

Conference Paper

Analysis of Community Behavioral Factors Influencing the Accuracy of Diarrhea Drug Use Using the Health Belief Model

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ORCIDRizka Nova Atmadani: <https://orcid.org/0000-0001-8417-8321>**Abstract.**

Diarrhea can be caused by infectious diseases that lead to relatively high morbidity and mortality rates. Diarrhea refers to a continuous flow of bowel movements that occurs suddenly and exceeds the normal limit, usually occurring more than 3 times in 24 hours and lasting less than 14 days. The Health Belief Model (HBM) can be used to identify factors that influence individual health behaviors. This study aimed to analyze the behavioral factors of the community towards the appropriate use of diarrhea drugs in the city of Biak Papua using the HBM. This was an observational study with a cross-sectional approach. There were 78 respondents and the data were analyzed using the Spearman rank test. According to the findings, each of the HBM components that were examined had a significant influence on the accuracy of drug use in diarrhea patients ($p < 0.05$). 15.2% of the respondents had a very precise accuracy, 46.2% had adequate accuracy, 24.4% had inaccurate accuracy, and 14.1% had very inaccurate accuracy. The correlation values of each perception were: perception of vulnerability = 0.549; perception of seriousness = 0.494; perception of obstacles = -0.371; perceived benefits = 0.226; and self-confidence = 0.513. It can be concluded that there is a relationship between behavior and accuracy in the use of diarrhea medicine in Biak City, Papua.

Keywords: diarrhea, accuracy, Health Belief Model (HBM)

1. INTRODUCTION

Diarrhea is one of the most common infectious diseases that attack the people of Indonesia and cause death. Diarrhea, which is when the flow of bowel movements is continuous, it can even be in the form of water where the frequency is higher than usual (3 times or more) in a day. Diarrhea causes relatively high morbidity and mortality. Generally, excessive diarrhea will cause dehydration, for children and infants have a greater risk than adults.[1]

Diarrhea affects millions of people per year and affects all age groups. Of the total incidence of diarrhea, most of the sufferers are children. Diarrhea is a major problem in developing countries, including Indonesia. In addition to being the cause of death,

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diarrhea is also the main cause of malnutrition that causes death and an indicator of extraordinary events [2]. There are several factors for diarrhea, namely by bacteria through contamination of food and drinks contaminated with feces or direct contact with sufferers. The bacteria that often cause diarrhea are *Shigella*, *Vibrio cholerae*, *Salmonella* (non-typhoid), *Campylobacter jejuni*, and the virus, while the virus that most often causes diarrhea, especially in children, is rotavirus. In addition to contamination, other factors that cause diarrhea are water, sanitation hygiene, family latrine. Poor hygiene patterns and poor sanitation will increase the risk factors for diarrhea. The biggest risks that can cause diarrheal disease are environmental and behavioral factors in dealing with diarrhea [1].

Diarrhea ranks 13th with an incidence of 35% the cause of death for all age groups and ranks third with an incidence of 13.2% causes of infectious death in each age group. The percentage of the incidence of diarrhea in developed countries is estimated to be around 0.5-2%, while in developing countries there are more cases than developed countries. According to data from the World Health Organization (WHO) data shows that every year there are two billion cases of diarrhea in adults worldwide. If this figure is used in Indonesia, the probability of diarrhea cases is around 100 million per year. Data from epidemiological studies in the United States show that complaints of diarrhea are in the third rank, the prevalence of diarrhea is around 3%-5% [3].

The World Health Organization (WHO) states that more than half of all prescribed drugs in the world are administered and in an inappropriate manner and half of patients use drugs in an inappropriate manner. Meanwhile, the use of a drug is said to be correct if it is in accordance with the right patient, the right indication of the disease, the right drug selection, the right information, the right dose, the right drug delivery (dispensing), the right method of administration, the right duration of administration, alert to side effects, proper follow-up (follow-up), proper assessment of the patient's condition, the drug must meet the requirements that it must be effective and safe with guaranteed quality also available at any time at a price that can be reached by all levels of society [4]

In this study using a cross-sectional method, namely the type of analytical observational method, the results and exposure of the study were carried out on study participants at the same time. The sampling technique used is non-probability sampling with the accidental method. This study uses an approach to the Health Belief Model (HBM) theory, which is to determine whether or not there is a relationship between the accuracy of diarrhea medication use and the HBM theory. In this study, two variables are used, namely independent variables (factors of the Health Belief Model theory) with

5 constructs, namely Perceived susceptibility, Perceived severity, Perceived barriers, Perceived benefits, Self-efficacy and the dependent variable with one indicator, namely the accuracy of diarrhea medication use.

Health Belief Model is a theoretical model that describes individual beliefs related to healthy living behavior, which is described by individual efforts to prevent or use health facilities. The HBM theory used in this research consists of five constructs, namely Perceived susceptibility (risk or vulnerability), Perceived Severity (seriousness or severity), Perceived benefits (value or usefulness), Perceived barriers (barriers), and Self-efficacy (individual motivation) [3]

2. RESEARCH METHODS

2.1. Research design and sample

This research is analytic observational with a cross-sectional study approach [2, 5]. The population used in this study is the community in the City of Biak Papua. The sampling technique used in this study is the non-probability sampling method with an accidental sampling approach. The number of population in this study is not known with certainty so that this study uses the Lemeshow formula to determine the number of samples so that the number of respondents obtained is 78 respondents.

2.2. Inclusion and exclusion criteria

Inclusion criteria are criteria or characteristics that need to be met by each member of the population that can be taken as a sample. Inclusion criteria that can be applied to the sample source population are local people who have had diarrhea, aged 18 years and over, patients who can communicate well using Indonesian, patients who are willing to be respondents of the study and fill out a questionnaire (filling informed consent) and criteria Exclusions are respondents whose data are incomplete.

2.3. Research instrument

The instruments used in this study were a demographic data questionnaire, a questionnaire related to accuracy, and a questionnaire related to the Health Belief Model. The use of questionnaires in this study, made by researchers taken from previous research and related theories/references, consists of 26 statement items. Filling out the

questionnaire is done by putting a tick (✓) on the answer that is considered correct by the respondent. The validity and reliability of the questionnaire have been carried out and have been declared valid and reliable.

2.4. Research variable

The independent variable and the dependent variable. The independent variables in this study are the factors of the Health Belief Model theory, while the dependent variable in this study is the accuracy of the use of diarrhea drugs. In this study, 2 types of questionnaires were used with a Likert scale in the form of ordinal data. In the Questionnaire related to Accuracy, there are 10 question item criteria questions with the answer "always" being given a score of 4, "Often" being given a score of 3, "Rarely" being given a score of 2, and the answer "Never" being given a score of 1. Accuracy can be categorized into four categories, namely very precise with the percentage of 76-100%, correct with the percentage of 56-75%, not quite right with the percentage of 40-55%, and the answer "Very inappropriate" with a percentage of <40%. In the Health Belief Model Questionnaire there are 16 question items, so that respondents were asked to express opinions with categories namely strongly agree (SS), Agree (S), Disagree (TS), Strongly Disagree (STS). Each scale is given a score with the provisions for the answer questions strongly agree (SS) is given a score of 4, Agree (S) is given a score of 3, Disagree (TS) is given a score of 2, Strongly Disagree (STS) is given a score of 1. From the scoring results that have been obtained, it can be categorized into four categories, namely "very good" with a percentage of 76-100%, "good" with a percentage of 56-75%, "not good" with a percentage of 40-55%, and the answer "very not good" percentage < 40%.

2.5. Data analysis

After the data is processed, it is continued with the analysis process with statistical tests using the SPSS program. Data analysis in this study was univariate and bivariate analysis. Univariate analysis in this study is the frequency distribution of demographic data. The results of univariate data analysis will be displayed in percentage form. In this study, bivariate analysis is used which is intended to see the relationship between the dependent variable and the independent variable. Bivariate analysis in this study was carried out using the Spearman rank test with a level of confidence used a significance level of $p(\alpha) = 0.05$. which is used to determine whether or not there is a relationship

and the magnitude of the relationship between accuracy and behavior on the accuracy of using diarrhea medicine[3, 4, 6].

2.6. Research ethics

This research has obtained a research permit from the Health Research Ethics Commission (KEPK) Faculty of Medicine UMM with No.E.5.a/157/KEPK-UMM/2021. Before the questionnaire was used to collect research data, a validity test and reliability test had been carried out, both of which had met the test requirements.

3. RESULTS

3.1. Respondents Socio-Demographic Data

TABLE 1: Socio-Demographic Data of Respondents.

Variable	Number respondents	Percentage
Gender		
Man	35	44.9
Woman	43	55.1
Age		
17 – 20 years	19	24.36
21 – 30 years	13	16.67
31 – 40 years	18	23.08
41 – 50 years	26	33.33
51 – 60 years	2	2.56
Work		
civil servant	28	35.9
entrepreneur	6	7.7
Employee	7	9.0
Student	19	24.4
Etc	18	23.1
Education		
junior high school	1	1.3
senior High School	33	42.3
College	44	56.4

Based on Table 1, it can be seen that the results of the characteristics of respondents based on gender, female sex obtained a higher percentage, namely 55.1% and male sex obtained a percentage of 44.9%. Human age can be divided into several ranges

or groups where each group describes the stage of human growth. The distribution of frequency data and the percentage of respondents' age can be seen in 1. Based on Table 1 it can be seen that the majority of respondents are aged 41-50 years as much as 33.33%, aged 31-65 years as much as 52.6%, while respondents aged >65 years were not found in this study. Based on 1, it can be seen that the type of work of the respondents who mostly work as civil servants is 35.9%, entrepreneurs are 7.7%, employees are 9, 0%, students as many as 24.4%, and people with other job categories (fishermen, divers, tourism) as much as 23.1%. Based on Table 1, it can be seen that the type of final education of the most respondents is at the tertiary level as much as 56.4%, at the high school level as much as 33%, and at the junior high school level as much as 1.3%.

TABLE 2: Characteristics of Respondents by Type of Diarrhea Drugs.

Types of Diarrhea Medicine	Amount	Percentage (%)
Attapulgite (Diatab)	17	10.90
Attapulgite (Molagite)	5	3.21
Attapulgite (Entrostop)	46	29.49
Attapulgite (Diapet NR)	18	11.54
ORS	30	19.23
Kaolin (Omegdiar)	1	0.64
Kaolin (Neo Kaolana)	4	2.56
Antibiotics (Cotrimoxazole)	7	4.49
Antibiotics (Metronidazole)	5	3.20
Antibiotics (Tetracycline)	2	1.28
Etc	21	13.46
Total	156	100

Based on Table 2 above, it shows that the type of diarrhea medicine that is most often used is the type of diarrhea medicine Attapulgite (Entrostop) with a percentage of 29.49%, while for the category of other diarrhea medicines, namely (Amoxicillin, Ciprofloxacin, Domperidone, Gentamicine inj, Supplements). zinc) The total number above is not the total number of respondents but the number of drugs used by respondents where each respondent has used more than one type of drug.

There are 4 categories of accuracy in the use of diarrhea drugs, very precise 76% - 100%, correct 56% - 75%, incorrect 40% - 55%, and very imprecise < 40% (Nursalam, 2016). The category of respondents based on the accuracy of drug use can be seen in table 3. From Table 3 it can be seen that the accuracy of the use of diarrhea drugs is in the very right category as much as 15.4% while the right category is 46.2%, the inappropriate category is 24.4%, and very inaccurate 14.1%.

TABLE 3: Categories of respondents based on the accuracy of drug use.

Accuracy Category	Number of Respondents	Percentage
Very precise	12	15.4%
Appropriate	36	46.2%
Not exactly	19	24.4%
Very imprecise	11	14.1%
Amount	78	100%

TABLE 4: The results of the test of the effect of each component of the Health Belief Model.

HBM Components	Correlation Value	P value
<i>Susceptibility</i>	0.549	0.000*
<i>Severity</i>	0.494	0.000*
<i>Barriers</i>	-0.371	0.001*
<i>Benefits</i>	0.226	0.047*
<i>Self-Efficacy</i>	0.513	0.000*
*Sig p-value at 0.05		

Based on table 4 of the 5 components of HBM, namely perceived susceptibility, perceived severity, perceived barriers, perceived benefits and self-efficacy, the strength of the relationship is stated to be large if the value of < 0.05 and each data significance is expressed by a large correlation value. In the component of perceived susceptibility, the significance value is $0.000 < 0.05$ so that from perceived susceptibility there is a significant effect with a correlation value of 0.549. On the perceived severity obtained a significance value of $0.000 < 0.05$. This indicates that there is a significant effect between perceived severity on the accuracy of drug use in diarrhea patients with a correlation value of 0.494. In the perceived barrier, a significance value of $0.001 < 0.05$ was obtained. So it is said that there is a significant effect between the perceived barrier on the accuracy of drug use in diarrhea patients with a correlation value of -0.371 so that the direction of the relationship is negative. On the perceived benefits obtained a significance value of $0.047 < 0.05$. This indicates that there is a significant effect between perceived benefits on the accuracy of drug use in diarrhea patients with a correlation value of 0.226. On self-efficacy obtained a significance value of $0.000 < 0.05$. This indicates that there is a significant influence between self-efficacy on the accuracy of drug use in diarrhea patients with a correlation value of 0.513. On the perceived benefits obtained a significance value of $0.047 < 0.05$. This indicates that there is a significant effect between perceived benefits on the accuracy of drug use in diarrhea patients with a correlation value of 0.226. On self-efficacy obtained a significance value of $0.000 < 0.05$. This indicates that there is a significant influence between self-efficacy on the accuracy of drug use in diarrhea patients with a correlation value of 0.513. On

the perceived benefits obtained a significance value of $0.047 < 0.05$. This indicates that there is a significant effect between perceived benefits on the accuracy of drug use in diarrhea patients with a correlation value of 0.226. On self-efficacy obtained a significance value of $0.000 < 0.05$. This indicates that there is a significant influence between self-efficacy on the accuracy of drug use in diarrhea patients with a correlation value of 0.513.

4. DISCUSSION

Based on the data, it can be seen in table 2. The data shows that the type of diarrhea medicine that is often used is the diarrhea drug Attapulgitte with the Entostop brand as much as 29.49%. This is in accordance with Research by Bagas 2018 because Entrostop is a type of over-the-counter drug that is widely sold in the market so that it is easy to find and also affordable. It can be seen in table 3 that the number of respondents with the most categories, namely the right category, is 36 people with a percentage (46.2 %). This shows that respondents pay attention to how to use diarrhea medicine properly. This research is in line with research by [7] which results in the most category results, namely the Right accuracy category with a percentage of 57.50%. While research by [7] obtained the most category results, namely the Very Precise category with a percentage of 61%. According to the Ministry of RI in 2011 there are several indicators of measuring the accuracy of the use of diarrhea drugs, including the right use of drugs, the right information, the right dose, the right price, the right indication, and being aware of the side effects of the drug. Accuracy in the use of diarrhea drugs affects the effectiveness of the therapy obtained. Based on the Health Belief Model questionnaire in table 4 Perceived Susceptibility, it can be seen that in the question items related to lifestyle, many people strongly agree that the availability of clean water affects the incidence of diarrhea, so that local governments can improve quality and maintain cleanliness so as to reduce vulnerability related to diarrhea. .

The Health Belief Model theory is used as a theory that can explain respondents' perceptions of the accuracy of drug use in diarrhea patients because the Health Belief Model is a model used to help identify and predict factors that influence healthy living behavior. There are 5 components of the Health Belief Model used, including perceived susceptibility, perceived severity, perceived barriers, perceived benefits, and self-efficacy.

Perceived Susceptibility, namely the perception of perceived vulnerability to risks that will arise. The higher the perceived susceptibility, the greater the perceived threat

and the greater the possibility of individuals to take action to overcome problems that may arise (Rimer, 2016). Frequency distribution data based on perceived susceptibility components from Table V.19 obtained the most number of respondents with very good category is 35 people (44.9%) and based on the influence test data (Spearman rank test) can be seen in table V.28 found a significance value 0.000 ($p < 0.05$) which means that there is a positive influence of the perception of susceptibility to the accuracy of diarrhea drug use.

The results of this study are corroborated by research by [8] that stated that the perception of susceptibility to diarrhea has a significant influence on the HBM stating that individuals will evaluate the possibility of diarrhea. The more individuals perceive themselves to be susceptible to diarrhea, the more they perceive themselves as a threat and take preventive action. Then other studies that are in line, namely research by [7] obtained positive influence results with the large influence test (R^2) is 0.327. The results of the study with the title patient compliance

Diabetes Mellitus by [9] who was researched at a hospital in Surabaya stated that there was a significant influence between the Perceived Susceptibility factor, a beta value of 0.534 was obtained, as well as the accuracy research in using gastritis medicine by [7] the value of the coefficient of determination test was obtained. R^2 of 0.285. So it can be concluded from the above research that respondents have very good accuracy and a high perception of susceptibility to diarrheal disease causing healthy behavior. This can happen because people in Biak City are very aware of the risk factors of diarrhea and are also influenced by the right lifestyle.

Perceived Severity, i.e. the individual's perception of how severe the physical and social consequences of the illness are, the more motivated the individual will be to avoid things that can cause the disease). Frequency distribution data based on perceived severity components from Table V.21 obtained the most number of respondents with good accuracy category is 52 people (66.67%) and based on influence test data (Spearman rank test) can be seen in table V found a significance value of 0.000 ($p < 0.05$) which means that there is a positive influence of perceived seriousness on accuracy and the correlation results from the Spearman rank test state that there is a large correlation value between accuracy and perceived severity.

This study is not in accordance with research from [8] which states that there is no effect between seriousness and the practice of giving oral rehydration, because it depends on how the individual perceives diarrhea. However, this study is in accordance with research from [7] if health outcomes do not have a major impact on the individual's

life, then he will not be motivated to avoid it. Another study by [7] stated that the better the perceived severity, the better the accuracy of drug use.

Perceived Barriers, that is, measuring the individual's assessment of the magnitude of the obstacles encountered in carrying out and implementing the suggested health behavior. Perceived barriers to taking action include, perceived discomfort, danger (eg, side effects). Frequency distribution data based on perceived barriers components from Table V.23 obtained the number of respondents with the most barriers category is the low category is 30 people (38.5%) and can be seen in table V.28 by the influence test (Spearman rank test) significance value 0.001, ($p < 0.05$), This means that perceived barriers have an influence on the accuracy of diarrhea medicine use. In this study the perception of barriers has a negative influence. This is in accordance with the theory that the higher the barrier, the lower the patient's accuracy in the use of diarrhea drugs. The results of this study were dominated by the low barrier category, due to the high accuracy of patients in using diarrhea drugs.

This study is in accordance with research from [8] which states that the perception of barriers to diarrhea has a significant influence, where individuals perceive that there are obstacles in the use of diarrhea drugs such as the discomfort they feel, the dangers that will arise when using diarrhea drugs. This study is in accordance with research from [7] which states that there is a relationship between perceived barriers and accuracy, but in this study there are differences where the perception of these barriers has a positive influence, this may be due to differences in population, the respondents answered that vary, the number of samples, and side effects occur when using diarrhea drugs. *Perceived Benefits*, which measures a person's beliefs about the perceived benefits of the various actions available to

reduce the threat of disease. This shows optimal confidence in reducing the severity of the unexpected and accepting the health that has been recommended and considering the action taken as something that has the potential to be beneficial and can reduce the threat [8] Frequency distribution data based on perceived benefits components from Table V.25 obtained the number of respondents with the most categories being good categories, namely 40 people (51.3%) and can be seen in table V.28 by testing the effect (Spearman rank test) a significance value of 0.047 ($p < 0.05$) This means that the perceived benefits have a positive influence on the accuracy of diarrhea drug use. From the results of the Spearman rank correlation test, it was found that the accuracy could be explained by the perceived benefits. This study is not in accordance with research from [8] which states that there is no effect between benefits and the accuracy of

using diarrhea medicine. If the individual believes that the use of diarrhea medicine is beneficial for him, then the individual will do so.

As for other studies, according to this study by [9] it is stated that the more aware the patient is about the perceived benefits of healthy behavior, the more obedient the patient will be to use insulin at the right time, place, and dose. Therefore, patients must believe that the benefits of healthy behavior are important for themselves to be healthier *self-efficacy*. It measures a person's belief that he or she can successfully carry out a behavior to get the desired result. Self-efficacy is a key component of health behavior change [8] Frequency distribution data based on perceived barriers components from Table V.27 obtained the number of respondents with the most good category is 49 people (62.8%) and can be seen in table V.28 by the influence test (Spearman rank test) the significance value is $0.000 < 0.05$, can be seen in Table V.24. That is, self-efficacy has a positive influence on the accuracy of using diarrhea medicine. From the results of the Spearman rank correlation test, it was found that the high influence can be seen in Table V.28, which means that the accuracy can be explained by the perception of self-confidence. This study is in accordance with research from [8] which states that confidence in diarrhea has a significant effect. In this case, the patient believes that he is able to make efforts to cure and prevent disease. Patients can properly use diarrhea medication because patients believe that with timely use they can control excessive diarrhea and patients believe that with a healthy lifestyle, diarrhea can be controlled. Some of the indicators listed in the questionnaire are that the patient creates a sense of self-confidence so that he can recover from the disease, and motivates himself to achieve a better quality of life. Belief in one's own ability to influence changes in outcomes (i.e., self-efficacy) is a key component of health behavior change [8] . [10] which states that confidence in diarrhea has a significant effect. In this case, the patient believes that he is able to make efforts to cure and prevent disease. Patients can properly use diarrhea medicine because patients believe that with timely use they can control excessive diarrhea and patients believe that with a healthy lifestyle diarrhea can be controlled. Some of the indicators listed in the questionnaire are that sufferers develop self-confidence in order to recover from illness, and motivate themselves to achieve a better quality of life. Belief in one's own ability to influence changes in outcomes (i.e., self-efficacy) is a key component of health behavior change [8]. [10] which states that confidence in diarrhea has a significant effect. In this case the patient believes that he is able to make efforts to cure and prevent disease. Patients can properly use diarrhea medicine because patients believe that with timely use they can control excessive diarrhea and patients believe that with a healthy lifestyle diarrhea can be

controlled. Some of the indicators listed in the questionnaire are that the patient creates a sense of self-confidence so that he can recover from the disease, and motivates himself to achieve a better quality of life. Belief in one's own ability to influence changes in outcomes (i.e., self-efficacy) is a key component of health behavior change [8].

This study is not in line with research by [11] related to the analysis of behavioral factors for adherence to gout patients. This study states factors related to adherence, the Health Belief Model factor, which is related to the patient's perception of the disease will make the patient obedient, the self-efficacy component does not have a significant effect on adherence to taking medication in gout patients.

5. CONCLUSION

Based on the results of research conducted on 78 respondents there is a relationship between behavior and accuracy. People's behavior towards accuracy has an accuracy of "very precise" as much as 15.4% while the "right" category is 46.2%, the "inappropriate" category is 24.4%, and the "very inappropriate" category is 14.1%. Each of the Health Belief Model factors has a significant effect on accuracy as evidenced by the significance value of all HBM component items showing $p < 0.05$. Perceived Susceptibility (0.000), Perceived Severity (0.000), Perceived Barriers (0.001), Perceived Benefits, 0.047, Self-efficacy (0.000). Then all the items related to the Health Belief Model with related accuracy.

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