



PERCEPTION OF CONSUMERS TOWARDS THE USE OF AUXILIARY LABELS FOR OVER-THE-COUNTER AND PRESCRIPTION DRUGS IN PROMOTING MEDICATION ADHERENCE IN LUZON

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ABSTRACT

The quantitative study aimed to determine Filipino medication consumers' perception on the use of auxiliary labels on over-the-counter and prescription drugs and assess effectiveness in the three aspects of patient confusion (cognitive, affective, and behavioral). Mode, frequency, and regression analysis were utilized in the data analysis. Participants were predominantly women (52.79%), aged 18-25 (68%), and graduates of bachelor's degrees (42.67%). The consumers' perception towards the use of auxiliary labels on over-the-counter and prescription drugs is highly accepted in terms of its effectiveness and the three aspects of patient confusion. Consumers perceive them as easy to understand ($n=122$, 81.33%), ensure safety ($n=125$, 83.33%), proper administration of medication ($n=124$, 82.67%), and should be implemented in the Philippines ($n=137$, 91.33%). Pharmacists ($p = 0.0273$) and internet ($p = 0.0296$) as sources of medication information and being male ($p = 0.0182$) had a significant relationship with affective and behavioral aspects, respectively. Medication consumers prefer the use of auxiliary labels as it aids in medication adherence. Researchers' recommendations are in-depth qualitative research with different settings, backgrounds, and populations for comparable results, and a study on pharmacists' perception and male gender in the use of auxiliary labels.

KEYWORDS: *auxiliary label/s, medication adherence, patient confusion.*

INTRODUCTION

Medication adherence is a vital part of medication therapy. Patient's adherence is essential for disease control, treatment of temporary illnesses, and overall long-term health and well-being.^[1] As practiced in other countries, the application of auxiliary labels on a prescription bottle is a way of notifying the patients the important information regarding their medication.^[2] With regard to this, increasing patient awareness of the information on the auxiliary label(s) can potentially decrease fatalities associated with taking the wrong medications. This practice is currently not utilized in the Philippines instead, important information is printed directly on medication boxes and patient information leaflets. However, patients with low health literacy affects how they understand this information even with the use of auxiliary labels. This is why auxiliary labels are used with patient counseling as a way to improve patients' understanding towards health, ultimately leading to increased medication adherence.

Medication non-adherence stems from numerous factors, but patient confusion is one of the lead causes. Information may come from multiple sources in which context and complexity of medication instruction varies and may create confusion, lack of understanding, unwillingness in decision making and information processing. Patient confusion model explains that a patient's cognitive, affective and behavioral process leads to either clear or confusing medication information. Cognitive and affective reactions to perceived information overload and complexity, in turn, may result in unfavorable behavioral consequences. In order to cope up with this, patients may resort to various strategies such as hastily "highlight only the important information" by themselves just to narrow down the information.^[3]

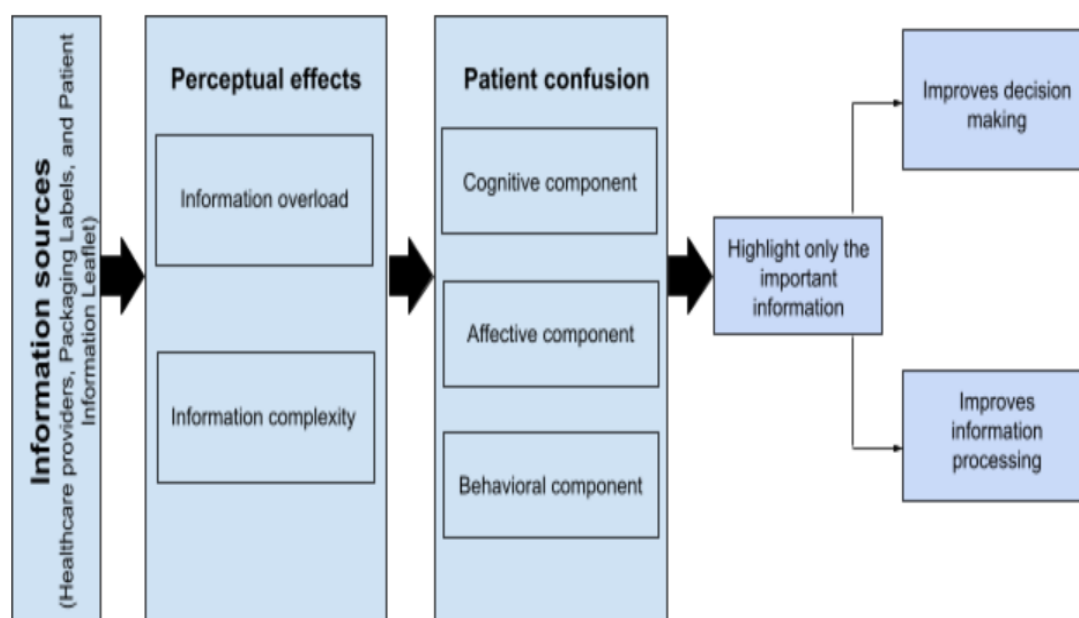


Figure 1: Patient Confusion Model.

This study was conducted to understand consumers' perception of the use of over-the-counter and prescription drug auxiliary labels to promote adherence in patient medication. Specific objectives include: (1) Determination of demographic profile of consumers in selected cities in Luzon by age, gender, education and source of information, (2) determine the perception of consumers towards auxiliary labels in over-the-counter (OTC) and prescription drugs in terms of its effectiveness and (3) determine the consumer's perception towards three aspects (cognitive, affective and behavioral aspects) in patient confusion regards to the effectivity of auxiliary labels in promoting medication adherence.

METHODS AND MATERIALS

This quantitative study utilized a validated Likert scale questionnaire designed based on the specific objectives. These were sent via an online platform Google Forms and was disseminated to 150 respondents divided equally from Lipa of Batangas, Norzagaray of Bulacan, Pakil of Laguna, Puerto Princesa of Palawan, and Bolinao of Pangasinan from December 2020 to January 2021. The study protocol and procedures were approved by the Institutional Ethics Review Committee (IERC) of Centro Escolar University.

Participants and Procedures

150 medication consumers that can speak and understand English and are aged 18 and above were the target respondents. A non-probability convenience sampling was utilized due to the COVID-19 pandemic and limited time frame to complete the study. The respondents were oriented briefly on what the study was about and its rationale before the questionnaire was sent via Messenger or Google Mail along with the consent forms,

and permission to participate. All data collected were kept confidential, as per Section 8 of Data Privacy Act of 2012.^[4] Henceforth, confidentiality of answered questionnaires and collected data were assured even after the span of research study.

Research Instrument

The questionnaire is divided into three (3) parts, (1) demographics, (2) perception towards the use of auxiliary labels, and (3) the cognitive, affective, and behavioral aspect of patient confusion that may affect the effectiveness of auxiliary labels. The respondents provided the demographic profile needed such as age, gender, location, and sources of information. Before proceeding to answer the questions, the respondents were provided a brief introduction about the auxiliary label since the auxiliary label was not implemented in the Philippines and the respondents do not have first-hand experience. The researchers created samples of auxiliary labels (Figure 1), derived from a sample of.^[5] The design was made in combination of simplified text and graphic icons as it indicates that labels with combination of icons and text increase the understanding of auxiliary labels.^[6]



© Perception of Consumers towards Introducing the Use of Auxiliary Labels for Over-The-Counter and Prescription Drugs in Promoting Patient Medication Adherence in Luzon (Navarro et al., 2020)

Figure 2: Sample Auxiliary Labels

The first part of the questionnaire with ten questions is tackling the consumer's perception on its effectiveness in promoting medication adherence. Consequently, the second part of the questionnaire tackles the consumers' perception in three aspects (cognitive, affective, and behavioral) of patient confusion with ten questions per aspect.

Data Analysis

The validated Likert scale questionnaire underwent pilot study in which the researchers gathered data from 10% of the target sample size of 15 respondents with 3 respondents each locale. After gathering the responses, statistical analysis was performed by a certified biostatistician. The questionnaire's Cronbach Alpha is 0.97 which exceeds the minimum of 0.70 to be deemed viable.^[7] The questionnaire also received a remark of an

excellent internal consistency. Statistical tools such as mode, frequency tables, and regression analysis were utilized in the analysis of data of the gathered responses and the independent-dependent variables significance. All data management, statistical analyses, and graphical illustrations are performed in R version 3.5.1.

RESULTS AND DISCUSSIONS

Demographic Profile

The research study has 150 respondents that are accumulated from five cities (Lipa of Batangas, Norzagaray of Bulacan, Pakil of Laguna, Puerto Princesa of Palawan, and Bolinao of Pangasinan) with thirty (30) respondents each. Presented below are the demographic profile of the respondents in terms of age and gender, education, and sources of information (Table 1).

Table 1: Demographic Profile

Demographics	Frequency (%)	Demographics	Frequency (%)
Age (years)		Sources of Information (rank)	
18-25	79 (52.67%)	Physician (1)	113 (17.02%)
26-35	21 (14%)	Pharmacist (2)	102 (15.36%)
36-45	14 (9.33%)	Nurses or other health professionals (3)	95 (14.31%)
46-55	23 (15.33%)	Family/Relatives (4.5)	84 (12.65%)
56-65	9 (6%)	Internet (4.5)	84 (12.65%)
66-75	3 (2%)	Media (TV, commercials, social media, video, etc.) (6)	76 (11.45%)
>75	1 (0.67%)	Friends (7)	59 (8.89%)
Gender		Packaging or Patient Information Leaflet (PIL) (8)	50 (7.53%)
Female	102 (68%)	Pharmacist Assistant (others) (9)	1 (0.15%)
Male	48 (32%)		
Education		Type of Drugs	
High School	17 (11.33%)	Over-the-Counter Drugs	62 (41.33%)
Technical Training (TESDA)	1 (0.67%)	Prescription Drugs	15 (10%)
Undergraduate	62 (41.33%)	Over-the-Counter Drugs and Prescription Drugs	73 (48.67%)
Graduate (Bachelor's Degree)	64 (42.67%)		
Masteral	6 (4%)		

Out of 150 respondents, the respondents are predominantly females (n=102, 68%), mostly with bachelor's degrees (n=64, 42.67%). Younger and female respondents with higher educational attainments were more likely to read and comprehend the OTC label information than that of older and male respondents with lower educational attainment.^[8] It is also stated that patients' readability and knowledge were linked to their education level.^[9] Similarly, poorly literate patients have more difficulty in reading and understanding instructions.^[10] With physician (n=113, 17.02%) and pharmacists (n=102, 15.36%) as the top two (2) sources of medical information, it showed similar results of having physicians (79.3%) and pharmacists (57.7%) as two of the most trusted sources of health information.^[11] In the Philippines, there are classifications of drugs namely over-the-counter and prescription drugs which can be bought without a prescription and with a prescription, respectively.^[4] Since this research study

focuses on the use of auxiliary labels in over-the-counter (OTC) and prescription drugs, the respondents were asked what OTC drugs they buy and what medicines are prescribed for them for the past 12 months to have familiarity with what they usually consume. The dosage, strength, regimens are not a part of the scope of this study. The OTC medications are only identified by their indication and drug classes according to the books. Additionally, the uses of the prescription drugs given by the respondents were only derived based on their answers; hence, how well they know their medications is not measured.

62 respondents (41.33%) solely answered that they buy over-the-counter drugs, 15 respondents (10%) answered prescription drugs only, and 73 respondents (48.67%) answered both over-the-counter and prescription drugs. Tables 2 and 3 show the type of over-the-counter and prescription drugs that the respondents buy.

Table 2: Over-the-Counter Drugs Consumed by Respondents.

OVER-THE-COUNTER DRUGS	Frequency	OVER-THE-COUNTER DRUGS	Frequency
Aluminum Hydroxide + Magnesium Hydroxide + Simeticone	1	Loperamide HCl	5
Antihistamine (unspecified)	5	Loratadine	2
Antitussive	1	Mefenamic Acid	4
Benzydamine HCl	2	Multivitamins and supplements	137
Betamethasone + d-Chlorpheniramine	1	Oral Rehydration Salts	1
Butamirate Citrate	1	Paracetamol	83
Carbocisteine	6	Paracetamol + Propyphenazone + Caffeine	1
Cetirizine	12	Phenylephrine HCl + Chlorphenamine Maleate	1
Dextromethorphan	1	Phenylephrine HCl + Chlorphenamine Maleate + Paracetamol	37
Dextromethorphan HBr + Phenylpropanolamine HCl + Paracetamol	1	Phenylpropanolamine HCl + Chlorphenamine Maleate + Paracetamol	7
Diphenhydramine	2	Tramadol	1
Guaifenesin	1	Vitamin B-Complex + Iron + Lysine + Bucizine Hydrochloride	1
Ibuprofen	9	Vitex negundo L. (Lagundi Leaf)	2

Ascorbic Acid, Ascorbic Acid with Zinc, Sodium Ascorbate + Zinc Sulfate Monohydrate, Zinc Sulfate Monohydrate, Sodium Carboxymethyl Betaglucon, Sodium Ascorbate, Sodium ascorbate with Zinc, Vitamin B complex, Vitamin B complex + Vitamin E, Vitamin E, d-Alpha Tocopherol (Vitamin E), Fish oil, Multivitamins, Multivitamins + Iron, Ferrous Sulfate, Multivitamins + minerals, Vitamins, Mangosteen xanthone, Calcium + Vitamin D3 + Minerals, PGM 10-22 with Zinc, collagen, Supreme C, Gencee, Centrum, Fern C, Cherifer, vitamin C like dayzinc or potencee, Iron supplements, Food Supplements, Mineral (Not Specified), Vitamins (unspecified) and Supplements (Unspecified) are considered **Multivitamins and Supplements**. The **Antihistamine** is the unspecified antihistamine. The

Antitussive is the unspecified antitussive. Drugs that should be **considered Rx** are Betamethasone + d-Chlorpheniramine, Tramadol, Vitamin B-Complex + Iron + Lysine + Bucizine Hydrochloride.

The two most consumed OTC medications answered by respondents were multivitamins and supplements (n=137) and Paracetamol (n=83). A study in Metro Manila shows that consumers have a strong belief in food supplements' positive effects towards the health status of a person. It showed 85.6% of the respondents, mostly women, are aware of the supplements they use. Vitamin C alone (64.7%) is the highest supplement consumption and vitamin/mineral combination (60.4%) is the second widely used supplement form both by

regular users^[12] Self-medication on OTC drugs is the most common management of illness in which Cebuanos (83.4%) are practicing self-medication. The common OTC medicine consumed is 500 mg Paracetamol (83.4%) whenever they have headache. Additionally, pharmacists influenced 50% of the respondents on the

OTC medicines that they use.^[13]

Table 3 shows the different prescription drugs that 88 respondents consumed (10% prescription drugs only and 48.67% over-the-counter and prescription drugs).

Table 3: Prescription Drugs Consumed by Respondents.

PRESCRIPTION DRUGS	Frequency	PRESCRIPTION DRUGS	Frequency
Amlodipine	19	Insulin	2
Amoxicillin	20	Irbesartan	1
Antibiotics	5	Isotretinoin	1
Atorvastatin	5	Levothyroxine	3
Azilsartan medoxomil	1	Losartan	7
Benzathine benzylpenicillin	1	Losartan Potassium + Hydrochlorothiazide	2
Betahistine	1	Mefenamic acid	1
Candesartan	1	Metformin	8
Carvedilol	2	Metoprolol	1
Cefixime	2	Montelukast	1
Celecoxib	2	Montelukast sodium + Levocetirizine HCl	2
Cephalexin	1	Naproxen	1
Clindamycin	2	Nebivolol HCl	1
Clopidogrel	2	Ofloxacin	1
Cloxacillin 500mg	1	Oral contraceptive pills	1
Co-amoxiclav	2	Orphenadrine citrate + Paracetamol	2
Co-trimoxazole	1	Pantoprazole + Domperidone	1
Dapagliflozin	2	Polymyxin B sulfate	1
Doxycycline	1	Propylene glycol + Propylene glycol	1
Dydrogesterone	1	Risperidone	2
Escitalopram oxalate	2	Roxithromycin	1
Estrogens & Progesterones	5	Salmeterol fluticasone	1
Febuxostat	1	Simvastatin	1
Fenofibrate	1	Telmisartan	2
Folic Acid	2	Temazepam	1
Furosimide	1	Trimetazidine	2

Antibiotics are unspecified antibiotics. **Oral contraceptive pills** are unspecified oral contraceptive pills. **Estrogens & Progesterones** include Cyproterone acetate + Ethinylestradiol, Dydrogesterone and Lynestrenol. **Mefenamic acid** is OTC if 250 mg and Rx if 500mg. Since the dosage is not specified, it is considered OTC. **Propylene glycol + propylene glycol** should be considered OTC.

The two (2) most used prescription drugs of consumers for the past 12 months are amoxicillin (n=20) and amlodipine (n=19). The antibiotics that are being taken by low-economic status population in Manila (91%) are mostly beta-lactams (amoxicillin, cloxacillin, amoxicillin/clavulanate, and oral cephalosporins) which are taken less than 7 days, sourced from community pharmacies, private clinics, and public health centers.^[14] On the other hand, hypertension is the Philippines' principal cause of morbidity and mortality amongst chronic diseases.^[15] Calcium channel blockers such as

amlodipine can be subsidized as one of the first-line hypertensive medicines by the Philippine government if desired.^[16]

Perception of Consumers towards the Use of Auxiliary Labels for Over-The-Counter and Prescription Drugs in Promoting Medication Adherence in Luzon

The respondents answered the 10 questions on a Likert scale using a 5-point scale: 1 as strongly disagree and 5 as strongly agree in the perception of consumers towards auxiliary labels in over-the-counter (OTC) and prescription drugs in terms of its effectiveness (Figure 3). Results were then analyzed through good and poor perception (Table 4). Good perception is interpreted by the combination scores of "Strongly Agree" (5) and "Agree" (4) while poor perception with "Neutral" (3), "Disagree" (2), and "Strongly Disagree" (1) in the Likert scale. Same goes with the good and poor cognitive, affective, and behavioral aspects of patient confusion.

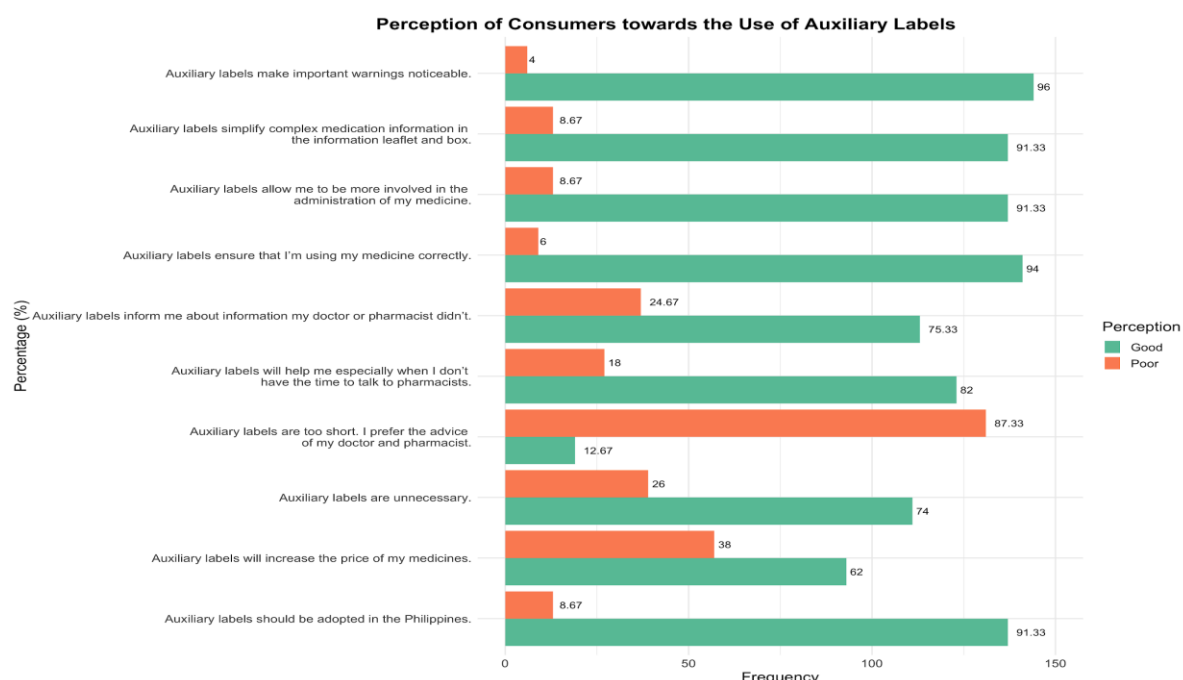


Figure 3: Perception of Consumers towards Auxiliary labels in Over-the-Counter (OTC) and Prescription Drugs in Terms of its Effectiveness Plot.

Table 4: Perception of Consumers towards Auxiliary labels in Over-the-Counter (OTC) and Prescription Drugs in Terms of its Effectiveness Frequency Table.

Statement	Strongly Disagree					Strongly Agree	
	1	2	3	4	5	Good Perception	Poor Perception
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
# 1	2 (1.33)	0 (0.00)	4 (2.67)	25 (16.67)	119 (79.33)	144 (96.00)	6 (4.00)
# 2	1 (0.67)	3 (2.00)	9 (6.00)	34 (22.67)	103 (68.67)	137 (91.33)	8.67 (13)
# 3	1 (0.67)	2 (1.33)	10 (6.67)	30 (20.00)	107 (71.33)	137 (91.33)	13 (8.67)
# 4	1 (0.67)	2 (1.33)	6 (4.00)	22 (14.67)	119 (79.33)	141 (94.00)	9 (6.00)
# 5	2 (1.33)	6 (4.00)	29 (19.33)	41 (27.33)	72 (48.00)	113 (75.33)	37 (24.67)
# 6	0 (0.00)	6 (4.00)	21 (14.00)	35 (23.33)	88 (58.67)	123 (82.00)	27 (18.00)
# 7	4 (2.67)	15 (10.00)	53 (35.33)	42 (28.00)	36 (24.00)	19 (12.67)	131 (87.33)
# 8	74 (49.33)	37 (24.67)	17 (11.33)	10 (6.67)	12 (8.00)	111 (74.00)	39 (26.00)
# 9	59 (39.33)	34 (22.67)	30 (20.00)	13 (8.67)	14 (9.33)	93 (62)	57 (38.00)
# 10	3 (2.00)	1 (0.67)	9 (6.00)	32 (21.33)	105 (70.00)	137 (91.33)	13 (8.67)

Based on the results on perception, the consumers agree that the auxiliary labels make warnings noticeable (96%) and are necessary (74%), but patients who have less health literacy are more likely to not notice the content of the auxiliary label.^[17] To be able to catch the attention of patients, the placement of auxiliary labels either vertically or horizontally on the pill bottle impacts the

early processing stage of information in patients; hence, they execute the information.^[18]

Physicians do not talk to their patients about health and medication information in a way that can be easily comprehend and typically written prescriptions are not legible, contain unfamiliar words, terms and abbreviations, often in Latin, and therefore patients tend

to not comprehend. The pharmacists are next in line to counsel patients when patients leave the physician's clinic without the adequate knowledge essential to correctly adhere to the prescribed medication.^[19] Auxiliary labels should be used as educational sources in communicating medication information to ensure correct instruction comprehension of patients.^[17] On the contrary, consumers agree that content is too short and they prefer the advice of a pharmacist (87.33%). In the United States, a study revealed that 63% failed to read and notice the auxiliary labels that were placed into their antibiotics medication bottles.^[20] Patient counseling by

pharmacists plays a vital role to provide medication information that will influence the patient's readability, literacy and comprehensibility.^[9] Without supplementary visual aids specifically auxiliary labels, complex OTC information makes consumers not know where to start reading which they disregard or misunderstood the information.^[8] Auxiliary labels simplify complex medication information in the information leaflet and box (91.33%). Despite the usage of auxiliary labels practiced in the United States is not yet implemented in the Philippines, consumers perceive that they want the practice to be adopted in the Philippines (91.33%).

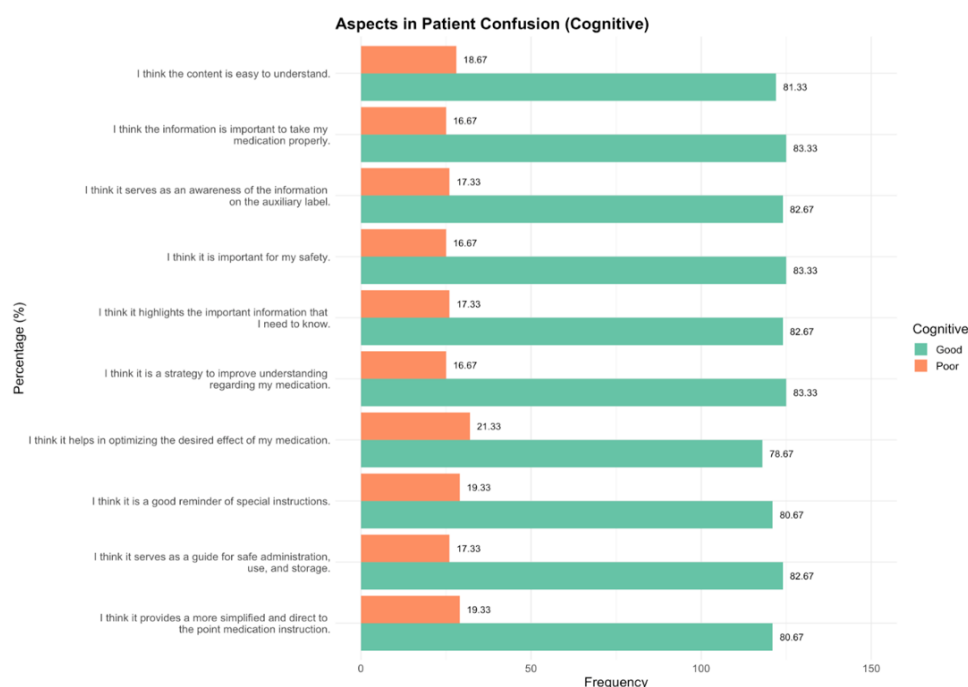


Figure 4: Cognitive Aspect Plot.

Table 5: Cognitive Aspect Frequency Table.

Cognitive	Strongly Disagree					Strongly Agree	
	1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	Good Cognitive n (%)	Poor Cognitive n (%)
# 1	1 (0.67)	5 (3.33)	22 (14.67)	41 (27.33)	81 (54.00)	122 (81.33)	28 (18.67)
# 2	0 (0.00)	3 (2.00)	22 (14.67)	35 (23.33)	90 (60.00)	125 (83.33)	25 (16.67)
# 3	0 (0.00)	6 (4.00)	20 (13.33)	41 (27.33)	83 (55.33)	124 (82.67)	26 (17.33)
# 4	1 (0.67)	7 (4.67)	17 (11.33)	39 (26.00)	86 (57.33)	125 (83.33)	25 (16.67)
# 5	0 (0.00)	5 (3.33)	21 (14.00)	47 (31.33)	77 (51.33)	124 (82.67)	26 (17.33)
# 6	0 (0.00)	8 (5.33)	17 (11.33)	44 (29.33)	81 (54.00)	125 (83.33)	25 (16.67)
# 7	1 (0.67)	10 (6.67)	21 (14.00)	45 (30.00)	73 (48.67)	118 (80.67)	32 (21.33)
# 8	0 (0.00)	9 (6.00)	20 (13.33)	36 (24.00)	85 (56.67)	121 (80.67)	29 (19.33)
# 9	0 (0.00)	4 (2.67)	22 (14.67)	44 (29.33)	80 (53.33)	124 (82.67)	26 (17.33)
# 10	0 (0.00)	10 (6.67)	19 (12.67)	39 (26.00)	82 (54.67)	121 (80.67)	29 (19.33)

Based on Figure 4, it is evident that the majority of the respondents answered the ten (10) statements with “strongly agree” and “agree”. Out of the ten (10) aforementioned statements, “2.) I think the information is important to take my medication properly”, “4.) I think it is important for my safety”, and “6.) I think it is a strategy to improve understanding regarding my medication” garnered the highest good cognitive of 83.33% (Table 3).

Medication consumers’ health literacy and readability are important factors affecting comprehension in terms of information processing and decision making thereby influencing their medication adherence and administration. However, health literacy is found to be low in the Philippines among children, adolescents, and adults. In a study conducted in Manila, results showed that most children and adolescents ages 10-17 ($n = 855$) have a very low health literacy in terms of nutrition, health consumer, substance use, illegal drugs, and prevention while 94% ($n = 1914$) of 2,036 Filipinos aged 50-70 years old have a low health literacy^[21] Hence,

addressing the country’s problems on poor health literacy is necessary to improve quality healthcare and improved health outcomes.

An evaluation study among Filipinos located in Metro Manila and their health literacy was conducted using the 2009 Influenza A (H1N1) virus printed educational material. Based on the results obtained, it was revealed that participants who received and read the H1N1 printed educational material had slightly higher levels of knowledge compared to those who did not receive. Participants then realized how such visual aids help improve health literacy and their comprehension regarding H1N1 for it can serve as an instrument for reinforcing written or verbal health communication. This is very vital since health information provided in a long and complex manner is less likely to be retained.^[22] This indicates that Filipinos learn and recall instructions better if visual aids were utilized and also explains that the respondents’ perception towards the use of auxiliary labels in terms of the cognitive aspect is highly accepted in promoting medication adherence.

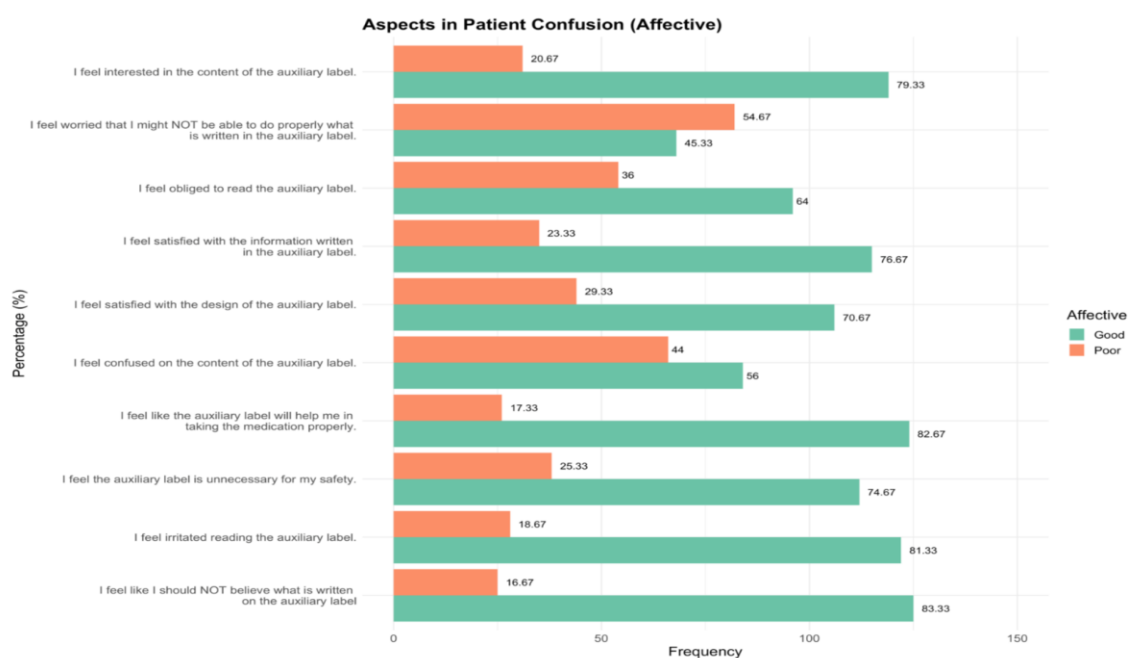


Figure 5: Affective Aspect Plot.

Table 6: Affective Aspect Frequency Table.

Affective	Strongly Disagree					Strongly Agree	
	1	2	3	4	5	Good Affective	Poor Affective
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
# 1	2 (1.33)	6 (4.00)	23 (15.33)	59 (39.33)	60 (40.00)	119 (79.33)	31 (20.67)
# 2	26 (17.33)	42 (28.00)	47 (37.33)	23 (15.33)	12 (8.00)	68 (45.33)	82 (54.67)
# 3	5 (3.33)	18 (12.00)	31 (20.67)	53 (35.33)	43 (28.67)	96 (64.00)	54 (36.00)
# 4	0 (0.00)	5 (3.33)	30 (20.00)	55 (36.67)	60 (40.00)	115 (76.67)	35 (23.33)
# 5	3 (2.00)	11 (7.33)	30 (20.00)	61 (40.67)	45 (30.00)	106 (70.67)	44 (29.33)
# 6	47 (31.33)	37 (24.67)	33 (22.00)	22 (14.67)	11 (7.33)	84 (56.00)	66 (44.00)
# 7	0 (0.00)	4 (2.67)	22 (14.67)	51 (34.00)	73 (48.67)	124 (82.67)	26 (17.33)
# 8	73 (48.67)	39 (26.00)	17 (11.33)	14 (9.33)	7 (4.67)	112 (74.67)	38 (25.33)
# 9	84 (56.00)	38 (25.33)	17 (11.33)	9 (6.00)	5 (3.33)	122 (81.33)	28 (18.67)
# 10	92 (61.33)	33 (22.00)	12 (8.00)	8 (5.33)	5 (3.33)	125 (83.33)	25 (16.67)

Nine out of ten statements in affective aspect showed good affective response. The statements “7.) I feel like the auxiliary label will help me in taking the medication properly”, “9.) I feel irritated reading the auxiliary label”, and “10.) I feel like I should not believe what is written on the auxiliary label” garnered the highest percentages of 82.67, 81.33, and 83.33. Meanwhile, only “2.) I feel worried that I may not be able to do properly what is written in the auxiliary label” is considered as poor affective.

Whilst behavioural determinants of medication adherence such as attitudes and intentions have been widely explored, the influence of emotions has received less attention. A meta-analysis of cognitive-based behaviour change techniques as interventions to improve medication adherence noted that when reading auxiliary labels, respondents had no feelings of irritation. Medication adherence barriers can affect how the auxiliary labels are viewed by the individual. One of the barriers are negative emotions such as annoyance and frustration are usually caused by many daily medications, illness reminders, and forms of medication declarations. These negative feelings may hinder therapy and should not be ignored.^[23]

A study conducted to improve auxiliary labels in increasing patient understanding revealed that simpler auxiliary labels focused on direct and easy to comprehend phrases is easier for patients to understand. Factors such as for low literacy and language should be acknowledged in designing an auxiliary label.^[24] Consequently, in a study regarding literacy and misunderstanding prescription drug labels, about 70.7 %

of low literacy patients properly stated the instructions for “Take two tablets by mouth twice daily”, but only 34.7 % demonstrated the correct action. Furthermore, labeling instructions and auxiliary warnings used are simple yet about 16% is still misunderstood by patients^[10] This actively demonstrates that although auxiliary labels have a high level of acceptance in the affective aspect, counselling by pharmacists should still be done to eliminate barriers such as low health literacy and to increase patients' understanding of auxiliary labels. Hence, auxiliary labels should be used with counselling, and should not replace the latter.

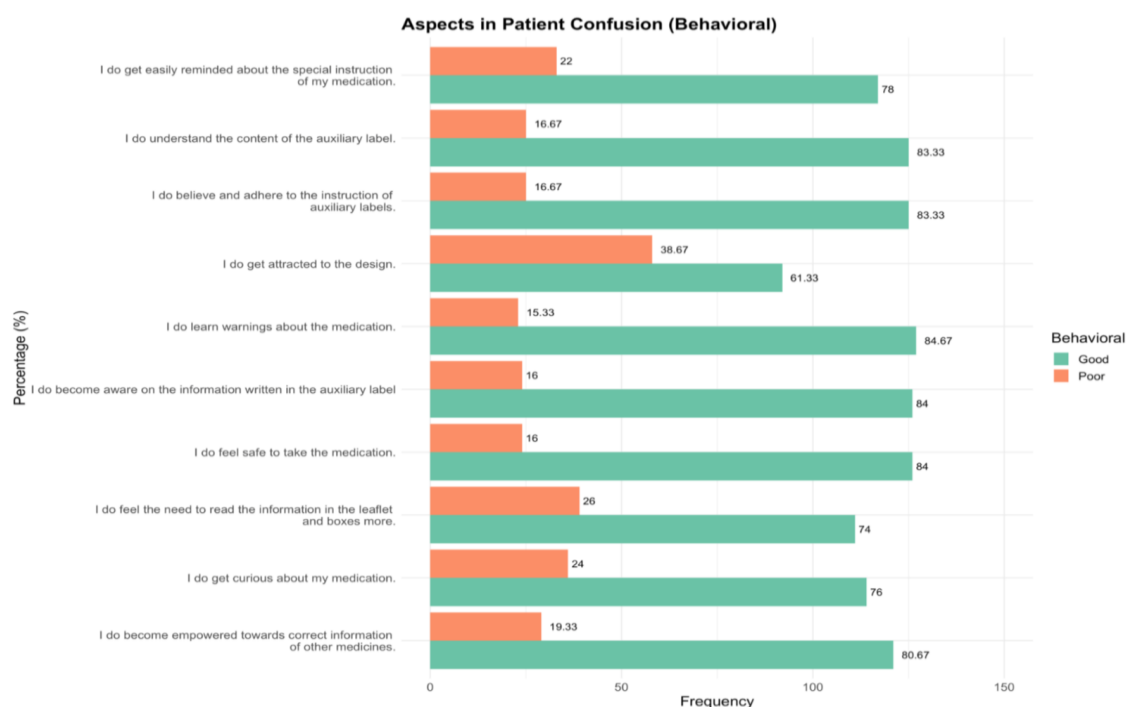


Figure 6: Behavioral Aspect Plot.

Table 7: Behavioral Aspect Frequency Table.

Behavioral	Strongly Disagree					Strongly Agree	
	1 n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	Good Behavior n (%)	Poor Behavior n (%)
# 1	1 (0.67)	10 (6.67)	22 (14.67)	46 (30.67)	71 (47.33)	117 (78)	33 (22)
# 2	1 (0.67)	4 (2.67)	20 (13.33)	46 (30.67)	79 (52.67)	125 (83)	25 (17)
# 3	2 (1.33)	4 (2.67)	19 (12.67)	49 (32.67)	76 (50.67)	125 (83)	25 (17)
# 4	2 (1.33)	16 (10.67)	40 (26.67)	51 (34.00)	41 (27.33)	92 (61)	58 (39)
# 5	1 (0.67)	4 (2.67)	18 (12.00)	53 (35.33)	74 (49.33)	127 (85)	23 (15)
# 6	0 (0.00)	5 (3.33)	19 (12.67)	51 (34.00)	75 (50.00)	126 (84)	24 (16)
# 7	2 (1.33)	5 (3.33)	17 (11.33)	47 (31.33)	79 (52.67)	126 (84)	24 (16)
# 8	0 (0.00)	14 (9.33)	25 (16.67)	46 (30.67)	65 (43.33)	111 (74)	39 (26)
# 9	1 (0.67)	7 (4.67)	28 (18.67)	53 (35.33)	61 (40.67)	114 (76)	36 (24)
# 10	0 (0.00)	8 (5.33)	21 (14.00)	47 (31.33)	74 (49.33)	121 (81)	29 (19)

As shown on Figure 6, "5.) I do learn warning about the medication" garnered a highest response (85%) along with "2.) I do understand the content of the auxiliary label" (83%). This implies that the auxiliary label provides a clear content and easy to understand term that increases the comprehensibility of the patient and packaging design are factors that lead to making consumers clear about drug labels.^[25] Moreover, "7.) I do feel safe to take the medication" garnered 84% of response which demonstrates that content and format of

auxiliary labels helps in making patients feel safe on taking medication. Content and format of prescription drug labels facilitate communication with and comprehension by patient, result in an increase in patient's safety and medication effectivity.^[26]

Among all the statements, "4. I do get attracted to the design" has the lowest percentage of good response (61%). This expresses a need to improve the auxiliary label design to draw consumers' attention such as

placement of a yellow color behind the text.^[27] Various approaches on the different causes of nonadherence and interacting with patients by providing behavioral support

helps to improve adherence to medication. Generally, auxiliary labels have a high level of acceptance in the behavioral aspect.

Table 8: Regression Analysis of Variables

Factors	P-values			
	Perception	Cognitive	Affective	Behavioral
Age (years)				
18-25	(ref)	(ref)	(ref)	(ref)
26-35	0.3743	0.8767	0.5092	0.9209
36-45	0.3927	0.5372	0.3401	0.4742
46-55	0.8584	0.7363	0.6708	0.4890
56-65	0.4803	0.2485	0.6416	0.7470
66-75	0.8074	0.5477	0.6415	0.9058
>75	0.8414	0.4491	0.9461	0.9349
Gender				
Female	(ref)	(ref)	(ref)	(ref)
Male	0.2785	0.7480	0.1756	0.0182
Education				
High School	(ref)	(ref)	(ref)	(ref)
Technical Training (TESDA)	0.9705	0.4060	0.4076	0.9511
Undergraduate	0.3513	0.1700	0.5694	0.9449
Graduate (Bachelor's Degree)	0.9096	0.2460	0.2865	0.9012
Masteral	0.9819	0.1280	0.9441	0.9007
Sources of Information				
Physician	(ref)	(ref)	(ref)	(ref)
Pharmacist	0.5163	0.5370	0.0273	0.1379
Nurses or other health professionals	0.7506	0.3350	0.0590	0.3589
Family/Relatives	0.4694	0.6130	0.0507	0.5866
Internet	0.2190	0.9980	0.0296	0.2432
Media (TV, commercials, social media, video, etc.)	0.2205	0.2360	0.0780	0.5663
Friends	0.2490	0.3480	0.1031	0.4090
Packaging or Patient Information Leaflet (PIL)	0.3828	0.1070	0.1060	0.6272
Pharmacist Assistant	0.5335	0.1070	0.4211	0.2539
Type of drugs				
OTC	(ref)	(ref)	(ref)	(ref)
Rx	0.3338	0.1749	0.4896	0.4263
OTC & Rx	0.1545	0.2416	0.1360	0.3335

In the regression analysis, there are variables that scored a p-value lower than 0.05 proves a significant relationship. It was observed that the pharmacist ($p = 0.0273$) and the internet ($p = 0.0296$) as information sources had a significant relationship with the affective aspect of patient confusion (Table 2). Pharmacists not only give advice, but also evaluate what the patient already knows and correct the misinformation when necessary while the internet provides a quick access of information it lacks to present health professionals that leaves patients on their own interpretation.^[11] Whereas the consumers' demographic profile of being male ($p = 0.0182$) had a significant relationship with the behavioral aspect of patient confusion which they usually discontinue medication whenever they assume the medication is not working.^[28]

Limitations

The limitations of this study is the lockdown experienced during the COVID-19 pandemic, resulting in the use of online surveys, slow pace of internet connection, constraint in conformity of respondents with the timeframe of the questionnaire, and complexity of Google Form to respondents that might affect data collection. The limited time frame given to complete the study narrowed the choice of the researcher only to quantitative research type. However, the results may not

be adequate to generalize the perceptions of consumers in Luzon but only some parts of Luzon. The results may cause bias since it focuses on perception only and the respondents don't have firsthand experience with auxiliary labels. Additionally, the dosage, strength, regimens, and specific uses are not a part of the scope of this study.

Summary of Findings

1. Participants were predominantly women (52.79%), aged 18-25 (68%), and graduates of bachelor's degrees (42.67%). The top three (3) sources of medication information that the respondents trust are physician (17.02%), pharmacists (15.36%), and nurses or other health professionals (14.31%).
2. Medication consumers prefer auxiliary labels to be adopted in the Philippines (91.33%). Although the content is too short where the consumers prefer the advice of a pharmacist (87.33%), they perceived auxiliary labels warnings noticeable (96%), simplify complex medication information in the information leaflet and box (91.33%), and allows more involvement of consumers in the medication administration (91.33%).
3. Auxiliary labels have a high level of acceptance in the cognitive, affective and behavioral aspect of the medication consumer. Medication consumers can

easily understand the content of the auxiliary label (81.33%), learn warnings of their medications (85%) and become empowered toward the correct information of other medications (81%) that helps them ensure their safety (83.33%) and proper administration of drug (82.67%). They also believe that the information written on auxiliary labels are reliable (82.67%); however, they feel worried that they might not do properly what is written in the auxiliary label (54.67%).

CONCLUSION

Consumers prefer the use of auxiliary labels as it helps in adherence to medication whereas, in relation to medication adherence, consumers have a favorable impression as reflected in cognitive, affective, and behavioral aspects of patient confusion. However, it must be noted that auxiliary labels must be used along with pharmacist's patient counseling. Consequently, pharmacists and the internet as information sources and being male, are factors that influence the affective and behavioral aspects, respectively.

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