cavity caused by RAS.[23,24] Anti-inflammatory mouthwash contains active ingredients, such as hyaluronic acid or *Aloe barbadensis* extract, and these properties can accelerate the healing of RAS.[5,25] The use of mouthwash is effective as the main therapy for RAS if it is used according to the recommended dosage and time.[14] The use of mouthwash as RAS therapy is known to reduce the duration and recurrence of RAS and prevent secondary infection by bacteria and fungi.[26,27] The use of mouthwash as RAS therapy is known to help reduce the duration and recurrence of RAS, as well as prevent secondary infection by bacteria and fungi.[26,27] Recent research on the effectiveness of mouthwash against RAS by Al-Johani in 2019 shows that mouthwash containing 0.2% hyaluronic acid used twice within 14 days can help accelerate the healing of RAS in the majority of patients (75.8%).[28]

Dental profession students play an important role in the promotion of oral health, so they need to have good knowledge and perception regarding this matter, especially about mouthwash. Thus, this research was conducted to determine the level of knowledge that dental profession students have regarding mouthwash selection, including information about its active ingredients, the duration of using it and the best time of day to use it for RAS therapy, as well as to assess the perceptions students have. Dentistry profession students from the first, second- and third-year classes of the Faculty of Dental Medicine at Universitas Airlangga were asked questions regarding the use of mouthwash, such as its importance, its safety and its effectiveness in RAS therapy.

Each individual's knowledge is affected by various factors, such as information, education and experience.[29–31] Sources of information can affect a person's knowledge, where information obtained from formal and non-formal education can have an immediate effect on producing change or increasing knowledge.[32] Knowledge itself also has a close relationship with education, where the higher the education a person has, the broader their knowledge will be. However, this does not mean that someone with low education cannot have extensive knowledge.[33] In addition, an individual's experiences can also affect one's knowledge, both formally and informally.[34] An individual's knowledge of an object also contains positive and negative aspects, which ultimately determine a person's attitude toward certain objects, including the perceptions of the individuals themselves.[33]

The results of this study contradict research by Mitha et al. in 2016 in Malaysia, which showed that the levels of knowledge and perception of the general public in Malaysia regarding the use of mouthwash were low.[31] Most likely, this is due to the inclusion criteria of respondents in the study, who were part of the general public and had not received a dental science education, so their knowledge and experience about the oral cavity, especially in RAS therapy, was inadequate compared with dental profession students.

The results of this study also contradict the research conducted by Benjamin in 2016 in Kenya and research conducted by Niveda and Jaiganesh in 2019 in India, which both showed that dental students had low levels of knowledge and perception about mouthwash in general.[9,14] Most likely, this was due to a gap of knowledge among the students.[15] In addition, this may have been caused by the inclusion criteria of respondents in the study who were dentistry students from the first to fourth years in Benjamin's study, and dentistry students from the second to fifth years in Niveda and Jaiganesh's study. These criteria could have meant that the respondents' knowledge and experience with RAS therapy, especially regarding mouthwash, was lower than that of the dental profession students in this study.

Overall, it can be concluded that the dental profession students in the Faculty of Dental Medicine at Universitas Airlangga have good levels of knowledge and perception, because most respondents in this study received scores in the range of 8–14 (95.56%), and for their levels of perception about mouthwash as RAS therapy, most of them received scores in the range of 3–4 (92.22%). In carrying out their future professions as dentists, their main task is to promote dental and oral health. With good knowledge and perceptions, it is hoped that the dental profession students of the Faculty of Dental Medicine at Universitas Airlangga will make the right choices when treating RAS patients, including in their selection of mouthwash, which is available in a variety of types and is easy to purchase without a prescription, so that RAS healing occurs optimally. It is also hoped that these students provide education on mouthwash to the public.

This study focused on mouthwash, which is only one topical treatment for RAS. RAS therapy can be topical, with various dosage forms, as well as systemic. Topical therapy can be the first line in the treatment of RAS, whereas systemic therapy can be given if the recurrence rate of RAS is high. In its application, systemic therapy still requires topical therapy, as it can be used to support RAS therapy and promote optimal healing.

CONCLUSION

Based on data analysis and interpretation in this study, the majority of respondents had good levels of knowledge of mouthwash (95.56%) and good levels of perception of mouthwash (92.22%). Thus, it can be concluded that the dental profession students of the Faculty of Dental Medicine at Universitas Airlangga have good levels of knowledge and perception about mouthwash in RAS therapy.

REFERENCES

1. Chiang CP, Yu-Fong Chang J, Wang YP, Wu YH, Wu YC, Sun A. Recurrent aphthous stomatitis – Etiology, serum autoantibodies, anemia, hematinic deficiencies, and management. Journal of the Formosan Medical Association. 2019;118(9):1279–89.
2. Ślebioda Z, Dorocka-Bobkowska B. Systemic and environmental risk factors for recurrent aphthous stomatitis in a Polish cohort of patients. Postepy Dermatologii i Alergologii. 2019;36(2):196–2011.
3. Nagoro AAB, Cecilia PH, Anggrarista KAN, Surboyo MDC. THE EFFICIENCY OF ER , CR : YSGG LASER AND HYALURONIC ACID GEL FOR THE EFFICIENCY OF ER , CR : YSGG LASER AND HYALURONIC ACID GEL FOR RECURRENT APHTHOUS ULCER TREATMENT. Biochemical Cell Archive. 2020;20(January):3161–5.
4. Tarakji B, Gazal G, Al-Maweri SA, Azzeghaiby SN, Alaizari N, Ali Al-Maweri S, et al. Guideline for the diagnosis and treatment of recurrent aphthous stomatitis for dental practitioners. Journal of International Oral Health [Internet]. 2015;7(5):74–80. Available from: http://www.ncbi.nlm.nih.gov/pubmed/26028911%0Ahttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC4441245
5. Dalessandri D, Zotti F, Laffranchi L, Migliorati M, Isola G, Bonetti S, et al. Treatment of recurrent aphthous stomatitis (RAS; Aphthae; canker sores) with a barrier forming mouth rinse or topical gel formulation containing hyaluronic acid: A retrospective clinical study. BMC Oral Health. 2019;19(1):1–10.
6. Sunarjo L, Hendari R, Rimbyastuti H. Manfaat Xanthone Terhadap Kesembuhan Ulkus Rongga Mulut Dilihat Dari Jumlah Sel Pmn Dan Fibroblast. ODONTO : Dental Journal. 2016;2(1):14.

7. Abbasi F, Raoof M, Khatami R, Shadman N, Borjian-Boroojeni F, Nazari F. Effectiveness of Amlexanox and Adcortyl for the treatment of recurrent aphthous ulcers. Journal of Clinical and Experimental Dentistry. 2016;18(4):368–72.
8. Massimo M. A comparative, randomized, controlled study on clinical efficacy and dental staining reduction of a mouthwash containing Chlorhexidine 0.20% and Anti Discoloration System (ADS). Annali di Stomatologia. 2015;(2):35–42.
9. Benjamin S. Knowledge, Attitude and Use of Mouthwash among Dental and Medical Students of the University of Nairobi. International Journal of Dentistry and Oral Health. 2016;2(5).
10. Parashar A. Mouthwashes and Their Use in Different Oral Conditions. Scholars Journal of Dental Sciences J Dent Sci. 2015;2(2B):186–91.
11. Raja M, Saha S, Reddy VK, Mohd S, Kumari M. Mouthwashes-An Overview of Current Knowledge. International Journal of Oral Health Research & Review. 2017;1(2).
12. Netriwati N. Penerapan Taksonomi Bloom Revisi untuk Meningkatkan Kemampuan Pemahaman Konsep Matematis. Desimal: Jurnal Matematika. 2018;1(3):347–52.
13. Démuth A. Perception Theories. Applications of Case Study Research. 2012. 1–19 p.
14. Niveda R, Jaiganesh R. Knowledge and attitude toward mouthwashes and their uses among dental undergraduate and postgraduate students. Drug Invention Today. 2019;12(6).
15. Al-Jawfi K, Alhaj A. Knowledge, Attitudes and Practices Related to Oral Health of Dental, Medical and Pharmacy Students at the University of Science and Technology in Yemen. International Journal of Dentistry and Oral Health. 2018;4(4).
16. Macfarlane T, Kawecki M, Cunningham C, Bovaird I, Morgan R, Rhodes K, et al. Mouthwash Use in General Population: Results from Adult Dental Health Survey in Grampian, Scotland. Journal of Oral and Maxillofacial Research. 2010;1(3):1–9.
17. Gandini S, Negri E, Boffetta P, la Vecchia C, Boyle P. Mouthwash and oral cancer risk - Quantitative meta-analysis of epidemiologic studies. Annals of Agricultural and Environmental Medicine. 2012;19(2).
18. Barral D, Campos J, Henriques I, Bastos A, Miranda D, Ten ER, et al. Mouthrinses: active ingredients, pharmacological properties and indications. Rev Gaucha Odontol. 2012;60(3):349–57.
19. Prasad KARV, John S, Deepika V, Dwijendra KS, Reddy BR, Chincholi S. Anti-Plaque Efficacy of Herbal and 0.2% Chlorhexidine Gluconate Mouthwash: A Comparative Study. Journal of international oral health : JIOH. 2015;7(8):98–102.
20. Teixeira D. The topical effect of chlorhexidine and povidone-iodine in the repair of oral wounds . A review. Baltic Dental and Maxillofacial Journal. 2019;21(2):35–41.
21. Ma JW, Huang BS, Hsu CW, Peng CW, Cheng ML, Kao JY, et al. Efficacy and safety evaluation of a chlorine dioxide solution. International Journal of Environmental Research and Public Health. 2017;14(3).
22. Teixeira S, Antonia M, Figueiredo Z de, Cherubini K, Claudia M, Garcia R, et al. Topical chlorhexidine, povidone-iodine and erythromycin in the repair of traumatic ulcers on the rat tongue: Clinical, histological and microbiological evaluation. Archives of Oral Biology. 2018;87(January):218–25.
23. Scully C, Flint SR, Bagan J V., Porter SR, Moos KF. Oral and maxillofacial diseases. Oral and Maxillofacial Diseases. 2010. 1–463 p.
24. Ghom AG, Ghom SA. Textbook of ORAL MEDICINE. Third. Ghom AG, editor. New Delhi, India: Jaypee Brothers Medical Publishers (P) Ltd; 2014. 531 p.
25. Vangipuram S, Jha A, Bhashyam M. Comparative efficacy of aloe vera mouthwash and chlorhexidine on periodontal health: A randomized controlled trial. Journal of Clinical and Experimental Dentistry. 2016;18(4):442–7.
26. Edgar NR, Saleh D, Miller RA. Recurrent aphthous stomatitis: A review. Journal of Clinical and Aesthetic Dermatology. 2017;10(3):26–36.
27. Sabbagh AH, Felemban MF. Therapeutic Management of Recurrent Aphthous Stomatitis: A Review of the Growing Knowledge. Annals of International medical and Dental Research. 2016;2(6).
28. Al-Johani K. Topical management of recurrent aphthous stomatitis. Egyptian Dental Journal. 2019;65:3517–28.
29. Kolokythas A. Long-Term Surgical Complications in the Oral Cancer Patient: A Comprehensive Review. Part I. Journal of Oral and Maxillofacial Research. 2010;1(3):1–9.

30. Lin SY, Lin CY, Hsin MC. Comparison of social and culture based risk perception of personal hygiene behaviours. Heliyon. 2018;4(10):e00839.
31. Mitha S, Elnaem MH, Koh M, En C, Babar MG, Siddiqui J, et al. Use and Perceived Benefits of Mouthwash among Malaysian Adults: An Exploratory Insight. Journal of Advanced Oral Research. 2016;7(3).
32. Wardani NI, SR DS, Masfiah S. Faktor-Faktor Yang Berhubungan Dengan Tingkat Pengetahuan Kader Kesehatan Tentang Thalassaemia Di Kecamatan Sumbang Kabupaten Banyumas. Journal of Chemical Information and Modeling. 2014;6:194–206.
33. Retnaningsih R. Hubungan Pengetahuan Dan Sikap Tentang Alat Pelindung Telinga Dengan Penggunaannya Pada Pekerja Di Pt. X. Journal of Industrial Hygiene and Occupational Health. 2016;1(1):67.
34. Damayanti S, Yudiernawati A, Maemunah N. Hubungan Perilaku Jajan dengan Status Gizi pada Anak SDN Tunggulwulung 3 Kota Malang. Nursing News. 2017;2(2):467–78.