

## The influence of knowledge of dental and oral health maintenance on the incidence of dental caries in dental poly patients at Konawe Selatan general hospital, southeast Sulawesi province, Indonesia

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### Abstract

Indonesia is one of the developing countries that has dental caries problems with a prevalence that tends to be high, namely 88.8%. The incidence of dental caries is influenced by dental and oral health maintenance behavior which includes knowledge, attitudes, and actions.

**Research Objectives** To determine the effect of knowledge of dental and oral health maintenance on the incidence of dental caries in dental poly patients. The type of research used is an observational survey with a design *cross sectional study*. Sampling technique is done in a way *accidental sampling*. The research sample is 100 respondents. Data analysis was performed using univariate and bivariate. The results showed that there was a significant effect between the variable knowledge of dental and oral health maintenance on the incidence of dental caries in dental poly patients with a value *p-value*=0.002.

**Conclusion**; there is a significant effect between the variable knowledge of dental and oral health maintenance on the incidence of dental caries in dental polyclinic patients at the Konawe Selatan District General Hospital in 2022.

**Suggestion**; The need to increase public knowledge through education, socialization, and guidance to the community on how to maintain dental and oral health by health workers, so as to encourage community motivation and awareness of the importance of maintaining dental and oral health

**Keywords**: Knowledge; Dental Caries; Hospital; Indonesia

### 1. Introduction

Health is very important for all humans because without good health, it will be difficult for every human being to carry out their daily activities. Health Act No. 23 of 1992 provides limitations: health is a state of well-being of body, soul and social that allows everyone to live productively socially and economically. The most recent limitation of health according to the World Health Organization (WHO) is that health is a state of complete physical, mental and social well-being, and not only the absence of disease and disability. Basically health includes three aspects, namely physical, mental and social, but according to law no. 23/1992, health includes four aspects namely physical, mental, social, and economic [1].

Dental and oral health is a healthy state of the hard and soft tissues of the teeth and related elements in the oral cavity that allows individuals to eat, speak and interact socially without dysfunction, aesthetic disturbances and discomfort due to disease, occlusion deviation and tooth loss so that able to live productively socially and economically. Dental and

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oral health is part of overall body health. Dental and oral health can reflect the health of the body as a whole, including if there is a lack of nutrition and symptoms of other diseases in the body. Disturbances in dental and oral health can have a negative impact on daily life including decreasing general health, lowering self-confidence, and interfering with performance and attendance at school or work [2]. One of the problems in dental and oral health is dental caries. The incidence of dental caries is one of the dental and oral health problems. Dental caries occurs due to damage to the hard tissues of the teeth which include enamel, dentine and cementum [3].

Based on *The Global Burden of Disease Study 2016* Dental and oral health problems, especially dental caries, are a disease experienced by almost half of the world's population (3.58 billion people). *The World Health Organization* states that dental caries occurs around 60-90% in school children and adults, besides that dental caries also contributes greatly to the incidence of tooth loss in the elderly globally. In 2017, WHO stated that dental caries in permanent teeth ranks first and dental caries in primary teeth in the twelfth most common disease (GBD 2015 Disease and Injury Incidence and Prevalence Collaborators, 2016). The increasing number of dental caries at this time is influenced by one of them is the factor of community behavior [4].

Indonesia is a developing country that has dental and oral health problems with a prevalence of ten disease groups that people complain about, one of which is dental caries. Dental caries is the most common dental problem found in Indonesia. So common that sufferers often ignore these problems. In fact, if dental caries is not treated, this disease can cause pain, tooth loss, focal infection, and even death. The results of the 2018 Basic Health Research stated that the largest proportion of dental problems in Indonesia were damaged/cavities/sick teeth (45.3%). The incidence of caries in Indonesia tends to be high. where the prevalence of caries as calculated through the DMF-T index (Decayed, Missing, Filled Teeth) in Indonesia is 88.8% [5].

Awareness of some of our people about the importance of maintaining healthy teeth and mouth is still very lacking. Based on the 2018 Basic Health Research, the Indonesian population who have dental and oral health problems reaches an average of 57.6 percent, and only 10.2 percent receive services from dental medical personnel [5].

The South Konawe Regional General Hospital is one of the government agencies in the health sector in South Konawe Regency. This hospital is located in Andoolo District and is the only regional general hospital in South Konawe Regency. The Dental Polyclinic is one of the polyclinics that has many patients at Konawe Selatan Hospital. Based on patient data at the dental clinic, most patients complain about dental caries.

Based on medical record data at Konawe Selatan Hospital, the number of visits to the dental clinic in 2019 was 1593 patients, in 2020 there were 875 patients and in 2021 there were 668. Data for the last 3 years shows a decreasing number of visits. And the number of sufferers of dental caries in 2019 is 79 patients, in 2020 there are 98 patients and in 2021 there are 184 patients. Data in the last 3 years shows an increase in the number of patients with dental caries. From these data it shows that the decrease in the number of visits could be due to a lack of public awareness to maintain dental and oral health by having their teeth checked early. This is reinforced by the increase in cases of dental caries over the last 3 years, the average visiting patient is already in a dental condition with dental caries [6].

The preliminary survey was conducted by interviewing and examining 10 patients who visited the dental clinic at Konawe Selatan Hospital. The results of the examination found dental caries in the 10 patients with an average DMF-T index of 4.5. From the interview results, 6 people had received dental treatment before. In addition, other problems were found to be a lack of public awareness and knowledge of the importance of maintaining healthy teeth and mouth, including: the habit of brushing your teeth only once or twice a day but only when bathing, ignoring if you have a toothache by only taking medicine at the shop, smoking and consuming foods that contain lots of sugar, and often use toothpicks to clean teeth, delay dental care because they think that going to the dentist is expensive. Research Objectives To determine the effect of knowledge of dental and oral health maintenance on the incidence of dental caries in dental polyclinic patients at Konawe Selatan Hospital in 2022.

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## 2. Material and methods

The type of research used is an observational survey with a design *cross sectional study*. On Study *cross-sectional* only observed once and measurements were made of subject variables at the time of the study. This research was carried out at the Konawe Selatan District General Hospital in July-August 2022. The sampling technique was carried out by *accidental sampling* namely the sampling technique in which the patient accidentally meets the researcher can be used as a research sample. The research sample is 100 respondents. Data analysis was performed using univariate and bivariate.

### 3. Results

#### 3.1. Univariate analysis

##### 3.1.1. Knowledge

Knowledge is a very important domain for the formation of one's actions. Knowledge is the result of human sensing, or the result of knowing someone about an object through the senses they have (eyes, nose, ears, and some of them). Sensing time to produce this knowledge is strongly influenced by the intensity of perception of the object. Most of a person's knowledge is obtained through the sense of hearing (ears) and the sense of sight [1]. The distribution of respondents according to knowledge of dental and oral health maintenance on the incidence of dental caries in dental polyclinic patients at Konawe Selatan Hospital in 2022 can be presented in table 1

**Table 1** Distribution of respondents according to knowledge of dental and oral health maintenance on the incidence of dental caries in dental polyclinic patients at Konawe Selatan Hospital in 2022

No	Knowledge	Amount (n)	Percentage (%)
1.	Enough	76	76
2.	Less	24	24
Total		100	100

Primary Data Sources for 2022

Table 1 shows that out of 100 respondents (100%), generally the knowledge of respondents in the sufficient category is more numerous, namely 76 respondents (76%) compared to the knowledge of respondents in the less category, namely 24 respondents (24%).

##### 3.1.2. Dental caries

Dental caries is a process of damage to calcified tissue that begins on the surface of the tooth through a process of decalcification of the tooth enamel layer followed by enzymatic lysis of organic structures so that cavities are formed which, if left unchecked, will penetrate the enamel then the dentin and can affect the pulp. The distribution of respondents according to the incidence of dental caries in dental polyclinic patients at Konawe Selatan Hospital in 2022 can be presented in table 2:

**Table 2** Distribution of respondents according to the incidence of dental caries in dental polyclinic patients at Konawe Selatan Hospital in 2022

No.	Dental caries	Amount (N)	Percentage (%)
1	Low	51	51
2	Currently	24	24
3	Height	25	25
Total		100	100

Primary Data Sources for 2022

Table 1 shows that out of 100 respondents (100%), generally the incidence of dental caries in the low category was more numerous, namely as many as 51 respondents (51%) compared to the incidence of moderate category of dental caries, namely as many as 24 respondents (24%) and the incidence of dental caries in the medium category. high, namely as many as 25 respondents (25%)

### 3.2. Bivariate Analysis

#### 3.2.1. Influence knowledge maintenance of oral health on the incidence of dental caries in dental poly patients South Konawe Hospital Year 2022

Knowledge is the result of knowing and this occurs after someone senses an object. Sensing occurs through the five human senses [1]. The distribution of respondents according to knowledge of dental and oral health maintenance on the incidence of dental caries in dental polyclinic patients at Konawe Selatan Hospital in 2022 can be presented in table 3:

**Table 3** The Effect of Knowledge on the Incidence of Dental Caries in Dental Polyclinic Patients at Konawe Selatan Hospital in 2022

No	Knowledge	DMT-F index (dental caries)						Amount		P - value
		Low		Currently		Height		n	%	
		n	%	N	%	n	%			
1	Enough	45	59	18	24	13	17	76	100	0.002
2	Less	6	25	6	25	12	50	24	100	
Total		51	51	24	24	25	25	100	100	

Primary Data Sources for 2022

Table 3 shows that of the 76 respondents (100%) who had sufficient knowledge there were more who had low dental caries, namely 45 respondents (59%), compared to those who had moderate dental caries, namely 18 respondents (24%) and those who had caries high teeth as many as 13 respondents (17%). Meanwhile, of the 24 respondents (100%) who had less knowledge, there were more who experienced high dental caries, namely 12 respondents (50%), compared to those who experienced moderate dental caries, namely 6 respondents (25%) and those who experienced low dental caries, namely 6 respondents (25%).

Statistical test results using *who squares* earned value *P-Value* 0.002. This shows that  $H_a$  is accepted, meaning that there is an influence on the respondent's knowledge of the incidence of dental caries in dental polyclinic patients at Konawe Selatan Hospital in 2022

## 4. Discussion

### 4.1. The Effect of Knowledge on the Incidence of Dental Caries in Dental Polyclinic Patients at Konawe Selatan Hospital in 2022

Health is the most important part of human life, both physically and spiritually healthy. In addition to general body health, dental and oral health also needs attention because dental and oral health can affect overall body health. Dental caries is a pathological process that occurs due to the interaction of internal and external factors including behavioral factors, knowledge and attitudes towards dental and oral care [8].

Knowledge of dental and oral hygiene is one of the factors that influence the rate of occurrence of dental caries. Prevention of dental caries can be done by providing Dental Health Education (DHE) to the community, especially early childhood because in this phase, teeth enter the mixed dentition phase and children begin to be more independent and able to receive information. DHE can be provided through one of the Public health center programs, namely the School Dental Health Unit which is aimed at elementary school children [7].

Dental caries or cavities is one of the dental and oral health problems that we often encounter in today's society, this disease can occur at all ages, both toddlers, children, adolescents and adults. Dental caries is a disease that occurs in the hard tissues of the teeth (enamel and dentin) and begins with the demineralization of the inorganic components of the teeth and is followed by the destruction of the organic matrix of the teeth. One of the reasons for the high incidence of caries is the lack of knowledge of parents about their child's dental health [9]. Dental caries is an infectious disease that destroys the tooth structure, this disease causes cavities which can cause pain, sleep disturbances, tooth loss, infection, various dangerous cases and even death [10].

Dental caries is the most common dental health disorder in early childhood. Dental caries causes teeth to become porous, hollow, broken, resulting in less than optimal growth. The aim of this study was to analyze the relationship between mother's knowledge, brushing teeth habits and sweet food consumption habits with the incidence of dental caries in early childhood [11].

The findings from the results of the study found that knowledge of dental health maintenance on the incidence of dental caries in dental polyclinic patients at Konawe Selatan General Hospital, knowledge in the good category was 76 respondents (76%) and the poor category was 24 respondents (24%), this shows that knowledge about the maintenance of dental and oral health is quite good, but the community's knowledge still needs to be further enhanced by the insight and understanding of the community through promotional, educational, outreach and health education activities so as to create an increase in community knowledge and insight in the future.

The results of the bivariate analysis showed that there was a significant influence between the knowledge variable on the incidence of dental caries in dental polyclinic patients at Konawe Selatan General Hospital by obtaining a p value of 0.002 and obtaining a p value of 0.002. *contingency coefficient* = 0.326, it was concluded that the knowledge variable was moderately related to the incidence of dental caries in dental polyclinic patients at Konawe Selatan Hospital. This indicates that the higher the public's knowledge about oral health, the better the community's actions to maintain and prevent the occurrence of dental caries in the community. That is, the importance of Health Education through education, outreach, counselling, guidance and health promotion activities should continue to be encouraged by Health workers in hospitals.

The findings also showed that the level of understanding and knowledge of the community about dental and oral health maintenance was obtained by a value of above 60 percent, namely the question that was most answered correctly was the question of using toothpaste, questions about good food for mouth washing teeth after eating by respondents, frequency of brushing teeth, dental examination time every 6 months, respondents who answered correctly, this is due to the influence of education and habits that have been practiced for a long time in their daily life. Structurally, education has a close relationship with one's knowledge, the higher a person's level of education, the higher the level of knowledge and scientific insight he has.

The results of this study are in line with the results of research [9] which says that there is a relationship between mother's knowledge about dental health and the incidence of dental caries in children in Banjar Negeri Village, Way Lima District, Pesawaran Regency in 2014. Research results [12] Say that there is a relationship between the level of knowledge parents with the incidence of caries in children. Research [13] says that there is an influence of mother's knowledge about dental health and tooth brushing habits on the incidence of dental caries in children. Research [14] says that there is a significant relationship between knowledge and dental caries prevention behavior. Research [15] says that there is a relationship between knowledge and the incidence of dental caries in pregnant women at the Independent Midwife Practice Bd. Eti Suryati, Amd.Keb Cipeundeuy Village, Jatinunggal District, Sumedang Regency in 2020. Research [10] says that there is a relationship between knowledge and the incidence of dental caries. Research [16] says that there is a relationship between children's actions regarding dental health and the incidence of dental caries. Research [7] says that the level of dental and oral hygiene knowledge of children at SDN 5 Sumerta has a strong relationship with the caries index with a negative correlation direction. Research [8] says that there is a relationship between children's knowledge and the occurrence of dental caries with a p value of 0.036. Research [11] says that there is a significant relationship between mother's knowledge about oral and dental health, the habit of brushing her teeth and the habit of consuming sweet foods with the incidence of dental caries. Research [17] says that there is a significant relationship between mother's knowledge and the incidence of caries in children. Research [18] says that there is a significant relationship between the level of knowledge of dental health maintenance and the severity of dental caries in SDN 091 Panyabung students with a strong degree of relationship and a negative direction ( $p=0.000$ ;  $r=-0.692$ ). However, this study is not in line with research [19] which states that there is no relationship between the level of knowledge of mothers about dental care and the incidence of dental caries in children aged 3-5 years.

Dental and oral health maintenance is one of the efforts to improve health. One of the reasons a person ignores dental and oral health problems is the lack of knowledge about dental and oral hygiene. The role of parents is very important in assisting children in maintaining healthy teeth and mouth, the role of parents is as caregivers, educators, supporters and supervisors. Dental caries is a disease of dental caries tissue caused by certain microorganisms that have the ability to form acids, especially in the presence of carbohydrates, which will result in low salivary pH which can cause the dissolution of enamel minerals slowly [12].

Knowledge is the result of knowing and this happens after people sense a certain object. Sensing occurs through the five human senses namely the senses of sight, hearing, smell, taste and touch. Most of human knowledge is obtained through

the eyes and ears. Knowledge or cognitive is a very important domain for the formation of one's actions [1]. The findings in the field also showed that the better knowledge, level of education and age of a person will increase awareness, willingness to maintain and pay attention to dental and oral health conditions so that in the future the incidence of dental caries cases is expected to decrease.

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## 5. Conclusion

Conclusion; there is a significant effect between the variable knowledge of dental and oral health maintenance on the incidence of dental caries in dental polyclinic patients at the Konawe Selatan District General Hospital in 2022. Suggestion; The need to increase public knowledge through education, outreach, and guidance to the community on how to maintain dental and oral health by health workers, so as to encourage community motivation and awareness of the importance of maintaining dental and oral health.

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## Compliance with ethical standards

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### *Disclosure of conflict of interest*

All authors in making this scientific article do not have a conflict of interest.

### *Statement of ethical approval*

This research does not give treatment to humans, but is survey research.

### *Statement of informed consent*

All informants/respondents involved in this research have expressed their consent as informants/respondents to be interviewed and provide information/information according to research needs.

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