

The level of public knowledge regarding how to obtain, use, store and Disposing of Antibiotics in the Kediri City District Area

Eta Arya Solikah^{1*}, Hanik Mariana Dewi²

Pharmacy Study Program, Faculty of FAKAR, Strada Indonesia Institute of Health Sciences Kediri

*Corresponding author: aryaeta2@gmail.com

ABSTRACT

Antibiotics are drugs used to treat bacterial infections that kill bacteria or prevent bacteria from multiplying. According to data from the antimicrobial resistance control committee, the level of bacterial resistance in Indonesia increased, from 40% in 2013 to 60.4% in 2019, this indicates that the need for antibacterials is still very high among the public. This study aims to evaluate the level of public knowledge regarding how to obtain, use, store and dispose of antibiotics in the Kota sub-district area, Kediri City. This research uses a descriptive method with a quantitative approach, the sample used is the community in the Kota District area, Kediri City which was taken randomly. *cluster* sampling. The results of the research show that the majority of respondents in Kota sub-district, Kediri City have a sufficient level of knowledge of antibiotic use with a percentage of 38.5%, it is known that the majority of respondents have an average knowledge of antibiotic storage between good and sufficient with a percentage of 37.0%, the majority of respondents have low knowledge of antibiotic disposal. with a percentage of 69.0%, then regarding how to get antibiotics the majority had good knowledge with a percentage of 49.3%. From the research results, it was concluded that the level of public knowledge regarding the use, storage, disposal and methods of obtaining antibiotics is still lacking. Then, from the results of respondents' answers, there is no significant relationship between gender and age, with respect to respondents' knowledge about use, storage, disposal and how to obtain them, whereas based on education there is a significant relationship with knowledge of storage and for work there is a significant relationship with knowledge of how to obtain antibiotics in the sub-district area. City, Kediri City.

Keyword : Antibiotica, Public Knowledge

INTRODUCTION

Antibiotics are drugs used to treat bacterial infections that are bactericidal (kill bacteria) or bacteriostatic (prevent bacteria from multiplying) (Minister of Health RI 2021). According to data from the antimicrobial resistance control committee, the level of bacterial resistance in Indonesia increased, from 40% in 2013 to 60.4% in 2019 (Ministry of Health of the Republic of Indonesia 2022). This indicates that the number of antibacterial needs is very high among the community. This high number of antibacterial needs causes problems due to improper management of antibiotics, namely errors in drug storage which will affect the condition of the active substances in the drug (Sembel DT 2015). Based on data obtained, 103,860 (35.2%) of 294,959 households in Indonesia store medicines for self- medication. Basically, leftover prescription medicines are generally not allowed to be kept because they can cause misuse. These leftover medicines are medicines left over from doctor's prescriptions from previous use (Republic of Indonesia Ministry of Health 2014).

People are not allowed to store medicines as they please, especially medicines that previously had to undergo special supervision, such as hard medicines and antibiotics, which are medicines that are widely used for infections caused by bacteria, where oral antibiotics are

the main choice for infection therapy (Savira 2020). In various developing countries, it is often available without a prescription from a doctor. This results in its use being unwise or arbitrary, such as using the wrong dose, wrong disease indication, wrong dosing interval and inappropriate administration time (too long or too short). . Based on data from the Ministry of Health's 2016 national antimicrobial resistance survey, it shows the prevalence *Multidrug Resistant Organisms* (MDRO) with bacterial indicators *Escherichia coli*

and *Klebsiella pneumoniae* ranges from 50-82% (Ministry of Health Republic of Indonesia 2016). This shows the increasing increase in multiresistant bacteria which must be immediately controlled by implementing the wise use of antibiotics (Minister of Health of the Republic of Indonesia 2021).

Currently, public knowledge about resistance is very low, this is due to a lack of public understanding about the use of antibiotics and it is also felt that health workers do not provide adequate information about the use of antibiotics (Zulkarni. R, et al 2020). This shows that the irregular use and management of antibiotic drugs is still high and is a factor in causing problems in the world of health. Disposal of medicines must also be considered because improper disposal of medicines can also be dangerous, not only for the environment but also for humans. Based on research by Savira et al (2020), the people of Puncak Sewu sub-district, Surabaya showed that 57.9% of 140 respondents did not throw away medicines. by separating medicinal waste from other waste which causes negative impacts on the environment because it pollutes groundwater, rivers, lakes, or even drinking water (Savira, M. et al., 2020). Based on the description above, the research is interested in conducting research on the level of public knowledge regarding the use, storage and disposal of antibiotics in the Kediri city sub-district area.

METHODS

A. Place, Research Category and Research Design

The research was conducted in the Kota sub-district area, Kediri City because research in this area had not previously been conducted on knowledge of the use, storage and disposal of antibiotics, and it is strategically located. The research carried out is a type of descriptive research, namely research that describes the level of public knowledge regarding how to obtain the use, storage and disposal of antibiotics in the Kediri city sub-district area. In this study there are two variables, namely the independent (free) variable, namely the level of knowledge of the people of Kota subdistrict, Kediri City regarding the use, storage and disposal of antibiotic drugs and the dependent (bound) variable, namely the use, storage and disposal of antibiotic drugs.

The research instrument used in this research was a questionnaire sheet (list of questions). Table 1. Questionnaire Sheet

No	Indicator	Question Number	Number of Questions
1.	knowledge of antibiotic use	1-8	8
2.	Knowledge of how to store antibiotics	9-16	8
3.	Knowledge of how to dispose of antibiotics	17-23	8
4.	How to get antibiotics	24-32	8
Total			32

This questionnaire consists of several favorable and unfavorable statements, where each variable consists of 4 favorable statements and 4 unfavorable statements in the statement of knowledge, storage and disposal of antibiotics, and how to obtain antibiotics consists of 2 alternative answers, namely Agree and Disagree. In this research, the questionnaire was validated first. Validity and reliability tests were carried out on 100 respondents who were not actual research respondents. Data collection was carried out prospectively. The research results obtained were recorded, grouped using descriptive methods. Data processing was carried out using statistical software with the frequency distribution method.

RESULTS AND DISCUSSION

Research Results

The research results showed that the majority level of knowledge of antibiotic use was in the good category, showing a percentage of 38.3%, in the sufficient category, the percentage was 38.5% and in the poor category, the percentage was 23.3%. According to data from the antimicrobial resistance control committee, the level of bacterial resistance in Indonesia increased, from 40% in 2013 to 60.4% in 2019 (Ministry of Health of the Republic of Indonesia 2022). This indicates that the number of antibacterial needs is very high among the community. Antibiotic drug resistance occurs when bacteria, viruses, fungi and parasites no longer respond to drugs, as a result antibiotics become ineffective and infections become difficult or impossible to treat, thereby increasing the risk of disease spreading. One of the main causes of antibiotic resistance is excessive use of antibiotics such as using the wrong dose and incorrect administration time (WHO, 2020). In this study, there were still many people who did not use enough antibiotics, so antibiotics were consumed inappropriately. In knowledge of antibiotic storage, it is known that the majority have knowledge equally between the good and sufficient categories showing a percentage of 37.0%, and in the poor category with a percentage of 26.0%. In general, antibiotics are not allowed to be stored because they can cause misuse, people are not allowed to store medicines as they wish, especially medicines that previously had to undergo special supervision, such as hard medicines and antibiotics, which are medicines that are widely used for infections caused by bacteria (Savira, M . et al., 2020). In this research, it was also found that the storage of antibiotic drugs in the community is still inadequate, this is because the high level of need for antibacterials causes problems due to improper management of antibiotics, one of which is also the storage of drugs and this will affect the active substances in the drugs. The results of knowledge of antibiotic disposal in the good category show a percentage of 15.8%, in the sufficient category with a percentage of 15.3% and in the poor category with a percentage of 69.0%, the disposal of antibiotic drugs is very important where the system In the disposal of antibiotic drugs, there

are still many errors in drug management which have an impact on the environment because careless disposal of drugs will occur and cause disruption of the balance of the surrounding ecosystem (Sembel DT 2015).

Meanwhile, inappropriate disposal of medicines is a global concern at the moment. In this research, public knowledge regarding the disposal of antibiotic medicines is still very lacking, this can be seen from the public's response, many people still do not know the procedures and programs provided by health workers in managing drug disposal. In terms of knowledge of how to get antibiotics, the good category shows a percentage of 49.3%, in the sufficient category the percentage is 30.0% and in the poor category the percentage is 20.8%, from data from the antimicrobial resistance control committee, the level of bacterial resistance in Indonesia is increasing, from 40% in 2013 to 60.4% in 2019 (RI Ministry of Health 2022). In this research, it was also found that the way to get antibiotics is very good, it can be seen from the public's response that when buying antibiotics they can only often be found at the nearest pharmacy and the prices are affordable. Based on the percentage value, it is known that there are still quite a lot of people who use antibiotic drugs irrationally, which will result in resistance to bacteria (WHO 2014).

Meanwhile, previous research showed lower results regarding the evaluation of public knowledge about the use of antibiotics in the Klaten district, Muhammadiyah University of Surakarta, which was carried out by (Chotimah 2017), namely that on average the public's knowledge of antibiotic use was 43%, and this is also considered insufficient in antibiotic knowledge. Regarding the results of drug storage and drug disposal, the majority of people have very little knowledge, where storage is still carried out in conditions that are not suitable for drugs and also drug disposal is still done by throwing them directly into the trash without separating them first, so education and understanding is really needed here. This is in line with previous researcher Savira (2020) regarding the practice of storing and disposing of medicines in the family, this research shows that it is still very lacking (Savira, M. et al., 2020). Likewise, previous research conducted by Chotimah Kusuma Putri (2017) stated that the level of public knowledge regarding the disposal of expired antibiotics with a percentage of 39% of 127 respondents was classified as very low (Chotimah 2017). This shows that the role of family members in drug management is to have good knowledge so that they can understand and utilize the facilities recommended by health workers, such as expired drugs that can be returned to the hospital or pharmacy to be destroyed later so that they are not misused by certain individuals. , and also the government and health workers provide knowledge and understanding, such as education held for the public regarding knowledge of storage and disposal of medicines, especially antibiotics (Savira, M. et al., 2020).

Knowledge of how to get antibiotics in this study is in the good category, many people think that buying antibiotics without a doctor's prescription is permissible, but people admit that they never buy antibiotics without a doctor's prescription, which is different from previous research Chotimah Kusuma Putri (2017) shows. The low level of knowledge reaching 35% of the 172 respondents can be seen from the research as the reason why these respondents admitted that they already knew the medicine and it was easier to buy antibiotics freely at the pharmacy without having to go to the doctor first. This is partly due to the lack of information obtained about the proper use of antibiotics. It is hoped that health workers can provide information or education to the public about their use and explain that antibiotics are a class of hard drugs that are mandatory. using a prescription from a doctor and what impacts will happen if you don't do it, or also making attractive packaging so that people can easily understand and remember it so that in the future people can use antibiotics rationally. This is explained by WHO (2014) that this knowledge is an experience that is influenced by factors outside the person or the environment itself, then this experience is known, and perceived, believed, so

that this gives rise to motivation, also the intention to act and ultimately makes behavior, both physical and non-physical and also socio-cultural, is what makes the differences in the statements in the research above (WHO 2014). Another thing that can influence the environment, this can influence the development and behavior of people and groups, as well as the social culture that exists in society can influence attitudes in receiving the information obtained (Nursalam 2017).

Based on the next test, namely test *Chi-Square*, namely a non-parameter comparative test carried out on two variables, where the data scale for both variables is nominal (Sugiyono 2014). In this study, to determine the relationship between the level of knowledge of the community and gender, age, education and occupation of the community statistically and then analyzed using the test *Chi-Square*.

1. Based on Gender

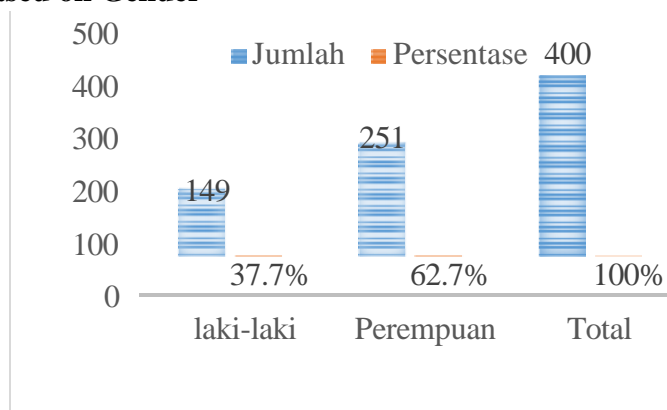


Diagram 1. Based on Gender

Based on the gender variable in the research table, it was found that the significance value in the community regarding knowledge of antibiotic use was 0.063 ($p > 0.05$), knowledge of antibiotic storage was 0.421 ($p > 0.05$), knowledge of antibiotic disposal was 0.489 ($p > 0.05$), on knowledge of how to get antibiotics 0.431 ($p > 0.05$), this shows that there is no relationship between gender and knowledge of antibiotic use. It can be seen that the value $p > 0.05$. The results of this research are also supported and in line with research by Feby Pramadita and Sikni Retno K Arminingtyas (2022) with a significance value $p > 0.05$, thus there is no significant relationship between gender and knowledge of antibiotics in the community (Febby, Pramadita, et al., 2022). This is also supported by Zulaikha (2017) where the results of the correlation between gender and antibiotic knowledge in the community obtained a significant value $p > 0.05$, which means there is no relationship between gender and knowledge of use in society (Zulaikha 2017). This is compared to research by Sara Nurmala and Dewi Oktavia Gunawan (2020) on knowledge of antibiotic drugs among people living in the Babakan Madang sub-district which shows a significance value of 0.001 ($p < 0.05$) and this shows that there is a relationship between knowledge of antibiotics in the community and the type of gender (Sara, et al., 2020). According to Hungu (2016) gender is the difference between women and men biologically, biological differences and biological functions between men and women cannot be exchanged between the two, and also its function remains with men and women (Hungu 2016). So it can be explained that from the results of this study there is no relationship between gender and knowledge of antibiotics in the community. The female respondents were more dominant because the research was conducted in the morning and evening where most of the respondents were women who were usually at home. It is known that men tend to have better knowledge than women, but a person's knowledge depends on the extent of knowledge or not which differentiates the person's level of literacy understanding. So gender is a biological difference

between men and women, it could be that women have more extensive knowledge than men and vice versa. So after conducting research it was found that gender did not have a significant influence on knowledge of use, storage, disposal and how to obtain antibiotics.

2. Based on Age

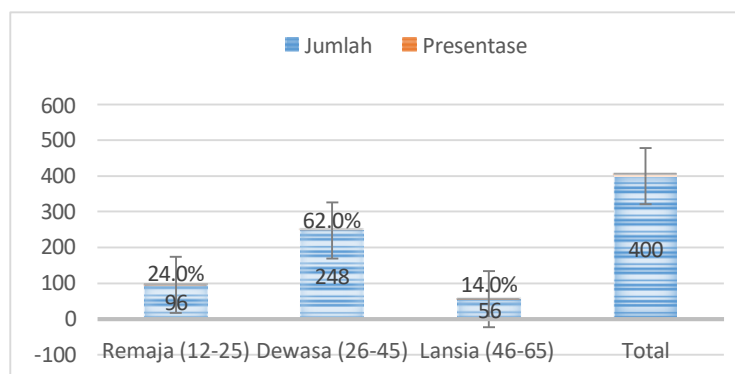


Diagram 2. Based on Age

Based on the age variable in the table, the significance value for the community regarding knowledge of antibiotic use is 0.442 ($p > 0.05$), knowledge of antibiotic storage is 0.550 ($p > 0.05$), knowledge of antibiotic disposal is 0.909 ($p > 0.05$), on knowledge of how to get antibiotics 0.633 ($p > 0.05$), this shows that there is no relationship between age and knowledge of antibiotic use. It can be seen that the value $p > 0.05$. This was also shown in research conducted by Sara Nurmala & Dewi Oktavia Gunawan (2020) on knowledge of antibiotic drugs among people living in the Babakan Madang sub-district, a significance value of 0.860 ($p > 0.05$) was obtained and this also shows that there is no relationship level of antibiotic knowledge with age (Sara, et al., 2020). This is explained as the increasing age of a person's level of maturity and strength in thinking and working, but this statement also shows that there are physical factors that hinder the learning process of adults, so this can cause a decrease in strength in thinking and working (WHO, 2014). So, through previous knowledge, one's own experience, then the experience of other people, the environment and also other intrinsic factors that can shape a person over a long period of time and will persist until old age. This research is also not in line with research from Yeni (2015), where the age of a more mature person greatly influences the level of ability and maturity to think and receive information better compared to younger people, the older they get, the more their understanding and thinking patterns change. (Yeni 2015). This result is very different from the theoretical basis which states that the older a person is, the more experience and knowledge will also increase. This can happen because advances in technology and information are unlimited and can be accessed by everyone so that it is not uncommon for younger people to tend to be smarter and contact and access technology and information such as the internet more often so they tend to have a higher level of knowledge. So in society, after conducting research, a person's age does not have a significant influence on the level of knowledge of use, storage, disposal and how to obtain antibiotics.

3. Based on Education

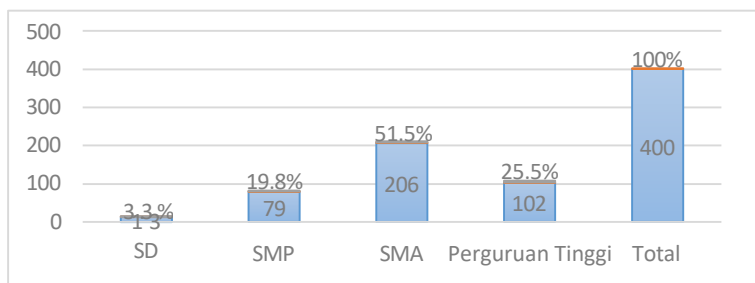


Diagram 3. Based on Education

Based on the education variable in the table, a significant value in the community regarding knowledge of antibiotic storage is 0.011 ($p > 0.05$), indicating that there is a relationship between education and knowledge of antibiotic storage, while knowledge of antibiotic use is 0.089 ($p > 0.05$). Knowledge of antibiotic disposal was 0.074 ($p > 0.05$), and knowledge of how to obtain antibiotics was 0.368 ($p > 0.05$), this shows that there is no relationship between education and knowledge of antibiotic use. It can be seen that the *value* $<$ value 0.05. This result is the same as research obtained by Masyita Miftahul Ummah (2018) showing that education and knowledge of antibiotics has a significance value of 0.876 ($p > 0.05$), which means there is no relationship between education and knowledge of antibiotics in the community, some researchers did not find a relationship. between education and antibiotic knowledge (Masyita 2018).

This is shown from the respondents' responses when interviewed, people with less education do not understand their condition so they believe in the benefits of therapy, storage, disposal and how to obtain antibiotic drugs, people with a lower level of education have better accuracy, people with a lower level of education You may be more confident in the advice given by doctors. From these results, education is also not a factor influencing public knowledge about antibiotics. This is inversely proportional to Nursalam's (2017) statement that the higher a person's education, the easier it is to find information and the more knowledge they have (Nursalam, 2017). Based on this research, there is no relationship between education and knowledge of antibiotics. Basically, the higher a person's education, the more knowledgeable they are in finding information and the more knowledge they have. This is because the level of education in society has not yet touched on the health aspects that are needed. The level of education is not just about health, but there are various other fields of education that are not related to the world of health, meaning that people are still relatively ignorant of their own health and of their own health independence. So that in society, after conducting research, knowledge of a person's level of education does not have a significant influence regarding knowledge of use, storage, disposal and how to obtain antibiotics.

4. Based on Job

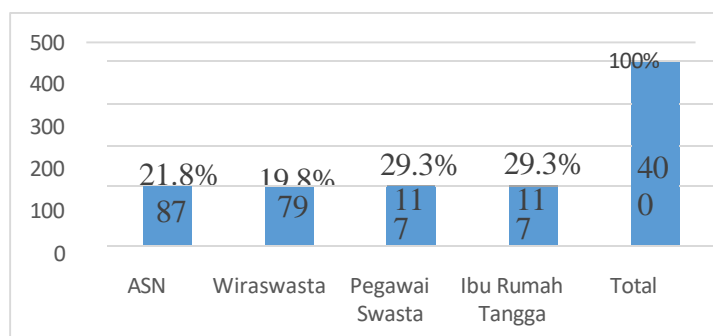


Diagram.4 By Occupation

Based on the occupational variables in the next table, a significant value was obtained for the community regarding knowledge of antibiotic use of 0.319 ($p > 0.05$), knowledge of antibiotic storage 0.508 ($p > 0.05$), and knowledge of antibiotic disposal 0.869 ($p > 0.05$), this result shows that there is no relationship between work and knowledge of antibiotic use, while knowledge of how to get antibiotics is 0.037 ($p > 0.05$), this shows that there is a relationship between work and knowledge of antibiotic use. This can be seen that $value < 0.05$. This is in line with research conducted by Sara Nurmalina & Dewi Oktavia Gunawan (2020) regarding knowledge of antibiotic drugs among people living in the Babakan Madang subdistrict, showing that the significance value obtained was 0.053 ($p > 0.05$), which means there is no employment relationship with public knowledge of antibiotic drugs (Sara, et al., 2020). This is in contrast to research conducted by Feby Pramadita and Sikni Retno Karminingtyas (2022) which shows that the significance value obtained is 0.001 ($p < 0.05$) which means that there is a significant relationship between work and knowledge of antibiotics in the community (Febby Pramadita, et al., 2022). This is confirmed by research conducted by Zulaikha (2017) that the significance value of the correlation between work and the level of knowledge in society is 0.000 (< 0.1) which shows that there is a significant relationship between work and community knowledge. In this relationship, the level of knowledge and work indirectly influences a person's level of knowledge (Zulaikha 2017). However, according to Vivian (2016) states that work is not a right from a factor related to work and knowledge because the source of knowledge and the impact of attitudes are concepts that occur due to circumstances, experiences, and what is recommended from other people, such as family, friends, social levels, and cultural systems in society (Vivian L. G, et al., 2016). This is influenced by several things, namely factors from the respondent and also factors from the perspective of the researcher himself.

Work is a factor that influences a person's knowledge, but basically work is not only about health aspects, there are also work in other fields that are not related to health. This indicates that society is still very ignorant of health regarding the management of antibiotic drugs, so in this research It was found that a person's job does not have a significant influence on knowledge of use, storage, disposal and how to obtain antibiotics.

a. Research Implications

It is hoped that it will be possible to conduct research on the level of public knowledge

regarding the use, storage, disposal and methods of obtaining antibiotic reference for health workers, especially pharmacists, to provide counseling, information and education to respondents regarding the use, storage, disposal and how

to get the right antibiotics and to educate more deeply about the use, storage, disposal and how to get antibiotics among the public to apply them well and right, and the importance of doing so.

b. Research Limitations

As for this study, there are deficiencies in knowing the level of knowledge of respondents regarding the use, storage, disposal and method of obtaining antibiotics. This is influenced by several things, namely, it could be due to factors from the respondents and also factors from the perspective of the researchers themselves. From data collection using this questionnaire which is filled in directly by the respondent and directed directly by the researcher and this is subjective, so that the truth obtained influences the value of the respondent's level of knowledge whether they answer with their true knowledge or whether the respondent gives a dishonest answer. when filling out the questionnaire.

Then, if viewed from the researcher's perspective, there are many factors related to the level of antibiotic knowledge, but due to many limitations in data collection, only a few variables were selected, and the questionnaire required re-validation with previous researchers' references and then validation was carried out first before conducting research. Then the respondents did not understand the questionnaire presented by the researcher so they needed to be accompanied when conducting research by explaining the purpose of the questionnaire presented.

CONCLUSION

From the research results it can be concluded as follows:

1. From the respondents' answers there is no significant relationship between gender and age, with respect to respondents' knowledge about use, storage, disposal and how to obtain them, whereas based on education there is a significant relationship with knowledge of storage and for work there is a significant relationship with knowledge of how to obtain antibiotics in the sub- district area. City, Kediri City.
2. The level of knowledge of the people of Kota District, Kediri City regarding using, storing, disposing of and how to obtain antibiotics is still lacking.
- 3.

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