

Student Behaviour Relationship of the Profession to Use of Amoxicillin Antibiotic on Posterior Tooth Extraction at RSIGM YW-UMI Makassar in 2019

Nurasisa Lestari¹, Ilmianti², Nur Rasdayanti³

^{1,2,3}Faculty of Dentistry, Universitas Muslim Indonesia, Makassar, Indonesia
E-mail: ³nurrasdayanti@gmail.com

Abstract. Bacterial resistance to antibiotics is a global threat to health. Health workers Knowledge, especially professional students who will become a dentist, is needed to prevent antibiotics abuse. Amoxicillin, including antibiotics, plays an important role in oral surgery. Antibiotics are compulsory for patients undergoing procedures action, especially for tooth extraction. The knowledge and attitudes of professional students are the components of behaviours interconnected in determining the use of antibiotics. To discover the behavioural relationship of professional students interviewed for aspects in knowledge, attitudes and actions on the use of amoxicillin antibiotics on the posterior tooth extraction. The research was analytic observation using the cross-sectional method. The research instrument used questionnaires related to knowledge, attitudes and actions of professional students on the use of amoxicillin antibiotics on the posterior tooth extraction. Statistical test results of Chi-Square acquired knowledge ($p_{value}=0.04 > \alpha = 0.05$, attitude ($p_{value}=0.04 > \alpha = 0.05$) and action-based behavior ($p_{value}=0.036 > \alpha = 0.05$). It found a significant relation between the professional student behaviour interviewed for the knowledge, attitude, and action on antibiotic use.

Keywords: Knowledge, Attitude, Behavior, Resistance, Antibiotic

1. Introduction

Of patients treated in developed country hospitals 13-37% get antibiotics either singly or in combination, whereas in developing countries 30-80% of patients treated in hospitals receive antibiotics and irrational use of antibiotics is very common in both developed and developing countries. The rational use of drugs, including antibiotics, according to WHO is that patients get treatment that suits their clinical needs, in doses according to their needs, in an adequate period, and at the lowest price for them and the surrounding community [1], [2].

The use of antibiotics in the field of dentistry is usually carried out empirically, clinicians who use these antibiotics do not know for sure the microorganisms that cause infection because culture is rarely performed on pus exudates originating from the affected tooth tissue. The choice of antibiotics is based on clinical conditions and bacterial epidemiological data so the antibiotics that are often used are broad-spectrum antibiotics with short-term use, about 7 to 10 days. The oral cavity as a place to enter food, contains various kinds of bacteria that can help in the process of mastication and digestion of food. Some bacteria develop as normal flora in the oral cavity and do not harm the human body. These bacterial colonies can be found in the teeth, gingival sulcus, tongue, cheek mucosa, palate, tonsils, and saliva. Microorganisms that become normal flora of the oral cavity can turn into pathogenic bacteria and cause infections in the oromaxillofacial region. These changes are influenced by factors of the patient's condition, the environment in the oral cavity, and bacterial accumulation [3]–[5].

Antibiotic therapy is one treatment for bacterial infections of the oral cavity. Antibiotics are beneficial in patient care when prescribed and given correctly for bacterial infections. Antibiotics are the drugs most widely used in infections caused by bacteria. Various studies have found that about 40-62% of antibiotics are used inappropriately among other things for diseases that do not require antibiotics. In studies of the quality of antibiotic use in various parts of the hospital, it was found that 30% to 80% were not based on indications [6], [7].

The relatively high intensity of antibiotic use raises various problems and is a global threat to

health, especially bacterial resistance to antibiotics. Besides having an impact on morbidity and mortality, it also has a very high negative economic and social impact. Initially, resistance occurred at the hospital level, but gradually it also developed in the community. Antibiotic resistance is recognized as one of the main threats to public health worldwide. The impact is felt by all fields of health and it affects the entire community. Although antibiotic resistance is a natural phenomenon, it is exacerbated by the misuse of antibiotics, poor quality drugs, weak laboratory capacity, inadequate supervision, and poor regulation or enforcement of regulations to ensure access to quality antibiotics and their proper use [7], [8].

Irrational use of antibiotics will cause an increase in the burden on patients and the community with increased medical costs, side effects, and also the risk of antibiotic resistance. Abuse of antibiotics has been considered a pandemic problem by WHO and various reports have found that antibiotic abuse is also carried out by dentists. Therefore, dentists must pay more attention to how to properly use antibiotics. Supporting factors for the irrational use of antibiotics include the lack of knowledge from health professionals in medicine, the habit of prescribing certain types or brands of drugs, people's trust in certain types or brands of drugs, and incorrect information. Knowledge from health workers is one of the factors that can influence the use of antibiotics irrationally because if health workers do not know about antibiotics there will be errors in prescribing [4], [9]–[11].

The Centers for Disease Control and Prevention in the USA says 50 million prescription antibiotics are not needed from 150 million prescriptions each year. In Indonesia, about 92% of people do not use antibiotics appropriately. Based on the results of research conducted by AMRIN study (Antimicrobial Resistance in Indonesia) show that the most widely used antibiotics are ampicillin and Amoxicillin [12], [13].

Antibiotics in the field of dentistry are very important, especially in the field of oral surgery. Antibiotics are used as prophylaxis and as a treatment for cases of inflammation, therefore the level of knowledge of health workers, especially dentists and professional students who will become dentists is needed to prevent irrational use of antibiotics which will cause many losses. Knowledge and attitude constitute the formation of behavior and these three components are interrelated in determining the use of antibiotics [14], [15]. Based on this description, this study aimed to obtain information about the relationship of the behavior of professional students with the use of the antibiotic Amoxicillin in posterior tooth extraction in YW-UMI Makassar Hospital.

2. Research Methods

The type of research used is Analytical Observational with Cross Sectional approach, measurement or observation is only done once in accordance with the time determined by the researcher by looking at the relationship between the dependent and independent variables. The study was conducted from November to December 2019 at RSIGM YW-UMI Makassar. Determination of sample size is done by Non-Probability with the Purposive Sampling technique which is taking samples that are samples that meet the inclusion criteria. Data collection was conducted on 35 respondents, namely professional students who are undergoing oral surgery clerks taking posterior dental extraction procedures, and prescribing antibiotics Amoxicillin in post-extraction patients.

The research data is used in the form of primary data obtained by distributing questionnaires to professional students who become research samples and secondary data obtained from medical records in accordance with each respondent's patients. The research began with a letter of introduction to the request for research permission obtained from the Faculty of Dentistry and then asked for permission from RSIGM YW-UMI Makassar. After obtaining permission, the researchers then collected data on professional students who were undergoing oral surgery clerks and performed dental extraction actions at YW-UMI Hospital Makassar. An informed consent sheet and questionnaire were given to respondents after dental extraction measures to be filled out if they were willing to be sampled in this study. After that, researchers recorded the Medical Record Number of respondent patients to be evaluated later by the use

of antibiotics by respondents.

Then the examination results are interpreted in the assessment category (Gyssen IC, 2005) as follows: Category 0: Use of appropriate antibiotics /wisely

1. Category I: The use of antibiotics is not timely
2. Category IIA: The use of antibiotics is not the right dose
3. Category IIB: The use of antibiotics is not an appropriate interval of administration
4. Category IIC: The use of antibiotics is not the right way/route of administration
5. Category IIIA: Use of antibiotics for too long
6. Category IIIB: Use of antibiotics is too short
7. Category IVA: Other antibiotics are more effective
8. Category IVB: Other antibiotics are less toxic / safer
9. Category IVC: There are other cheaper antibiotics
10. Category IVD: There are other antibiotics whose spectrum of antibacterial is narrower
11. Category V: There is no indication of antibiotic use
12. Category VI: Medical record data is incomplete and cannot be evaluated

Professional student behavior was measured using a questionnaire using three behavioral domains namely knowledge, attitudes, and actions. Where in the domain of knowledge 20 statements were submitted and for the domain of attitude and action each of them was submitted 10 statements. So, the number of statements given was 40 statements. Interpretation of the questionnaire based on a Likert scale with a choice of answers strongly disagree given a score of 1; disagree given a score of 2; quite agree given a score of 3; agree to be given a score of 4; quite agree given a score of 5.

The measurement results are interpreted as follows:

1. Knowledge Score
 - a. Good: 15-20
 - b. Moderate: 8-14
 - c. Bad: 1-7
2. Attitude and Action Scores
 - a. Good: 35-50
 - b. Moderate: 18-34
 - c. Bad: 1-17

The data collected was carried out univariate and bivariate data analysis using the SPSS system. Data were analyzed using the chi-square test and then the data processing results were presented in tabular and narrative form.

3. Result and Discussion

Result

The results of the study appear in Table 1, showing the frequency distribution of the characteristics of respondents in this study. There were 10 (28.57%) respondents who were male and 25 (71.43%) respondents who were female.

Table 1 Frequency Distribution of Respondent Characteristics

Gender	n	Percentage (%)
Male	10	28,57
Female	25	71,43
Total	35	100

Table 2 shows the frequency distribution of case diagnoses in this study. Professional students who were respondents in this study performed dental extraction with a diagnosis of cases, namely pulp

gangrene (22.86%); radix gangrene (45.71%); necrosis (20.00%); irreversible pulpitis (5.71%); and reversible pulpitis (5.71%).

Table 2 Frequency Distribution of Case Diagnosis

Diagnosis	n	Percentage (%)
Gangrene Pulp	8	22,86
Gangrene Radix	16	45,71
Necrosis	7	20
Irreversible Pulpitis	2	5,71
Reversible Pulpitis	2	5,71
Total	35	100

Table 3 shows that there are 4 or 11.43% of respondents who have moderate knowledge of the prescription of Amoxicillin antibiotics in category 0. There are 16 or 45.71% of respondents who have good knowledge of the prescription of Amoxicillin antibiotics in category 0, namely the use of appropriate antibiotics/wisely. Then there are 8 or 22.86% of respondents who have moderate knowledge about the prescription of Amoxicillin antibiotics in category V. Furthermore, there are 7 or 20.0% of respondents who have good knowledge of the prescription of Amoxicillin antibiotics in category V, namely there is no indication of antibiotic use.

Table 3 Relationship of Professional Student Knowledge on the Use of Amoxicillin Antibiotics

Knowledge	Amoxicillin Antibiotic Prescription Category						<i>p</i> value
	Category 0 (Right / Wise)		Category V (Not according to)		Total		
	n	%	n	%	n	%	
Moderate	4	11,43	8	22,86	12	34,29	0,04
Good	16	45,71	7	20	23	65,71	
Total	20	57,14	15	42,86	35	100	

Table 4 shows that there are 3 or 8.57% of respondents have a moderate attitude toward prescribing Amoxicillin antibiotics in category 0. There are 17 or 48.57% of respondents who have a good attitude with prescribing Amoxicillin antibiotics in category 0. There are 7 or 20% of respondents who have a moderate attitude with prescribing Amoxicillin antibiotics in category V. There are 8 or 22.86% of respondents who have a good attitude with the prescription of Amoxicillin antibiotics in category V.

Table 4 Relationship of Professional Student Attitudes toward the Use of Amoxicillin Antibiotics

Attitude	Amoxicillin Antibiotic Prescription Category						<i>p</i> value
	Category 0 (Right / Wise)		Category V (Not according to indications)		Total		
	n	%	n	%	n	%	
Moderate	3	8.57	7	20	8	22.86	0,04
Good	17	48.57	8	22.86	27	77.14	
Total	20	57.14	15	42.86	35	100	

Table 5 found that there were no respondents who had moderate action with the prescription of Amoxicillin antibiotics in category 0. There were 20 or 57.14% of respondents who had good actions with prescribing Amoxicillin antibiotics in category 0. There were 3 or 8.57% of respondents who had moderate actions with prescribing Amoxicillin antibiotics category V. There are 12 or 34.29% of respondents who had good actions with prescribing the category V antibiotic Amoxicillin.

Table 5 Relationship of Professional Student Actions with the Use of Amoxicillin Antibiotics

Action	Amoxicillin Antibiotic Prescription Category				Total	<i>p</i> value
	Category 0 (Right / Wise)		Category V (Not according to indications)			
	n	%	n	%		
Moderate	0	0	3	8.57	3	8.57
Good	20	57.14	12	34.29	32	91.43
Total	20	57.14	15	42.86	35	100

Discussion

Knowledge is everything that is known to a particular object that has many sources, including the intellect which is the power of one's mind to understand something and experience through an observation by the five senses. Attitude is a view that is followed by a tendency to act, perceive, think, and feel about an object. The action referred to in this study is the practice of professional students in the use of antibiotics Amoxicillin.

Table 3 shows the relationship of knowledge of professional students to the use of Amoxicillin antibiotics in RSIGM YW-UMI Makassar in 2019. Based on the Chi-Square test results the behavioral relationship in terms of the knowledge aspects of professional students on the use of Amoxicillin antibiotics at RSIGM YW-UMI Makassar in 2019 obtained *p* value of 0.04 or $p < 0.05$. That is, there is a significant relationship between behavior in terms of the knowledge aspects of professional students on the use of the antibiotic Amoxicillin in RSIGM YW-UMI Makassar in 2019.

In this study, special attention needs to be given to statements regarding clinical conditions that indicate antibiotic therapy. The average professional student has a low percentage that giving the right answer. The first step taken in providing antibiotic therapy is to determine the patient's problem. Complaints submitted by patients must be explored more deeply during the history. If the history is done properly and thoroughly, it will be very helpful to establish the right diagnosis. In the end, after the history, it will be easier to set therapeutic goals. Then, the clinical examination of the patient in the form of an examination of extraoral and intraoral clinical conditions must also be carried out before taking action on the patient.

Furthermore, for statements regarding Amoxicillin antibiotics, the average professional student has a high percentage of correct answers. The principle of antibiotic selection is based on three choices, namely first choice (first choice), antibiotic restriction (restricted/reserved), and antibiotic prophylaxis and therapy groups. Amoxicillin antibiotics include first-line antibiotics, so these antibiotics are often prescribed by professional students. Therefore, in this study, the largest number are professional students with a good level of knowledge.

This research is in line with the results of Irma Fatmawati's research (2014) which says that there is a significant relationship between knowledge of attitudes and behavior of antibiotic use in health and non-health students at the Muhammadiyah University of Surakarta. This study is supported by the results of the study of Tajuddin Shaik and Bikash Ranjan Meher (2016) who said that there was no significant difference between the undergraduate knowledge of third and second-year dentistry students regarding the rational use of antibiotics in the Tertiary Care Dental Hospital of South India. Most respondents in

the study advised their friends and relatives to prescribe antibiotics that did not meet their requirements and should not. The study said there must be mandated guidelines that who should prescribe antibiotics and who should not and should be enforced strictly at the national level. In addition, it needs to be done through educational interventions. Continuous Medical Education (CME) and workshops need to be conducted regularly to pay attention to the causes and effects of antibiotic resistance [16], [17].

This research also deals with the theory of knowledge put forward by Piaget. According to him, there are two complementary aspects of thinking, namely the figurative aspect and the operative aspect. The most important aspect of thinking is the operative aspect. This aspect is very instrumental in shaping one's knowledge. Operative thinking brings out operative knowledge, which is real knowledge. The theory of constructivism explains that a person's knowledge is a form (construction) of the person himself. Without the activity of someone digesting and shaping it, one will not know. The formation of knowledge is first determined by the activity or activity of the person himself in dealing with new problems, materials, or environments. That person alone forms his knowledge. However, this does not mean that other people or other social environments have no role. People or other social environments influence the formation of knowledge as a spur, criticism, and challenge so that the process of knowledge formation is smoother. By dealing with and contacting others, one's ideas are challenged, straightened out, and convinced [18].

In addition to this theory, based on Decree Number: SKEP / 03 / PB PDGI / V / 2008 concerning the Code of Ethics of Indonesian Dentistry, the Executive Board of the Indonesian Dentists Association, especially in Chapter III, concerning the Obligations of Dentists Against Peer Article 15 Paragraph 1, which reads "Doctor in Indonesia must maintain good relations with colleagues, both in personal life and in carrying out the profession. Experience or knowledge gained should be shared with other colleagues ". Based on this, if applied in the daily life of professional students at RSIGM YW-UMI Makassar, then all respondents who were sampled in this study would have the same knowledge about the use of the antibiotic Amoxicillin. However, the results of the study showed that professional students have different knowledge or in this case, there are differences in perception between one professional student and another [19].

Table 4 shows the attitudes of professional students towards the use of Amoxicillin antibiotics at RSIGM YW UMI Makassar in 2019. Based on the Chi-Square test results obtained that the behavioral relationship was viewed in terms of the attitude of professional students towards the use of Amoxicillin antibiotics at RSIGM YW UMI Makassar in 2019 obtained p value of 0.04 or $p < 0.05$. This means that there is a significant relationship between behavior in terms of the attitude of professional students towards the use of the antibiotic Amoxicillin at RSIGM YW UMI Makassar in 2019. In this study, special attention needs to be paid to the statement regarding the duration of use and side effects of the Amoxicillin antibiotic. The average professional student has a positive attitude but is not entirely sure of the statement.

This research is in line with research conducted by Nadia Iga Hasan which states that there is a significant relationship between attitude and the use of antibiotics among college students in Jember. This research is supported by British Public Health, which is an autonomous executive body operating the health department to protect and improve the health and well-being of the nation and reduce health inequalities. This is done through world-class science, knowledge and intelligence, advocacy, partnerships, and the provision of specialist public health services. The conclusion from a systematic review of UK Public Health is that prescription is a complex process based on various internal and external factors. The dominant factor among these is the perception that prescribes that the patient wants antibiotics and the fear of what might happen if antibiotics are not given [20], [21]. This is related to the attitude of professional students towards the use of Amoxicillin antibiotics at RSIGM YW UMI Makassar. Based on research that has been done, shows that after extracting the teeth a professional student will prescribe Amoxicillin antibiotics without considering the undesirable pharmacodynamic effects.

Table 5 shows the actions of professional students on the use of Amoxicillin antibiotics at

RSIGM YW UMI Makassar in 2019. Based on the Chi-Square test results obtained the behavioral relationship in terms of aspects of professional student actions on the use of Amoxicillin antibiotics at RSIGM YW UMI Makassar in 2019 obtained p value of 0.036 or $p < 0.05$. That is, there is a significant relationship between behavior in terms of aspects of professional students' actions towards the use of Amoxicillin antibiotics at RSIGM YW UMI Makassar in 2019.

This study is in line with research conducted by Efri Handriansyah which states that there is a significant relationship between actions with the use of antibiotics in D3 Nursing students at the Muhammadiyah Health College in Palembang. The research shows that the behavior or actions in the use of antibiotics are influenced by antibiotic knowledge. That is, the better the knowledge about the antibiotics they have, the more appropriate the behavior or actions in the use of antibiotics [22].

This research is supported by research conducted by Darmiyanti Zuchdi regarding attitude formation. Human attitude is the main predictor of daily actions, although there are still other factors namely one's environment and beliefs. This means that sometimes attitudes can determine someone's actions, but sometimes attitudes don't manifest into actions. Consideration of all the negative and positive effects of an action also determines whether a person's attitude becomes a real action or not. In other words besides attitude, the other main factor influencing one's actions is social norms. Someone who believes that the action to be carried out has a positive impact on him will be inclined to take the action. Vice versa if he believes the action to be taken has a negative impact on him, he will be refusing to do the action. In addition to personal beliefs, group beliefs also determine one's actions. If the person believes that his actions will be approved by the group or social environment, then he will do it. Conversely, if he believes that his social environment will not support him then he does not intend to carry out these actions [23].

This is related to the actions of professional students in the use of Amoxicillin antibiotics at RSIGM YW UMI Makassar. Based on research that has been done, the percentage of professional students with good actions is more dominant. Apart from that, special attention needs to be given to statements regarding prescribing instructions to patients who receive their prescriptions. This study shows the lack of information regarding drug information by professional students at RSIGM YW UMI Makassar in 2019 to patients. Even though it has been clearly stated in the Dentistry Code of Ethics (KODEKGI 2008) chapter II regarding the obligations of dentists to patients, dentists in Indonesia must submit information regarding treatment and treatment plans as well as suitable alternatives. However, it cannot be separated from various factors that can affect the action that can be done. One factor in question is personal experience. Personal experiences are interrelated in one's life. Because people who are considered important for example colleagues and lecturers can influence the formation of attitudes. Professional students tend to behave the same as the attitudes of people who are considered important. This tendency arises because of the motivation to be interconnected and to avoid conflict [19], [21].

The strategies that can be developed to achieve optimization of antibiotic use are in the form of formulation of antibiotics and guidelines for antibiotic use. An antibiotic formulary is a simple list of drugs available for use in a hospital. Formulary control effectively influences antibiotic prescribing while reducing antibiotic use and resistance. In addition, this method does not cause negative effects/effects on patients, as well as providing positive education to prescribing doctors.

In addition, clinical guidelines for the use of antibiotics are needed as effective instruments to avoid unnecessary drug administration as well as to increase the effectiveness of prescribed antibiotics. Another important thing to note is the implementation of the guidelines, which is a process to ensure that the guidelines are applied in clinical practice [24].

In practice, the most experienced clinicians are the least compliant with the guidelines. Some things that become a barrier (barrier) to implementation of the guidelines, namely ignorance about the existence of the guidelines, attitudes (lack of agreement with the guidelines, not believing in the guidelines, lack of confidence, or weakness/error in previous practice). Another condition that causes clinicians to be reluctant to apply the guidelines is because they are felt to be inappropriate for clinical practice. Based on this, the barrier factors for the implementation of the guidelines can be grouped into

three, namely related to the guidelines, the character of the doctor, and social and institutional conditions. Guidelines should provide a change in clinical practice by changing clinical knowledge, attitudes, behavior, and beliefs [24].

Implementation of a guideline requires dissemination. One of the reasons for the ineffectiveness of the guidelines is the clinician's knowledge about the existence of the guidelines. With dissemination, the clinician's concern for the guidelines can be increased so that it affects their knowledge, attitudes, and behavior. Therefore, through this study, the authors hope that the results of the research that has been done can be used as an evaluation material for institutions regarding the use of antibiotics in Makassar YW-UMI Hospital because the problem of resistance to antibiotic use is a major concern of the world where all relevant parties must make various efforts to overcome this problem [24].

4. Conclusion

Based on the results of research and discussion, it is concluded that there is a significant relationship between the behavior of professional students in terms of knowledge of attitudes and actions towards the use of the antibiotic Amoxicillin in posterior tooth extraction in RSIGM YW-UMI Makassar in 2019.

Based on the conclusions described, the suggestions made by researchers are expected for the institution to be able to make and provide guidelines for the use of antibiotics to professional students. In addition, it is expected that all professional students will further increase their knowledge of antibiotic use by reading various literature and the latest research on antibiotics and attending antibiotic use training or seminars. Then further research needs to be done on the knowledge, attitudes, and actions of antibiotic use along with the factors that influence it.

5. References

- [1] AMRIN-Study Group, "Penggunaan Antibiotik di RS Dr. Soetomo Surabaya dan RSUP Dr. Kariadi Semarang," pp. 1–3, 2005.
- [2] World Health Organization, "Promoting rational use of medicines: core components," *WHO Policy Perspect. Med.*, pp. 1–6, 2002.
- [3] R. P. Roda, J. V. Bagan, and J. M. S. Bielsa, "Antibiotic use in dental practice," *Med Oral Patol Oral Cir Bucal*, vol. 12, no. 3, pp. 86–92, 2017.
- [4] "Antibiotic prophylaxis for dental patients at risk for infection," *Pediatr. Dent.*, 2018.
- [5] F. Mardiyantoro, *Spread of Odontogenic Infection & Management Basic Understanding of Infection in the Oral Cavity and Surrounding Areas*. Malang: UB Press, 2017.
- [6] W. Wilson *et al.*, "Prevention of Infective Endocarditis," *Circulation*, vol. 116, no. 15, pp. 1736–1754, Oct. 2007, doi: 10.1161/CIRCULATIONAHA.106.183095.
- [7] "Pedoman Umum Penggunaan Antibiotik," 2013.
- [8] WHO, "Worldwide Country Situation Analysis," *World Heal Organ*, 2015. <http://www.who.int/drug-resistance/documents/situation-analysis/en/>
- [9] A. Ramasamy, "A review of use of antibiotics in dentistry and recommendations for rational antibiotic usage by dentists," *Int. Arab. J. Antimicrob. Agents*, vol. 4, no. 2, pp. 1–15, 2014, doi: 10.3823/748.
- [10] *Panduan praktik klinis bagi dokter gigi / Kementerian Kesehatan RI*. Jakarta: Kementerian Kesehatan, 2014.
- [11] Tiara Selvi, *Bahaya Penggunaan Antibiotik yang Tidak Rasional*. 2015.
- [12] M. PSFA, *New Vision, Mission, Policy and Healthy Indonesia Health Development Strategy 2010*. Jakarta, 2010.
- [13] E. . Akalin, "The evolution of guidelines in an era of cost containment," *Surg. Prophyl.*, 2002.
- [14] G. W. Pedersen, *Buku Ajar Praktis Bedah Mulut*. Hoboken, 1996.

- [15] R. P. Syukrinawati, "Tingkat Pengetahuan Penggunaan Antibiotik Oleh Mahasiswa Kepaniteraan Klinik Departemen Bedah Mulut RSGM-P FKG USU Periode September 2013 – Maret 2014," 2014.
- [16] I. Fatmawati, "Tinjauan Pengetahuan, Sikap, dan Perilaku Penggunaan Antibiotik pada Mahasiswa Kesehatan dan non Kesehatan di Universitas Muhammadiyah Surakarta," Universitas Muhammadiyah Surakarta, 2014.
- [17] T. Shaik and B. R. Meher, "A questionnaire based study to assess the knowledge, attitude and practice (KAP) of rationale use of antibiotics among undergraduate dental students in a tertiary care dental hospital of South India," *Int. J. Basic Clin. Pharmacol.*, vol. 6, no. 2, p. 312, Jan. 2017, doi: 10.18203/2319-2003.ijbcp20170321.
- [18] F. Ibda, "Cognitive Development: Jean Piaget's Theory," *Intelektualita*, vol. 3, no. 1, p. 242904, 2015.
- [19] Persatuan Dokter Gigi Indonesia, *Kode Etik Kedokteran Gigi Indonesia (KODEKGI)*. 2020. [Online]. Available: https://www.pdgi-jaksel.org/download_index.php?filename=1627040503033.pdf
- [20] Hasan, "Relationship between Knowledge Level and Behavior of Antibiotic Use in D3 Nursing Students of Muhammadiyah Health Science Week School," 2016.
- [21] R. Pinder, D. Berry, A. Sallis, T. Chadborn, and RJ Pinder, "Behaviour change and antibiotic prescribing in healthcare settings Literature review and behavioural analysis," *Public Heal. Engl.*, 2015.
- [22] E. Handriansyah, "Hubungan Tingkat Pengetahuan dan Perilaku Penggunaan Antibiotik pada Mahasiswa D3 Keperawatan Sekolah Tinggi Ilmu Kesehatan Muhammadiyah Palembang Angkatan 2014 dan 2015," 2017.
- [23] Zuchdi, "Formation of Attitude," *J Horiz. Educ.*, 1995.
- [24] D. Fauzia, "Strategi Optimasi Penggunaan Antibiotik," *J. Ilmu Kedokt.*, vol. 9, no. 2, p. 55, Dec. 2017, doi: 10.26891/JIK.v9i2.2015.55-64.