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Health belief model and the understanding of rational use of medicines

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ABSTRACT

Community perception is an experience that causes a different understanding of treatment. Differences in people's perceptions of drug safety will affect their attitudes towards rational use of medicines (RUM). Therefore, it is necessary to do an in-depth measurement of public perceptions. The purpose of this study was to determine the relationship between community perceptions through the health belief model (HBM) with the understanding of (RUM). This study used a cross-sectional design with 97 samples in Denpasar City, Bali, Indonesia. Data collection was conducted from November 2019 to January 2020 using a questionnaire and analyzed using binary logistic tests. The results showed that perceptions based on perceived susceptibility perceived severity, health motivation, perceived benefits, and self-efficacy did not provide a significant relationship with the understanding of RUM ($p>0.05$). Perceived barriers provide significant results on the understanding of RUM ($p<0.05$). Health perceptions in allergy reporting and awareness of drug use based on clinical conditions and selection of alternatives increase understanding of rational drug use. The drug-taking procedure needs to be done quickly and according to the provisions to appropriately use the medication. Therefore, health workers' role is essential in providing complete services and information about drugs in health care, especially in symptomatic drugs.

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1. INTRODUCTION

Treatment is a service provided to the community to improve health. The rational use of drugs is essential to ensure the safety of a medicine in the community. The use of drugs for health can be influenced by public perception, especially in terms of knowledge and information [1], [2]. Other research in Sungai Besar District of South also mentions that information such as advertisements can affect perceptions about drugs [3]. The results also stated that drug selection based on perception was 52.7% [4]. The public perception itself can be measured using the health belief model (HBM) theory. This HBM theory focuses on one's subjective perceptions, such as perceived susceptibility, perceived severity, perceived benefits, health motivation, perceived barriers, and self-efficacy [5], [6]. The use of drugs in the community for healing from illness is very high. The results showed that people save drugs for self-medication by 48.1% [7]. Rational use of medicine (RUM) is a priority for the use of drugs that are following guaranteed safety quality and are available in the community [8]. Inappropriate treatment can cause problems in drug use [9]. One of them is

the irrational use of drugs. Results several studies show that RUMs in Panyabungan and Denpasar cities are only 40.6% and 44.3% [10], [11]. Current research reveals gaps in the public's view of drug safety, consequently affecting their attitudes on RUM [12]. The results also showed that low perception and knowledge could provide unsafe medication [13]. The results of other studies about public perception do not affect drug use. Howefer, information from health professionals affects the RUM [14]. Therefore, it is necessary to do an in-depth measurement of public perceptions in influencing the RUM.

HBM is a form of description of the sociopsychological model that is used to understand individual health behaviour through beliefs and to examine how these changes [15]. This research is different from previous research, which is more explicitly exploring the perception of RUM through the HBM approach. The urgency of this research was due to a lack of understanding of RUM in the community, particularly in the city of Denpasar. The purpose of this study is to look at the relationship between community perceptions based on the health belief model (HBM) approach with an understanding of RUM.

2. RESEARCH METHOD

2.1. Type of study and duration

This study was cross-sectional survey. This study obtained an ethical clearance permit number No.001/IIK BALI/EC/XII/2019. Researchers in this study delivered questionnaire questions directly to the public. This research was conducted in January-February 2020. The sampling method was purposive sampling.

2.2. Sample size and informant consent

The number of sample calculations used the Levy and Lameshow formula, because the population is unknown [16].

$$n = \frac{z_{1-\alpha}^2 \, p(1-p)}{d^2}$$

$$n = \frac{(1.96^2) \, 0.5 \, (1-0.5)}{0.1^2} = 97 \text{ Sample}$$

where, n=Sample, p=Chance, d=Limit error or absolute precision, $z_{1-\alpha}^2$= Trust metric

The number of samples used was 97. The study inclusion criteria were people aged 18-60 years and residing in the city of Denpasar. The exclusion criterion for this study is the community who work as health workers. Informant consent was given before filling out the questionnaire by the sample, which contained consent to the use of the sample's personal, the length of time filling out the questionnaire, benefits, inconveniences, research risks, and confidentiality of sample data. If the representative agrees it will proceed to fill out the questionnaire

2.3. Study questionnaire and analysis

This research was conducted quantitatively; meanwhile, the preparation of the questionnaire of quantitative and qualitative. The quantitative arrangement compares the calculated R-value with the R-Table. The qualitative interpretation was carried out using focused group design (FGD). Content validation using language experts and FGD with pharmacists. Validation and reliability tests were carried out in Badung Regency. The selection of Badung Regency is because it has similarities with the place where the research was conducted in Denpasar City compared to other districts in Bali [17].

Tool for measuring HBM variables of drug use (35 questions) using a questionnaire adapted from previous research [18]. Test the validity and reliability using 42 samples. The test results are valid-reliable with values R-Table >0.304 (validity) and Cronbach's Alpha >0.60 (reliability). The questionnaire of HBM are shown in Table 1, lowest validity value is 0.425, and the reliability value is 0.78.

The RUM understanding questionnaire (15 questions) was based on theory and FGD with pharmacists in Denpasar. The questionnaire about understanding RUM are shown in Table 2, the lowest validity value, 0.310, with a reliability of 0.79. Statistical analysis was in the form of sample characteristics, univariate test of HBM-understanding of RUM variables, and binary logistic test.

Table 1. Validity and reliability HBM questionnaire

No	Health belief model (HBM)	f (42 Sample)	
		Validity	Reliability
	Perceived susceptibility		
1	Use of drugs without consulting can make treatment unsafe	0.552	
2	I use the drug without consulting the chance of allergies increases.	0.472	
3	I use drugs without consulting, and I may become ill.	0.674	
4	I used drugs without consultation, and my body and organs became unhealthy.	0.669	
5	If it is not a health worker who suggests drugs, it can be dangerous	0.529	0.78
6	I do not recommend my medication to other people because it causes treatment unsafe.	0.425	
	Perceived severity		
7	Drug allergies can harm health.	0.481	
8	I will be stressed when thinking about drug side effects.	0.547	
9	I am afraid to think about drug allergies without consulting.	0.685	
10	I will have side effect problems that will continue for a long time.	0.593	
11	If I take the drug without consulting it, it can destroy my belief about medicine.	0.578	
12	If I use the wrong drug and it is not consulted, it will cause changes in my life (vision loss, and hearing damage)	0.431	
	Health motivation		
13	I want to find the beginning of my health problems.	0.462	
14	Being healthy is very important.	0.474	
15	I am looking for information to improve my health.	0.632	
16	I learned to get information on the correct use of drugs.	0.521	
17	I think it is essential to practice behavior and knowledge to improve health.	0.477	
18	I used the drug by consulting beforehand.	0.442	
	Perceived benefit		
19	The use of drugs in the consultation will provide an advantage	0.655	
20	Using the consulted drug improves healing.	0.661	
21	the consulted drug can prevent allergies	0.483	
22	The drug consulted provides legal protection	0.561	
	Perceived barriers		
23	To get the medicine by consultation is very difficult.	0.496	
24	The procedure for obtaining the drug can take a long time.	0.477	
25	Nothing can help me get medicine.	0.462	
26	I don't have to follow procedures because taking medicine without consultation can heal.	0.633	
27	If buying over-the-counter medicine can cure, drug consultation is not necessary.	0.627	
28	I don't have time to get the medication in consultation.	0.454	
	Self-efficacy		
29	I know the procedure for getting medicine by having a prior consultation.	0.670	
30	I can use medicine properly.	0.566	
31	I was able to recover because of the use of the right medicine.	0.543	
32	I can understand the drug information provided	0.468	
33	I was able to get the necessary information because I wanted to know the drug's proper use.	0.591	
34	I can use the dosage of medicine properly.	0.481	
35	I understand the timing of taking the right medication	0.673	

Table 2. Validity and reliability RUM

No	RUM understanding (15 item)	n (42 respondents)	
		Validity	Reliability
1	Do you need to consult with other diseases before you choose a medication (heart disease, and diabetes).	0.359	
2	Drug selection must be adjusted to the patient's condition (pregnant, breastfeeding, and age).	0.310	
3	Drug indications are the uses of a drug	0.445	
4	If I have a drug allergy, I will keep it a secret	0.433	
5	I give them information on the use of other drugs before buying	0.389	
6	All drugs should be taken after eating	0.573	
7	Drugs taken 3 x 1 tablet must be drinking every 8 hours	0.348	
8	Antibiotic drugs can be kept if the symptoms of the disease are gone	0.356	0.79
9	The dose of the drug is the same as taken by each person	0.335	
10	Antibiotics can be used to treat viral infections	0.441	
11	Drugs that have the same ingredients and different prices give the different effects	0.402	
12	Cough, fever, and diarrhea medicine does not need to be drunk until it runs out if the symptoms have disappeared	0.358	
13	The amount of medicine purchased matches with the time of takes the medicine	0.577	
14	Generic drugs have the same effect as patent medicines, even though the price is different	0.429	
15	I will be choosing a generic drug that cheaper than a patent medicine if the money is not enough to buy a patent medicine	0.465	

3. RESULTS AND DISCUSSION

3.1. Sample socio-demographic characteristics

Sample socio-demographic characteristics are shown in Table 3. A total of 63.5% of the community were female 53.6% and male 60.8% were married and 39.2% single. Among the patients, 62.9% had achieved ES/JHS/SHS (elementary/ junior high/senior school) and 37.1 % university education. In terms of employment, 10.3% were unemployed, 63.9% private employees, 17.5% entrepreneurs, and 8.2% civil servant. The percentage of community with ages (years), 32% were 18-25, 30.9% 26-35, 23.7% 36-45, and 13.4% 46-55, respectively

Table 3. Samples characteristics

Sample socio-demographic characteristics	n (97 respondents)	%
Gender		
Female	52	53.6
Male	45	46.4
Marital status		
Single	38	39.2
Married	59	60.8
Education		
ES/JHS/SHS	61	62.9
University	36	37.1
Profession		
Unemployed	10	10.3
Private employees	62	63.9
Entrepreneurs	17	17.5
Civil servants	8	8.2
Age (years)		
18-25	31	32.0
26-35	30	30.9
36-45	23	23.7
46-55	13	13.4

3.2. Test univariate HBM

The results of Table 4 about the univariate test of the HBM approach and the understanding of RUM show that the percentage of community perceptions about perceived susceptibility being good was 51.5% and not good 48.5%. The percentage of community perceptions about perceived severity being good was 54.6% and not good 45.4%. The percentage of community perceptions about health motivation being good was 52.6% and not good 47.4%. The percentage of community perceptions about perceived benefits being good was 63.9% and not good 36.1%. The percentage of community perceptions about perceived barriers being good was 51.5% and not good 48.5%. The percentage of community perceptions about self efficacy being good was 68% and not good 32%.

Table 4. Univariate test of HBM

Heathy belief model (HBM)	n	%
Perceived susceptibility (median)		
Not good	47	48.5
Good	50	51.5
Perceived severity (median)		
Not good	44	45.4
Good	53	54.6
Health motivation (median)		
Not good	46	47.4
Good	51	52.6
Perceived benefits (median)		
Not good	35	36.1
Good	62	63.9
Perceived barriers (median)		
Not good	47	48.5
Good	50	51.5
Self-efficacy (median)		
Not good	31	32
Good	66	68

3.3. The value of the RUM understanding questionnaire

The results of the RUM understanding questionnaire are shown in Table 5. Most people understand the use of drugs must adjust to the patient's condition (93.8%), and patients will not keep their drug allergies secret (90.7). The wrong value of understanding RUM in the community regarding cough, fever, and diarrhea medicine does not need to be taken until it runs out if the symptoms have disappeared (50.5%) and all medicines taken after eating (26.8%). The people of Denpasar City do not know about RUM's understanding of generic-patent drugs having the same effect even though the price is the highest (30.9%).

Table 5. Results of the RUM understanding questionnaire

	RUM understanding	n(%)		
		No	Do not know	Yes
1	Do you need to consult with other diseases before you choose a medication (heart disease, and diabetes)	5(5.2)	8(8.2)	84(86.6)*
2	Drug selection must be adjusted to the patient's condition (pregnant, breastfeeding, and age)	1(1)	5(5.2)	91(93.8)*
3	Drug indications are the uses of a drug	5(5.2)	13(13.4)	79(81.4)*
4	If I have a drug allergy, I will keep it a secret	88(90.7)*	8(4.1)	5(5.2)
5	I give them information on the use of other drugs before buying	5(5.2)	13(13.4)	79(81.4)*
6	All drugs should be taken after eating	52(53.6)*	19(19.6)	26(26.8)
7	Drugs taken 3 x 1 tablet must be drinking every eight hours	14(14.4)	23(23.7)	60(61.9)*
8	Antibiotic drugs can be kept if the symptoms of the disease are gone	57(58.8)*	26(26.8)	14(14.4)
9	The dose of the drug is the same as taken by each person	80(82.5)*	14(14.4)	3(3.1)
10	Antibiotics can be used to treat viral infections	66(68)*	20(20.6)	11(11.3)
11	Drugs that have the same ingredients and different prices give the different effects	33(34)*	26(26.8)	38(39.2)
12	Cough, fever, and diarrhea medicine does not need to be drunk until it runs out if the symptoms have disappeared	49(50.5)	13(13.4)	35(36.1)*
13	The amount of medicine purchased matches with the time of takes the medicine	17(17.5)	11(28.9)	52(53.6)*
14	Generic drugs have the same effect as patent medicines, even though the price is different	18(18.6)	30(30.9)	49(50.5)*
15	I will be choosing a generic drug that cheaper than a patent medicine if the money is not enough to buy a patent medicine	14(14.4)	13(13.4)	75(77.3)*

* *correct*

3.4. The value of the RUM understanding questionnaire

The results of the binary logistic test analysis are shown in Table 6. The sample characteristics of gender, occupation, education, marital status, and age did not provide a significant relationship to the understanding of RUM ($p>0.05$). Perception value based on HBM perceived susceptibility perceived severity, health motivation perceived benefits, and self-efficacy did not provide a significant relationship with an understanding of RUM ($p>0.05$). Perceived barriers gave significant results on the understanding of RUM ($p<0.05$).

Table 6. Binary logistic test

Characteristics and community perceptions based on HBM	OR	95% CI		p
		Lower limit	Upper limit	
Gender	1.20	0.49	2.93	0.69
Profession	1.43	0.81	2.54	0.21
Education	0.62	0.24	1.57	0.31
Marital status	1.01	0.29	3.45	0.98
Age	1.15	0.74	1.78	0.51
Perceived susceptibility	1.40	0.53	3.68	0.49
Perceived severity	0.55	0.18	1.68	0.29
Health motivation	1.42	0.55	3.63	0.46
Perceived benefits	0.67	0.24	1.83	0.44
Perceived barriers	0.41	0.18	0.93	0.03
Self-efficacy	1.74	0.71	4.26	0.22

3.5. Discussion

The results of the study perceived susceptibility, did not provide a significant relationship with an understanding of RUM. These results differ from studies of perceived susceptibility with values that can less influence patient involvement in understanding drug use [19]. Other studies also mention the perceived susceptibility to influence factors related to the drug selection process, including physiological status [20]. This study indicates that the community does not agree to use drugs without consultation because it can increase the risk of death [21]. The results of this perceived severity research are supported by studies that

show the influence of drug use is not enough to motivate healthy perceptions in drug use [22]. Other studies have had different results regarding patients' perceptions of reasonable safety risks that can improve healthy behavior [23]. Other research also mentions that the use of appropriate drugs is a useful step towards healthy behavior in the community [24]. This difference in results is because the incidence of drug allergy is rare. Therefore, people still do not show the perceived severity of drug use, howefer the community has already reported allergies to health workers, increasing awareness of drug understanding.

Health motivation has inconsistent results with the use of drugs, especially in the treatment of chronic diseases [25]. The results of other studies also support many decisions not influenced by health motivation; drug use is not always planned and is strongly influenced by emotional factors [26]. This is contrary to health motivation research regarding certain aspects of treatment as crucial for changing health behavior [27]. This is because the statement of the public being healthy with drugs is less critical. This is supported by the results of public understanding of RUM regarding drug selection is strongly influenced by clinical conditions, and will use other alternatives if the use of drugs is detrimental. Perceived benefit does not affect the understanding of RUM. This contradicts research, which states that perceived benefits increase motivation for treatment behavior [28]. The research data states that public perceptions of using drugs do not need consideration from pharmacists, howefer rather to the administration of obtaining drugs. This is consistent with research that states that rational drug use is influenced by access to health facilities, regulation of the drug dispensing process, and regulation [5]. This study's results have a similar value and are in line with research that states perceived benefits (64%) [29]. There are still many mistakes in using rational medicine for symptomatic drugs that are taken until they run out. This is because people feel that taking medicine until it runs out will provide benefits to be healthier.

The results of self-efficacy research did not provide a significant relationship to the understanding of RUM. This contradicts research, which states the use of self-efficacy is related to the scale of the right drug use [30]. This difference in results is due to people's perceptions of not agreeing with the important procedures of obtaining drugs, so that understanding of RUM many errors in symptomatic treatment and the effects of generic-patent medicines. The results of the perceived barrier study with the understanding of RUM show significant results. This result is different from research, which states that the perceived barrier does not affect a person's desire to use drugs and is more influenced by culture [31]. The findings of this study are confirmed by other studies that show the community 's willingness to use anything suitable because of the lack of access to knowledge and time and insufficient public access to health services [32]. This is also consistent with the research data of public perceptions that strongly agree on the limited time to obtain drugs and affect the understanding of RUM, especially in information on symptomatic treatment.

4. CONCLUSION

Health perceptions in allergy reporting and awareness of drug use based on clinical conditions and selection of alternatives increase understanding of rational drug use. The drug-taking procedure needs to be done quickly and according to the provisions to appropriately use the medication. Therefore, health workers' role is essential in providing complete services and information about drugs in health care, especially in symptomatic drugs.

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