



Description of the driving factors for the use of dental and oral health services at the faculty of dental and oral medicine, Airlangga University

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Abstract

Background: *Streptococcus mutans* is a gram-positive bacteria in the form of a cocci, which is a normal flora of the oral cavity. *Streptococcus mutans* forms a biofilm layer consisting of a matrix of Extracellular Polymeric Substances. Biofilm can be a health problem, one of which is dental caries. Tyrosol is *Quorum Sensing* which is owned by *Candida albicans* and has anti-biofilm and antibacterial properties on *Streptococcus mutans*.

Purpose: To analyze the effect of *quorum sensing* tyrosol (antibiofilm and antibacterial) on *Streptococcus mutans*.

Method: This study uses the narrative review method. The literature sources used come from the digital databases Science Direct, Pubmed, and Proquest. Inclusion criteria published in the period 2005-2022, in the form of research results or review articles, and can be accessed in full text.

Discussion: Some literature states that tyrosol can cause a decrease in *Streptococcus mutans* biofilm formation. Tyrosol synthesizes the *Flo8* gene which plays a role in hypha formation and virulence. *Flo8* can induce ALS1 to inhibit AgI/II synthesis. The phenolic content in tyrosol can suppress the production of *glucosyltransferases* produced by *S. mutans*, causing a decrease in biofilm formation, damage the cytoplasmic membrane and inhibit bacterial DNA synthesis.

Conclusion: Tyrosol can inhibit biofilm formation and antibacterial *S. mutans* by involving the *QS* mechanism. The phenolic content in tyrosol has anti-biofilm and antibacterial properties on *S. mutans*.

Keywords: biofilm, *Streptococcus mutans*, tyrosol, *Quorum Sensing*

Introduction

Dental and oral health is an integral part of general health. Oral and dental health affects a person's quality of life, thus influencing their well-being [1]. A clean oral cavity and teeth make people feel more confident to talk, eat and socialize without pain, discomfort or embarrassment [2]. The Central Statistics Agency states that dental and oral health also play a role as one of the factors affecting Indonesia's happiness index [3].

Maintaining dental health is a crucial aspect, not only for comfort and appearance but also to prevent more serious health issues [1, 4]. Dental infections can spread to other parts of the body and lead to general health problems [5]. Therefore, undergoing regular dental check-ups and maintaining dental hygiene are vital steps in caring for overall health [6].

Ensuring oral health requires collaborative efforts from both dentists as healthcare providers and the community [7]. The crucial factors determining the dental health of a population are individual's perspectives on their own teeth [8, 9]. Dental and oral health efforts involve integrated, coordinated, and continuous activities to preserve and enhance the dental and oral health of the community [10]. Dental and oral health services encompass health improvement activities, disease prevention, disease treatment, as well as the recovery of dental and oral health [11].

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The 2016 Indonesian Health Profile describes the use of dental and oral health services at community health centers, with an average of 5 visits per day, while the national target is 9 visits per day. The average daily visits to Class B public hospitals are 23 people, with a national target of 65 people per day [12].

Dental and oral health among the community and academics is certainly a determining factor in an academic's own quality of life [13]. However, until this day, many of them are not very aware of their own dental and oral health [14]. Academics tend to use dental and oral health services only if it's just urgent. Therefore, this research was conducted to find out the description of the factors that influence the community and academics to use dental and oral services, especially at the Faculty of Dentistry, Airlangga University.

Method

This research was conducted in the Faculty of Dentistry, Airlangga University. The type of research used is quantitative research. The research design used is a cross sectional study, where the respondents are members of the community and academics at the faculty. The data used is primary data with questionnaire data collection techniques. The questionnaire includes information relating to the patient's name, age, gender, education, occupation and place of residence and the questionnaire is further categorized to evaluate the driving

factors for the use of dental and oral health services. Sampling was carried out using accidental sampling, with a total sample of 204 respondents. The research results are described in the form of a frequency distribution table and the research results are tested with SPSS software.

Result

Univariate analysis results

Table 1: Description of Age, Gender and Education of Research Respondents

	Frequency (n)	Percentage (%)
Age (n=204)		
late adolescence (17-25 years)	163	79.9
Early adulthood (26-35 years)	18	8.8
Late adulthood (36-45 years)	8	3.9
Early elderly (46-55 years)	10	4.9
Late elderly (56-65 years)	3	1.5
Elderly people >65 years	2	1.0
Gender (n=204)		
Man	65	32.1
Woman	139	67.9
Education (n=204)		
Elementary school	1	.5
Junior high school	2	1.0
Senior high school	93	45.6
PT	108	52.9

Table 1 shows that the age of the majority of respondents is categorized as late teens with a percentage of 79.9%, the majority are female with a percentage of 67.9%, the education level of the majority is categorized as high, namely tertiary education with a percentage of 52.9% and high school in second place with a percentage 45.6 %.

Table 2: Driving factors for the use of dental health services

	Frequency (n)	Percentage (%)
Factor (n=204)		
Mild Toothache		
Not a driving factor	100	49
Driving factors	104	51
Severe Toothache		
Not a driving factor	17	8.3
Driving factors	187	91.7
Friends Suggestions		
Not a driving factor	65	31.9
Driving factors	139	68.1
Boss Advice		
Not a driving factor	94	46.1
Driving factors	110	53.9
Social media impressions		
Not a driving factor	77	37.7
Driving factors	127	62.3
Appearance		
Not a driving factor	38	18.6
Driving factors	166	81.4
Couple's Demands		
Not a driving factor	89	43.6
Driving factors	115	56.4
Job Demands		
Not a driving factor	63	30.9
Driving factors	141	69.1

Based on table 2, it can be seen that mild toothache is a motivating factor for members of the community and academics to visit health service facilities, with a very small percentage. Severe toothache is a driving factor for members of the community and academics to visit dental and oral health facilities with a percentage of 91.7% or around 187 respondents. Around 68.1% or 139 respondents chose to visit dental and oral health services because they were recommended by friends. Around 53.9% or 110 respondents chose to visit dental and oral health services because they were advised by their superiors. Around 62.3% or 127 respondents chose to visit dental and oral health services because of social media broadcasts. Around 81.4% or 166 respondents chose to visit dental and oral health services because of their appearance. Around 56.4% or 115 respondents chose to visit dental and oral health services because of their partner's demands. Around 69.1% or 141 respondents chose to visit dental and oral health services because of work demands.

Discussion

The effect of mild toothache on utilization of dental and oral health services

Based on the research results table and table 3 which shows the validation score for encouraging the use of dental and oral health services, it is known that mild toothache is a driving force with a percentage of 51.0% compared to non-motivating at 49.0% or with a difference of 2%. This figure is small enough that it can be concluded that mild toothache does not really encourage members of the community and academics to visit dental and oral health service facilities.

Table 3: Mild toothache encouragement score

Valid	Frequency	Percent	Valid percent	Cumulative percent
Not a driving factor	100	49.0	49.0	49.0
Driving factors	104	51.0	51.0	100.0
Total	204	100.0	100.0	

The effect of severe toothache on utilization of dental and oral health services

Table 4: Severe toothache encouragement score

Valid	Frequency	Percent	Valid percent	Cumulative percent
Not a driving factor	17	8.3	8.3	8.3
Driving factors	187	91.7	91.7	100.0
Total	204	100.0	100.0	

Based on the research results table and table 4 which shows the validation score for encouraging the use of dental and oral health services, it is known that severe toothache is a driving force with a percentage of 91.7% compared to non-motivating at 8.3% or a difference of 83.4%. This figure is so large that it can be said that severe toothache really encourages members of the community and academics to visit dental and oral health service facilities. Severe toothache is a significant driver because of its enormous impact in the form of pain, discomfort and other damage which causes many negative things that interfere with a person's life, including reducing self-confidence and hindering work.

The effect of friends' suggestions on the utilization of dental and oral health services

Table 5: Friend suggestion encouragement score

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Not a driving factor	65	31.9	31.9	31.9
Driving factors	139	68.1	68.1	100.0
Total	204	100.0	100.0	

Based on the research results table and table 5 which shows the validation score for encouraging the use of dental and oral health services, it is known that friends' suggestions are a motivator with a percentage of 68.1% compared to non-motivators of 31.9% or a difference of 36.2%. This figure can be said to be an average so it can be said that friends' suggestions can encourage members of the community and academics to visit dental and oral health service facilities, but it is not very significant.

The influence of superior's advice on utilization of dental and oral health services

Table 6: Score of encouragement from supervisor's suggestions

Valid	Frequency	Percent	Valid percent	Cumulative percent
Not a driving factor	94	46.1	46.1	46.1
Driving factors	110	53.9	53.9	100.0
Total	204	100.0	100.0	

Based on the research results table and table 6 which shows the validation score for encouraging the use of dental and oral health services, it is known that superiors' suggestions are a motivator with a percentage of 53.9% compared to non-motivators of 46.1% or a difference of 7.8%. This figure is quite small so it can be concluded that the superior's advice does not really encourage members of the community and academics to visit dental and oral health service facilities. A superior's suggestion can be a driving force for the use of health services if there is a health guarantee facility from the office concerned.

The influence of media broadcasts on the utilization of dental and oral health services

Table 7: Media exposure encouragement score

Valid	Frequency	Percent	Valid Percent	Cumulative Percent
Not a driving factor	77	37.7	37.7	37.7
Driving factors	127	62.3	62.3	100.0
Total	204	100.0	100.0	

Based on the research results table and table 7 which shows the validation score for encouraging the use of dental and oral health services, it is known that media broadcasts are a driving force with a percentage of 62.3% compared to non-motivating factors of 37.7% or a difference of 24.6%. This figure can be said to be an average so it can be said that media broadcasts can encourage the community and academics to visit dental and oral health service facilities, but it is not very significant. Media broadcasts can encourage by socializing the importance of www.dzarc.com/medical

maintaining dental and oral health and showing the impacts when dental and oral health is not maintained.

The influence of appearance on utilization of dental and oral health services

Table 8: Appearance encouragement score

Valid	Frequency	Percent	Valid percent	Cumulative percent
Not a driving factor	38	18.6	18.6	18.6
Driving factors	166	81.4	81.4	100.0
Total	204	100.0	100.0	

Based on the research results table and table 8 which shows the validation scores for encouraging the use of dental and oral health services, it is known that severe toothache is a driving force with a percentage of 81.4% compared to non-motivating at 18.6% or a difference of 62.8%. This figure is considered large so it can be concluded that concern for appearance really encourages members of the community and academics to visit dental and oral health service facilities. Thus, it can be said that people tend to care more about appearance than health.

The influence of spouse's demands on utilization of dental and oral health services

Table 9: Couple's demand encouragement score

Valid	Frequency	Percent	Valid percent	Cumulative percent
Not a driving factor	89	43.6	43.6	43.6
Driving factors	115	56.4	56.4	100.0
Total	204	100.0	100.0	

Based on the research results table and table 9 which shows the validation score for encouraging the use of dental and oral health services, it is known that the partner's demands are a driving force with a percentage of 56.4% compared to non-motivating factors of 43.6% or a difference of 12.8%. This figure is quite small so it can be concluded that the demands of couples do not really encourage members of the community and academics to visit dental and oral health service facilities. Couples' demands for using dental and oral health services can be found in couples who really respect and obey their partners.

The influence of job demands on utilization of dental and oral health services

Table 10: Job demands encouragement score

Valid	Frequency	Percent	Valid percent	Cumulative percent
Not a driving factor	63	30.9	30.9	30.9
Driving factors	141	69.1	69.1	100.0
Total	204	100.0	100.0	

Based on the research results table and table 7 which shows the validation score for encouraging the use of dental and oral health services, it is known that job demands are a driving force with a percentage of 69.1% compared to non-motivating factors of 30.9% or a difference of 38.2%. This figure can be said to be an average so it can be said that work demands can encourage members of the community and academics to visit

dental and oral health service facilities, but it is not very significant. Job demands that encourage someone to visit dental and oral health services are generally related to work requirements that require a neat appearance.

Conclusion

Based on the results of the research that has been carried out, it can be seen that the 8 driving factors that have been determined as independent variables are valid factors that can encourage members of the community and academics to visit dental and oral health service facilities. However, each variable has a different percentage as a driving factor. Severe toothache and demands on appearance are the most significant variables that encourage someone to visit dental and oral health services. Then, media exposure variables, appearance demands and job demands on average are the driving factors for members of the community and academics to visit dental and oral health services. As for the mild toothache variable, friends' suggestions and partner's demands are variables that are not very significant in encouraging members of the community and academics to visit dental and oral health services.

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