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KNOWLEDGE, ATTITUDE, AND PRACTICE OF HYPERTENSIVE PATIENTS ON GENERIC AND BRANDED MEDICATIONS

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ABSTRACT

Hypertension is one of the most prevalent diseases that cause mortality and morbidity worldwide. Rising health care prices have been a crucial concern affecting different government agencies, medical providers, and consumers. One way to improve health standards is to provide patients with accessible and affordable quality-assured drugs to reduce the financial burden, mitigating significant pain and suffering, and reducing the rate of morbidity and mortality. (Ozawa et al., 2019) The Philippine government has mandated the usage of generic drugs in the country. The FDA guarantees the bioequivalence and similarity of generic and branded medicine regarding safety, quality, and efficacy. However, the patients' viewpoint as end-users of these medicines is an essential factor in increasing the rational use of drugs. The study aims to evaluate the knowledge and attitude and determine the practice of hypertensive patients on generic and branded medications. A descriptive study with 245 participants from Hagonoy, Bulacan was conducted using an online survey questionnaire. Data were analyzed using IBM SPSS. Most of the respondents are female (61.77%), ages 54-60 years old (30.19%), with a below 10k (36.57%) family income per month. The results showed that in terms of knowledge and attitude, participants have sufficient knowledge regarding cost-differences. In contrast, they lack discernment in terms of quality and effectiveness, and they were slightly unaffected and influenced by the media or pharmacists. At the same time, their practice showed that they preferred to buy branded medicines. In conclusion, educational interventions among healthcare professionals and the government were needed.

INTRODUCTION

Hypertension is a cardiovascular condition that progressively increases in the past few years. It is one of the world's most serious public health concerns, causing mortality and morbidity globally. (Alam, Mittall, & Chawla, 2017). In 2018, the Philippine Health Statistics published the top leading diseases that cause morbidity and mortality in the Philippines. Hypertension was the second most common cause of morbidity, accounting for 637,078 cases and a rate of 602.4 cases per 100,000 population, respectively. In 2018 mortality statistics, around 26 836 deaths were reported for mortality cases of hypertensive disease. On a similar note, hypertension is one of the leading causes of mortality across many countries. (Philippine Health Statistics, 2018)

In the 2017 Blood Pressure Guidelines of the American Heart Association, they have listed Blood Pressure classifications. A blood pressure of less than 120/80 mmHg is considered normal. Patients having their results fall into this category do not have to

undergo any treatment. Maintaining healthy heart habits and monitoring blood pressure to be sure that it will remain in a normal range is what is necessary. Blood pressure ranging from 120-129 mmHg systolic pressure and less than 80 mmHg diastolic pressure are considered elevated blood pressure. High blood pressure is likely to persist in this category. Hypertension is classified as Stage 1 when blood pressure is 130-139 mmHg systolic or 80-89 mmHg diastolic, and medications and lifestyle adjustments are recommended. This stage reduces the chance of developing heart disease, such as atherosclerotic cardiovascular disease (ASCVD). Blood pressure ranging from 140/90 mmHg or greater is considered Stage 2 of Hypertension. At this stage, it is more expected to be prescribed with a combination of antihypertensive agents. Blood pressure that reaches more significant than 180 mmHg systolic pressure or greater than 120 mmHg diastolic pressure is considered extremely high blood pressure or a hypertensive crisis. A hypertensive emergency may cause possible organ damage such as unstable angina, dyspnea, back pain, changes in vision, difficulty speaking, which needs an immediate medical response. (US Pharmacist, 2018)

Several antihypertensive agents have been widely used in hypertension treatment. These are the Diuretics, Beta-blockers, Alpha-blockers, Angiotensin-Converting Enzyme Inhibitors, Angiotensin II Receptor Blockers, and Calcium Channel Blockers (American Heart Association, 2020). In several patients with mild hypertension, initial monotherapy is effective. However, single drug treatment is incapable of reaching the target blood pressure. In this case, prescribers may increase the dose or change the medication. In other patients with blood pressure higher than 120 mmHg systolic pressure or 80 mmHg diastolic pressure, initial combination therapy using two antihypertensive drugs or fixed-dose combination drugs is recommended. Approximately 75 percent of individuals with high blood pressure require combination medicine to attain the desired blood pressure, and 25 percent will need at least three antihypertensive medications to obtain the desired therapeutic outcomes. (Garcia & Guerra, 2018)

The combination of drugs for therapy enables a more effective treatment than higher doses of monotherapy. It offers more excellent protection to target organs and can also minimize side effects by combining one or more drugs at lower doses. (Beckerman, 2020) The initial first-line therapy for Stage 1 Hypertension is Thiazide diuretics, Calcium Channel Blockers, ACE Inhibitors, and ARBS. Two of those classes are used in patients with Stage 2 Hypertension. (Rubenfire, 2017) Several patients lacking therapy adherence are also recommended to use triple therapy using combinations of Renin-Angiotensin System Inhibitor (RASI), Calcium Channel Blockers, and Natriuretic agents to maximize the patient's compliance to the treatment. (Garcia & Guerra, 2018)

Despite the growing incidence of hypertension, the quantity of its management, treatment, and blood pressure control is low. Uncontrolled and poorly controlled hypertension is prevalent. (Beaney et al., 2018) The cost of drugs has always been an obstacle to the patient's compliance with the therapy. Rising health care prices have been a crucial concern affecting different government agencies, medical providers, and consumers. Consumers purchasing medicines have been recognized as the fastest-growing portion of health care expenditures, especially in lower-middle-income countries, where the Philippines belongs. (WHO, 2019) Accessibility and affordability of quality-assured drugs are essential for reducing the financial burden of patients to their treatment. (Alam, Mittall & Chawla, 2017)

One of the ways to improve health standards is to provide patients with accessible quality medication. Accessibility and affordability of quality-assured drugs are essential for reducing the financial burden of treatment, mitigating more significant pain and suffering, reducing the rate of morbidity and mortality worldwide. (Ozawa et al., 2019) There are two types of medicine available for purchase by consumers. *Branded medicine* is a medicine that was discovered, developed, and marketed by a pharmaceutical company. Whenever a new drug is found, the company should apply for a patent against other companies who make copies and sell the drug. During this point, the drug has two identities: a generic version, which is the drug's common scientific name, and a branded version, which distinguishes it in the marketplace. (Alam, Mittal, & Chawla 2017).

By contrast, the United States Food and Drug Administration defines *generic medicine* as a medication designed to be similar to the brand name possible in terms of dosage form, safety and strength, route of administration, quality, performance characteristics, and intended purpose. The medicines help to demonstrate bioequivalence, which means medicine performs similarly and has similar clinical outcomes as its version. (US FDA, 2018)

The US Food and Drug Administration (2018) constructed a handout for awareness about Generic Drug Facts. This table follows information about the Similarities and Differences between Generic and Branded medicine.

Similarities	Differences
On the authority of the FDA, generic medicine can be effectively substituted for a branded drug in the following manner: ● The active component should be identical (pharmacologically active ingredient) ● The dosage strength ought to be the same (the number of active ingredients) ● The dosage form ought to be the same (tablet, injectable, etc.) ● The route of administration should be the same (oral, topical, etc.) ● The indication ought to be the same	The following are their differences from one another: ● Trademark laws prevent the generic drug from looking the same as the branded drug ● The color and size may be different ● Generic medicines are cheaper than branded medicine ● Generic drug may cost 30-80% different from a branded drug ● Generic medicine may contain the additional inactive ingredient ● Inactive ingredients do not affect the ef-

● The manufacturing process must have strict standards as branded medicine
  ● The container must be appropriate
  ● The label must be the same as branded medicine
	fectiveness of the drug

Figure 1. (a) Similarities and Differences between Generic and Branded Medicines

Due to the advantages and benefits of generic drugs purchase, the Philippine Government has established a Cheaper Medicines Program (CMP). This program includes policies and regulations to provide a lower cost of medicines in the Philippines. The Republic Act No. 6675, the Generics Act of 1988, is designed to increase the public's awareness of the presence and efficiency of generic medicines. It is designed to ensure that generic medications are appropriately supplied at the lowest possible cost and are offered entirely for free to underprivileged patients. The law also required all government health agencies and their personnel to use generic terminology or generic names in all purchases, prescribing, dispensing, and administering drugs and medicines. In line with the CMP is the RA 9502 Universally Accessible Cheaper and Quality Medicines Act of 2008. (Picazo, 2010) According to this, the issued Executive Order 821 prescribing the maximal retail prices (MRP), also known as government mediated access prices, reduces the cost of selected innovator and generic drugs. They included only five active pharmaceutical ingredients; one of these is the antihypertensive agents. (Sarol, 2014).

Scientific data on patients' experiences and attitudes toward generic drugs must sustain a generic drug use policy, but it has only been studied to a small extent. Reports on patient attitudes and preferences are generally accessible from countries where generic drug replacement in retail pharmacies is accepted apart from India. Although the US FDA constructed an awareness for the similarities and differences of generic and branded medicines, in some instances, substituting a generic drug for a branded product may not be suitable to certain patients because some patients have different reactions to medications. Some patients distrust the difference in inactive ingredients, pill shape, color, and other characteristics of generic medicines. (Kumar et al., 2019)

With this context, the current study was conducted to evaluate the knowledge and attitude and determine the practice of hypertensive patients on generic and branded medications.

MATERIALS AND METHODS

Research Method

A descriptive research method was used in this research study to evaluate the knowledge and attitude and determine the practice of hypertensive patients on generic and branded medications.

Descriptive research involves describing, recording, analyzing, interpreting the present nature and the composition of phenomena. The term descriptive study refers to the type of research question, design, and data analysis applied to a given topic.

Descriptive statistics describe "what is," but inferential statistics attempt to identify cause and effect. The type of questions provided by the researcher will ultimately determine the technique necessary to conduct an appropriate assessment of the topic at hand.

This type of research aims to describe the data and characteristics of what is being studied and investigate the frequency, averages, and other statistical calculations.

Research Procedures

A modified questionnaire-based survey was sent online to the participants. Each participant was asked to answer seventeen (17) questions. The respondents' participation was voluntary. For confidentiality, no personal information other than age, sex, income range, and prescription were asked.

Subjects/Respondents of the Study

A total of two hundred fifty-three (253) hypertensive patients in Hagonoy, Bulacan were the computed participants of the study. However, the researchers could only gather two hundred forty-five (245) participants, equivalent to 96.84%. The participants were described according to their demographic profile, such as age, sex, and income range. In addition, knowledge, attitude, and practice of hypertensive patients regarding their utilization of generic and branded medicines were assessed.

Sampling Techniques

Purposive and snowball non-probability sampling techniques were used in this study. The participants were based on the researchers' criteria and then were asked to recruit other participants suitable for the requirements. The respondents were hypertensive patients in Hagonoy, Bulacan, ages 19-65 years old.

Sample Size Determination

The sample size of the participants from the total population was computed using Raosoft sample size calculator via http://www.raosoft.com/samplesize.html with:
Confidence level = 90%

Margin of error = 5%
Response distribution = 50%
Total population = 3.674

Unfortunately, the researchers recruited 245 respondents only instead of the computed sample size of 253.

Inclusion criteria:
     a. Residents in Hagonoy Bulacan who are 19-65 years old
     b. Residents in Hagonoy Bulacan who are clinically diagnosed with hypertension
     c. Residents in Hagonoy Bulacan who can present updated prescription

Exclusion criteria:
     a. Resident in Hagonoy Bulacan who have hypertension but are 66 years old and older
     b. Residents in Hagonoy Bulacan who are high blood but not clinically diagnosed with hypertension
     c. Residents in Hagonoy Bulacan with hypertension but do not have an updated prescription

Research Instruments

The modified questionnaires were formed based on qualitative research. A questionnaire in the English language included seventeen (17) multiple-choice questions with a five-point Likert scale response. These assessed the knowledge, attitude, and practice of hypertensive patients on generic and branded medications. The questionnaire contained two (2) sections. Section I was used to elicit the participant's profile, such as age, sex, and income level. Section II contained three categories of factors, namely: Knowledge, Attitude, and Practice. Data were collected using a self-administered questionnaire using Google form. The forms were created by using https://docs.google.com/forms. A blank format was chosen, to which the questions along with the choices of options were added.

Validation of Instrument

Three (3) professionals examined the research instruments. Deficiencies detected in the tool were corrected to enhance the validity of the instrument. The overall scores were all retained, which means no further changes would be made.

Reliability of Instrument

A pre-test utilizing hypertensive patients excluded in the actual research was conducted to determine the clarity of items and consistency of responses. A certified statistician evaluated the data, and the overall reliability scores were good and acceptable.

Statistical Treatment of Data

IBM SPSS Statistics Version 23 was used for data analysis. Summary statistics were expressed using mean and standard deviation (SD) for numerical variables and frequencies, counts, and percentages for categorical variables. Each variable was treated independently.

Ethical Considerations

The protocol of the study using Human subjects was submitted and approved by the Institutional Ethics Review Committee (IERC) of Centro Escolar University under the Research and Evaluation Office.

RESULTS AND DISCUSSION

Table 1. Demographics Data of Hypertensive Patients in Hagonoy, Bulacan

Profile	N	%
Age		
19-25	10	3.88
26-32	12	4.99
33-39	46	18.84
40-46	31	12.47
47-53	44	18.01
54-60	74	30.19
61-65	28	11.63
Sex		
Female	151	61.77
Male	94	38.23
Income level		
Below 10k	90	36.57
10k-21k	62	25.48
21k-43k	48	19.67

43k-76k	24	9.97
76k-131k	13	5.26
Above 131k	8	3.05

Among the 245 participants, 62% were female, and 35% were male. At the same time, 30% of respondents were 54-60 years old. In addition, the majority of respondents, which accounts for 36%, have a family monthly income of below 10k.

Elevated blood pressure are more common among women mostly in their menopausal age of 51 years old and above. (Abramson et al. 2018) Also, people who belongs to low socioeconomic status are more common to develop hypertension due to stress of unemployment. (Nawi et al. 2017)

Knowledge

Table 2. Knowledge of Hypertensive Patients on Generic and Branded Medications in Mean and Standard Deviation

	Mean ± SD
Drug Category	
I am familiar with generic medicines.	4.23 ± 0.690
I am familiar with branded medicines.	4.26 ± 0.669
Quality	
Generic and branded medicines have similar qualities.	2.18 ± 1.018
Effectiveness	
Generic medicines provide relief from the disease quickly as branded medicines.	2.22 ± 1.104
The therapeutic effect of generic medicines stays for a long period as branded medicines.	2.20 ± 1.028
Cost	
Generic medicines have a higher price than branded medicines.	2.19 ± 1.103
Generic medicines have lower prices than branded medicines.	4.38 ± 0.673
Generic medicines have the same price as branded medicines.	2.23 ± 0.879
Generic medicines would provide significant savings to me.	4.17 ± 0.750
Generic medicines are cheaper because they are less effective.	2.48 ± 1.052

In this study, the respondents have quite the same level of knowledge on generic and branded drug categories. Still, the majority are more likely to be aware of branded medicines, with a mean rating of 4.26. In terms of quality, 50% of the respondents disagreed that generic and branded drugs have the same quality. Accordingly, the majority of respondents also disagreed with the similarity of generic and branded medicines on effectiveness. For example, 58% disagreed that both drugs provide relief from the disease quickly, 57% disagreed that they have the same power, and 58% disagreed that they have the same therapeutic effect. Finally, in terms of their cost, respondents seem to know and agree that generic medicine has a lower price than branded medicines, which accounts for 48% of responses (please see figure 2). Thus, the overall results have shown that, although the respondents are familiar with branded and generic, their knowledge of quality and effectiveness was poor; nevertheless, their knowledge of the cost is reasonable.

The respondents shows more familiarity to branded medications which is common in the Philippines. Despite the imple-

mentation of Generics Act of 1988 in increasing the public's awareness of the presence of generic medicine still a lot have no knowledge about it. (Wong et al. 2016) The respondents have shown discernment on the quality and effectiveness of generic and branded medications. Most of the respondents believed that generic have lower quality than branded medicines. (Tripathi & Bhattacharya 2018). Due to lack of awareness and knowledge, many consumers negatively believe in generic medicines. Participants believed that the effectiveness of branded drugs is quick and the duration of action is longer compared to generic drugs. (Alam, Mittal, & Chawla 2017) In terms of cost, respondents are knowledgeable to the cost difference of generic and branded medications.

Questions	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
1. I am familiar with generic medicines.	90 (36.6%)	124 (50.7%)	28 (11.6%)	3 (1.1%)	0
2. I am familiar with branded medicines.	90 (36.8%)	131 (53.5%)	21 (8.6%)	2 (0.8%)	1 (0.3%)
3. Generic and branded medicines have similar qualities.	15 (6.1%)	28 (11.4%)	7 (2.9%)	136 (55.5%)	59 (24.1%)
4. Generic medicines provide relief from the disease quickly as branded medicine.	7 (2.9%)	34 (13.9%)	9 (3.7%)	142 (58.0%)	53 (21.6%)
5. Generic medicines have similar power as branded medicines.	16 (6.5%)	25 (10.2%)	10 (4.1%)	139 (56.7%)	55 (22.4%)
6. The therapeutic effect of generic medicines stays for a long period as branded medicines.	8 (3.3%)	34 (13.9%)	9 (3.7%)	143 (58.4%)	51 (20.8%)
8. Generic medicines have a higher price than branded medicines.	14 (5.8%)	22 (8.9%)	26 (10.5%)	118 (48.2%)	65 (26.6%)
9. Generic medicines have lower prices than branded medicines.	117 (47.6%)	109 (44.3%)	16 (6.6%)	3 (1.4%)	0
10. Generic medicines have the same price as branded medicines.	5 (2.2%)	14 (5.8%)	54 (21.9%)	130 (52.9%)	42 (17.2%)
11. Generic medicines would provide significant savings to me.	86 (35.2%)	170 (49.3%)	31 (12.7%)	7 (2.8%)	0
12. Generic medicines are cheaper because they are less effective.	7 (3.0%)	40 (16.19%)	52 (21.31%)	105 (42.9%)	41 (16.6%)

Figure 2. (a) Knowledge of Hypertensive Patients on Generic and Branded Medications in Frequencies and Percentage

Attitude

Table 3. Attitude of Hypertensive Patients on Generic and Branded Medications Mean and Standard Deviation

	Mean ± SD
I agree to switch when a pharmacist offers a generic medicine even though my physician prescribed me a branded medicine.	2.24±1.073
I would not ask for generic medicine if my physician prescribed me a branded medicine, even if it was more expensive.	3.80±1.088
Advertisement (TV, Radio) convinces me to buy generic drugs.	3.08±1.006
Advertisement (TV, Radio) convinces me to buy branded drugs.	3.01±0.992

Advertisement (TV, Radio) changes my perception of medicines.	3.11±1.051

In this study, the results have shown homogeneity in responses. For the Healthcare recommendations, 59% of respondents disagreed with switching when a pharmacist offers a generic medicine, and 56% will not ask for a generic drug. Instead, they will follow the prescribed brand name of their physicians. For the Advertisements, 30% agreed that advertisements convince them to buy generic medicines, 25% also agreed that advertisements persuade them to buy branded medicines. In comparison, 29% agreed that advertisements change their perception of drugs (please see figure 3). Thus, it shows that respondents are more likely to trust what is prescribed by their physician and disregard pharmacists' recommendations while media advertisements slightly influence them.

The influence of Healthcare recommendations to the respondents is quite poor. It showed that patients mostly prefer branded medications because they want assurance that their effectiveness is worth their limited budget. (Ku 2017). Media (Television, Print, and Radio) do not mainly influenced respondents. It doesn't affect the purchasing behavior of most consumers in the Philippines (Bautista R., Ranola B., & Macomb Exzell 2017)

Questions	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
1. I agree to switch when a pharmacist offers a generic medicine, even if my physician prescribed me a branded medicine.	12 (4.9%)	33 (13.5%)	6 (2.4%)	145 (59.2%)	49 (20.0%)
2. I would not ask for generic medicine if my physician prescribed me a branded medicine, even if it was more expensive.	58 (23.7%)	136 (55.5%)	8 (3.3%)	31 (12.7%)	12 (4.9%)
3. Advertisement (TV, Radio) convinces me to buy generic drugs.	16 (6.4%)	73 (29.6%)	87 (35.7%)	54 (22.2%)	15 (6.1%)
4. Advertisement (TV, Radio) convinces me to buy branded drugs.	13 (5.5%)	62 (25.2%)	100 (41.0%)	51 (20.8%)	18 (7.5%)
5. Advertisement (TV, Radio) changes my perception of medicines.	20 (8.0%)	72 (29.4%)	86 (35.2%)	49 (19.9%)	18 (7.5%)

Figure 3. (a) Attitude of Hypertensive Patients on Generic and Branded Medications in Terms Frequencies and Percentage

Practice

Table 4. Practice of Hypertensive Patients on Generic and Branded Medications Mean and Standard Deviation

	Mean ± SD
I prefer buying branded medicines.	3.81±1.067
I prefer buying generic medicines.	2.18±1.095

In this study, the results have shown homogeneity in responses. The majority mostly prefer to buy branded medicines, with 56% of respondents and 54% disagreed with buying generic medicines.

The respondents shown to be more branded inclined in purchasing medications regardless of its cost. Most consumers prefer branded medicines because they want assurance of the effectiveness of the medicines they purchase with the limited budget they possess (Ku 2017)

Questions	Strongly agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly disagree (%)
1. I prefer buying branded medicines.	57 (23.3%)	137 (55.9%)	8 (3.3%)	33 (13.5%)	10 (4.1%)
2. I prefer buying generic medicines.	12 (4.9%)	31 (12.7%)	8 (3.3%)	133 (54.3%)	61 (24.9%)

Figure 4. (a) Practice of Hypertensive Patients on Generic and Branded Medications in Terms Frequencies and Percentage

Conclusion

The study revealed that hypertensive patients are familiar with and have sufficient knowledge regarding the cost distinction between generic and branded medicines. The results also showed that the respondents have a lack of discernment in terms of quality and effectiveness. Although the FDA has claimed unequivocally that generic medicine is the same as its branded counterpart, patients remain skeptical of generic medicines' quality and potency. Accordingly, this study revealed that their knowledge of generic medicine was limited to their familiarity with its cost-effectiveness. In connection with the study of Kumar et al. (2017), the patients would only buy generic drugs if it is less expensive. In terms of the attitude of hypertensive patients, the majority of those who belong to low to middle-income households are slightly influenced by media advertisements. However, respondents are more obedient to follow the prescribed medication of their physician compared to the recommendation of pharmacists. Regarding their practice in utilizing medicines, respondents have shown to be more branded inclined despite the affordability of generic medicines. The study revealed that even though the highest percentage of respondents belong to low-income households, they still prefer to buy branded medicines. Furthermore, in many countries, a significant number of patients and consumers lack adequate knowledge of generic medicines. As a result, educational interventions and activities are required to assist patients in learning about generic and branded medicines. Help patients learn about generic and branded medications. Furthermore, healthcare providers are critical in promoting patient acceptance of generic medications. As a result, health care providers must be more proactive in counseling and recommending patients to generic medications.

Acknowledgment

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