

Factors Affecting Chronic Patients Brand Preference of Pharmaceutical Products in Hawassa City, Ethiopia

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Abstract- *The Purpose of this study is to assess factors affecting brand preference of pharmaceutical products of chronic patients in Hawassa city. The study followed Quantitative research approach. Descriptive and explanatory research design is employed to assess the influence of price differences of drugs, product availability, prior brand experience, professional information, and country of origin on brand preference of pharmaceutical products. The study was conducted with 371 chronic patients using self-administered questionnaire. Sample is taken from 7 sub cities of Hawassa city pharmacies and drug stores through stratified random sampling technique. The data was analyzed using descriptive and inferential analysis method. The findings of the study revealed that product availability, price difference, prior brand experience, and social status have significant influence on chronic patients' brand preference. Pharmaceutical products manufacturers, importers, suppliers and local pharmacies need to emphasize the features and characteristics mentioned above to enhance brand preference of chronic patients.*

Key words: Factors, Brand preference, Pharmaceutical products, chronic patients

I.INTRODUCTION

In the past, healthcare professionals are the sole decision maker on the choice of medication for patients. However, due to the increased power of patients today, knowledge of patients could affect the pattern and behavior of healthcare professionals' prescription. The traditional role of healthcare professionals as the gatekeeper for healthcare information has been challenged by the emergence and evolution of the Internet. Indisputably, patients have slowly become their own strong healthcare advocates, as they are able to make their own research and gain information from their fingertips regarding medication and disease status. Today, the patient possesses more power than ever to arrive to an era of achieving patient- acceptable-yet-physician-appropriate-treatments (Blackett & Harrison, 2001). Promoting brand loyalty among the patients is a powerful asset that can possibly influence the healthcare professionals especially within the primary care treatment which include chronic disease like hyperlipidemia, hypertension, and diabetes (Griffiths, 2008). It remains a question to what extent a patient have their decision-making influenced by brands when they select medication. It is interesting to find out if branding plays a fundamental role in the pharmaceutical industry when it comes to selection of pharmaceutical products. Most studies on generic drugs have focused on the knowledge, beliefs, and perceptions of pharmacists, physicians, and patients about these drugs but the literatures of upper middle-income countries lacks studies on the factors that influence the purchasing decision of consumers between generic and brand drugs (Schuiling and Moss, 2003).

The growth in Ethiopian Economy(Quarth Africa,2017),has brought a tremendous change in peoples life style that will result in the development of chronic diseases like Hypertension, Diabetes which are the cause of a change in feeding style and overweight(Jonathan, 2014). Due to an increase in the number of chronic patients, the need for continuous medication demand has increased a lot than expected. Besides, a prolonged exposure with the medication they take for their illnesses and the different reasons they give to prefer one brand over another, chronic patients become familiar with their medication brands. Hence, it is a paramount importance to undertake a research in order to find a solution for the growing needs of chronic patients. This study is conducted to examine the factors that influence the brand preference of pharmaceutical products in Ethiopia, Hawasa City. The research will answer the following research questions:

- What are the major factors that influence chronic patients brand preference towards pharmaceutical products in the study area?
- How do factors (price difference, product availability, professional information, prior brand experience, social status and country of origin) affect chronic patients brand preference towards pharmaceutical products in the study area?

II. OBJECTIVES OF THE STUDY

1. General Objective

The main objective of this study is to assess the factors affecting consumers brand preference of pharmaceutical products with reference to chronic patients in Hawassa city

2) *Specific Objective and Research Hypothesis*

- To examine whether price differences of drugs among brands has significant influence on chronic patients brand preference of pharmaceutical products.
- To analyze whether country of origin has significant influence on chronic patients brand preference of pharmaceutical products
- To examine whether professional information has significant effect on chronic patients brand preference of pharmaceutical products
- To evaluate whether product availability has significant effect on chronic patients brand preference of pharmaceutical products.
- To assess whether social status has significant influence on chronic patients brand preference of pharmaceutical products
- To evaluate the influence of prior brand experience on chronic patients brand preference of pharmaceutical products

Based on the existing theoretical, empirical literature and the objectives above, the study proposed the following research hypothesis

1. **Ho1:** Price differences of drugs among brands has no significant influence on chronic patients brand preference of pharmaceutical products
2. **Ho2:** Country of origin has no significant influence on chronic patients brand preference of pharmaceutical products
3. **Ho3:** Product availability has no significant influence on chronic patients brand preference of pharmaceutical products
4. **Ho4:** Professional information has no significant influence on chronic patients brand preference of pharmaceutical products
5. **Ho5:** Social status has no significant influence on chronic patients brand preference of pharmaceutical products
6. **Ho6:** Prior brand experience has no significant influence on chronic patients brand preference of pharmaceutical products

III. LITERATURE REVIEW

Research conducted by (Sheroog et.al, 2016), indicated that consumers value global brands especially for their assumed high quality and prestigious image. Porter and Claycomb (1997), stated that a favorable brand image positively affect consumers emotional buying decision. The perception of high quality may be closely linked to the differentiation and superiority of a particular brand and thus encourage them to choose that brand over competing brands (Yoo et.al., 2000). Higher product quality not only enhances utilitarian value, but rewards the consumer emotionally by providing more gratifying experience (Babin et.al., 2004). Perfectionist or quality consciousness is an awareness of and desire for high quality products, and the need to make the best or perfect choice versus buying the first product or brand available. This indicates that quality characteristics are also related to performance (Sproles and Kendall, 1986).

The consumer who perceives the product to be of higher quality will buy that product in assessment to a product of lower quality. The consumer's implied perception of quality from the brand supersedes its price when making purchase decision (Dodds et al., 1991). For the past four decades, the effect of a product's country of origin (COO) on buyer perception, evaluations, and intentions has been one of the most widely studied phenomena in the international business, marketing and consumer behavior literatures. In developing countries, foreign brands are perceived as possessing attractive attributes such as status and esteem, which enhances the emotional reward that a consumer derives from the use of those brands (Bhat and Reddy, 1998; Kinra, 2006). Steenkamp et.al (2003), found that perceived global brand is positively related to both perceived brand quality and prestige. These

factors enhance purchase likelihood. The effect through perceived quality is strongest. Perceived global brands effects are weaker for more ethnocentric consumers. On the other hand, Gregory & Ross (1994), studies indicated across the product categories respondents rated country of origin as significantly less important as a choice determinant than product quality and price. Besides, consumers express a market preference for locally made products when price, technical features, and brand name are invariant, and where the locally made product is perceived to be superior or, at least, not significantly inferior to an overseas-made product. Where the locally made product is perceived to be of inferior quality to the imported product, consumers generally prefer an imported product.

Researchers found out that once consumers perceive a price difference between local-owned and foreign owned brands, price dissimilarities begin to affect their preference for local-owned brands. Hence, price is one of the most important extrinsic cues that consumers use when evaluating the product/brand (Hansen, 2005), Price sensitivity has been studied in relation to several different consumption factors such as satisfaction (Anderson, 1996), brand loyalty (Krishnamurthi and Raj, 1991), studies confirmed that a relationship exists between consumers' post- purchase experience and subsequent price sensitivity, and whether before or after, purchase experience will affect price sensitivity (Hsieh and Chang, 2004). However there is a different school of thought that believes with experience of a product, the consumer becomes more knowledgeable as to its quality and value (Zeithaml, 1988) consequently when a consumer better understands the value of the product, they are more sensitive to changes in value (e.g. if the price were to increase), which may affect the intention to purchase (Chang and Wildt, 1994; Helsen and Schmittlein, 1994). Anderson (1996), also identified that increased consumer satisfaction would lead to increased price tolerance, meaning decreased price sensitivity.

In Ethiopia, the pharmaceutical sector is regulated by four measurements: Medicines, premises, pharmacy professionals and practices. Currently, Food, Medicine, and Health Care Administration and Control Authority of Ethiopia(EFMHACA) in Federal Ministry of Health is responsible for the regulatory activities related to product evaluation and registration, import and export control, licensing, and inspection of pharmaceutical establishments, post-marketing surveillance, and pharmacovigilance. As parts of market authorization process, EFMHACA uses WHO certification scheme as a requirement. However, the authority does not have an efficient registration system and as a result timely updating of the list proved to be difficult. Due to lack of human resources and facilities, the efficiency of product registration process at times is reported to be delayed(FDROE PESA,PASS& WHO,2017). Besides, the registration process is not linked to Good Manufacturing Practice (GMP) inspection of manufacturing plants. Delay in the registration process is another problem often mentioned by clients(FDROE MOH, & WHO,2003), Nonetheless, there have been couples of research done to understand the importance of branding in the pharmaceutical industry, not much on the factors affecting brand preference of pharmaceutical products with the context of Hawassa City. To fill the gap, this study examined the factors affecting pharmaceutical brand preferences of chronic patients.

1. Conceptual Frame Work

The following conceptual frame work (fig.1) depicts the relationship between independent variables (price differences, country of origin, product availability, professional information, social status, and prior brand experience) and the dependent variables (Brand preference of pharmaceutical products).

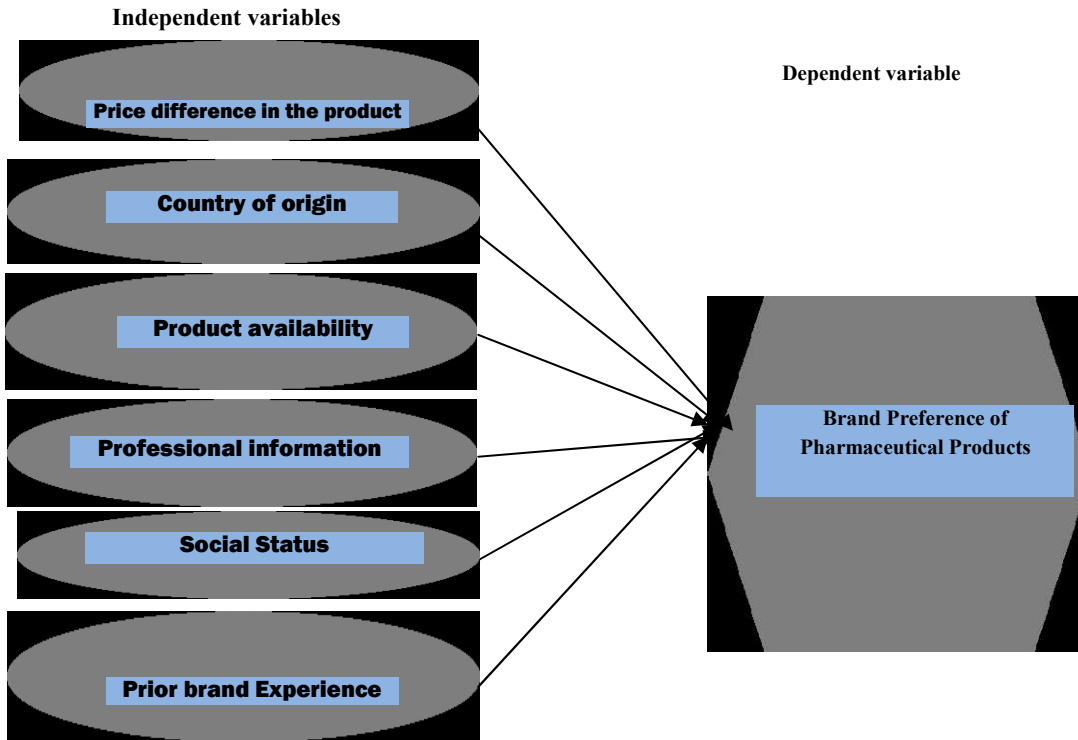


Fig.1. Conceptual frame work

Source: Adapted from (Khraim, 2011) and modified by the researchers (2019)

IV. RESEARCH METHODOLOGY

The study followed quantitative research approach. It employed descriptive and explanatory research design. The reason behind selecting the study designs is to describe the characteristics of the population, made predictions, and determined relationships between dependent and independent variables. Accordingly, data has been collected from both primary and secondary data sources. Primary data was collected through self-administered questionnaire from chronic patients coming to visit private pharmacies/Drug stores. While, secondary data was extracted from books, journals, published and unpublished research work of scholars, reports, and etc. A total of 384 chronic patients were approached to fill the questionnaire. The private health sectors were selected because in government health facilities generic prescriptions are advocated than brand prescriptions. In addition, chronic patients need to be free when they choose their brands in private stores and pharmacies.

1. Sample Size and Sampling Technique.

To draw the required sample size, eight sub-cities were selected by the researcher. To draw a proportional size that constitutes a sample of the study, the researcher used stratified sampling technique, which provides equal chance of being considered to each stratum, and then items were selected from each stratum to constitute a sample. To this effect, the study used sample size determination formula provided by Cochran (1963), as follows:

$$n_o = \frac{Z^2 pq}{e^2}$$

Where, n_0 is the sample size, Z^2 is the abscissa of the normal curve with 95% confidence level, 5% precision, and e^2 is the desired level of precision, P is the estimated proportion of an attribute by assuming $P=0.5$ (maximum variability) that is present in the population, and q is 1-p. The value for Z is 1.96 which is found in using the above formula, we have

$$= \frac{(1.96)^2 * 0.5 * 0.5}{(0.05)^2} = \frac{(3.8416) * 0.25}{0.0025} = 384$$

Source: (Cochran, 1963)

TABLE I

HAWASSA CITY POPULATION DISTRIBUTION BY SUB-CITIES

No.	Sub-cities	Population	Percent (%)	Sample size	No. of Pharmacies
1	Hawella-tulla	978	0.46	2	2
2	Mehal Ketema	19,685	9.34	36	34
3	Hayek Dar	23,367	11.09	42	5
4	Addis Ketema	23,965	11.38	44	11
5	Misrak	31,191	14.8	57	18
6	Menaharia	32,945	15.64	60	19
7	Tabor	58,584	27.81	107	6
8	Bahile Adarash	19,964	9.47	36	16
	Total	210,679	100	384	111

Source: population of housing report (CSA, 2007, E.C.)

2).Data Collection & Analysis Methods: 96 voluntary pharmacies and drug stores that serves moderate to high number of patients were purposely selected based on the data given from health office in Hawassa city. Pilot test was carried out with 15 respondents and some modifications were made on the questionnaire. Besides, content validity of the questionnaire was checked with experts in the field. Cronbach’s alpha test was also conducted to assess the internal consistency of the scale items of the questionnaire before distributing it to respondents. The Cronbach’s alpha results of pilot Study for all independent and dependent variable is greater than 0.7, which is acceptable (in the normal range) (Bhattacharjee, 2012). The Cronbach’s alpha test was in the normal range i.e. > .70 for all the independent variables and dependent variables (see table II) below.

TABLE II

CRONBACH’S ALPHA RESULTS

No	Items	Score
1	Product availability	0.756
2	Price difference	0.735
3	Country of origin	0.746
4	Health professional information	0.722
5	Social status	0.718
6	Prior brand experience	0.728

Source: Survey data (2019)

The questionnaire was divided into three sections. The first part was designed to obtain background information about chronic patients' age, sex, level of education, class of chronic disease, how they select and preferred setup to buy their medication. Data regarding background information of chronic patients and knowledge of brand were collected using multiple choices. The Second part of the questionnaire was designed to check their knowledge of the brand. The third section assesses the factors affecting brand preference of pharmaceutical brands. On the other hand, a five point likert scale (1.Strongly disagree, 2.Disagree, 3.Neutral, 4. Agree, and 5.Strongly agree) used to assess factors affecting chronic patients pharmaceutical brand preferences. A number of ethical considerations addressed. The participants' informed consent is taken first. Thus, all participants were informed about the purpose of the research. Subjects in the study were given awareness about their voluntary participation in the study, they were free to withdraw from the study at any time, and they would not be harmed because of their participation or non-participation in this research. In case of confidentiality, the researchers promised not to reveal the respondents' identity in any report, paper, or public forum. Then the questionnaire was distributed to 384 chronic patients. Data for this study was collected through self-administered questionnaire from chronic patients coming to visit private drug stores and pharmacies in the study area. Also one of the researchers is a pharmacist by his profession; this facilitated communication with the respondents and improved the response rate.

The collected primary data was processed through editing, coding, and classified in to groups for further data for analysis. The collected data was entered into SPSS version 22 for analysis. The data was presented using tables and graphs. Quantitative data analysis method used to analyze the data. Both descriptive analysis (frequencies, percentiles, mean, and standard deviation) and inferential analysis (correlation and regression) were performed using SPSS. Based on the results, the data was interpreted to describe and explain the findings and the hypotheses were tested. Spearman correlation analysis was conducted to determine the relationship between independent variables (Factors of preferences) and dependent variable (brand preference). Test of normality for dependent variable (Appendix, 1) and multi co linearity test of independent variables were carried out before performing multiple regressions. Finally, test of multiple linear regressions applied to determine the influence of independent variable on dependent variable.

V. RESULT DISCUSSION

The following section discusses background information of respondents, Therapeutic category of chronic patients in Hawassa City, Summary of Descriptive Statics of independent variables, dependent variable (brand preference of chronic patients.), correlation, and regression analysis.

TABLE III
BACKGROUND INFORMATION OF RESPONDENTS

			Frequency	Percent
1	Sex	Male	277	74.7
		Female	94	25.3
		Total	371	100.0
2	Age	< 18	2	0.5
		19-37	123	33.2
		38-56	133	35.8
		Above57	113	30.5
		Total	371	100.0

3	Educational level of respondents	Elementary Level	104	19.6
		High school	20	10.6
		College Diploma	49	16.7
		First degree	139	36.4
		Masters and above	59	16.7
Total			371	100.0

Source: Survey data (2019)

As shown in table III above, the majority of respondents are male, representing 74.7% of the total respondents. 35.8% of total respondents fall in the age of 38-56 years. So, most of chronic patients coming to private pharmacies and drug stores in Hawassa city are male and at a moderate age of (38-56 years old). As illustrated in the table, out of the total chronic patients involved in the study, 139 (36.4%) of them have an educational level of first degree. Thus majority of chronic patients involved in the study have educational level of first degree. This makes easy to fill the research questionnaire regarding their pharmaceutical products brand preference, specifically their drugs.

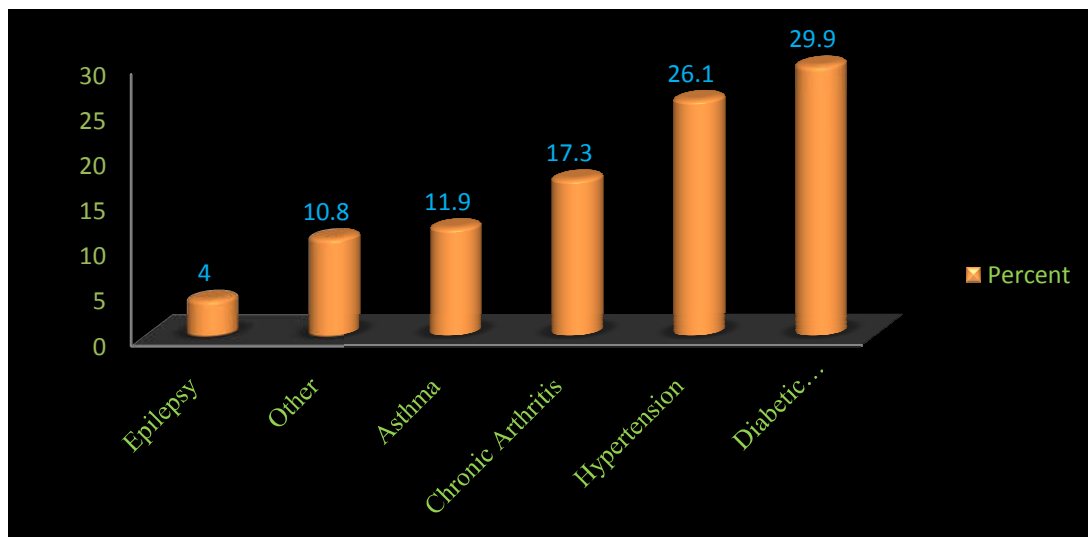


Fig.2. Percentage Therapeutic category

Source: Survey data (2019)

As demonstrated in fig.2 above, majority of the chronic patients (111 out of 371 respondents) involved in the study are Diabetic Mellitus patients who came to visit private pharmacies/drug stores in Hawassa city. This shows that 29.9 % of the chronic patients are Diabetic Mellitus patients. The remaining patients are chronic arthritis, hypertensive, Epileptic, Asthmatic and other patients. In number and percent, they are 64(17.3%), 97(26.1%), 15(4%), 44(11.9%), and 40 (10.8%) respectively.

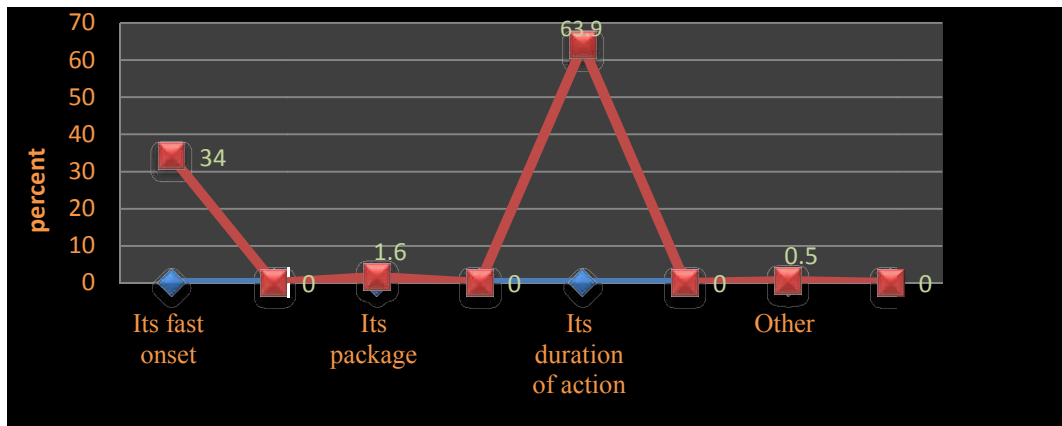


Fig.3.Respondents' brand choice

Source: Survey data (2019)

Figure 3 above indicated most of the chronic patients 237(63.9%) prefer their choice of brand after recognizing its duration of action. Out of the total chronic patients involved in the study 126(34%), 6(1.6%) and 2(0.5%) of them prefer their brand based on its fast onset of action, its package, and other unspecified reasons respectively.

TABLE IV

SUMMARY OF DESCRIPTIVE STATICS OF INDEPENDENT FACTORS

No	Brand Preference Factors	Mean	Std. Deviation
1	Product Availability	3.71	0.994
2	Price Difference	3.59	1.149
3	Professional information	3.11	1.292
4	Social status	2.12	1.143
5	Country of origin	3.50	1.046
6	Prior brand experience	3.71	1.051

Source: Survey data (2019)

According to Al-sayaad et.al (2006), mean range between [1.00, 1.80) implied that the response option lies in strongly agree, followed by Disagree [1.80, 2.60), Neutral [2.60, 3.40), Agree [3.40, 4.20), strongly agree [4.20, 5.00]. As shown in table IV above, Based on Al-sayaad et.al (2006), chronic patients agreed on product availability (M=3.71, S.D.=0.994), Prior brand experience(M=3.71, S.D.=1.051), country of origin (M=3.50,S.D.=1.046) influence on their selection of pharmaceutical brands, while respondents are neutral for professional information influence (M=3.11,S.D.=1.292). On the other hand, chronic patients are disagreed in social status influence (M=2.12, S.D., 1.143) in their preference of pharmaceutical brands.

TABLE V
SUMMARY OF DESCRIPTIVE STATISTICS OF BRAND PREFERENCE

	Package of drugs	Advertisement	The features and designs	Brand image of the drug	Overall Mean
N	371	371	371	371	
Mean	2.20	2.08	2.95	3.62	2.71

Source: Survey data (2019)

As illustrated in table V above, the overall mean for prescribing brand preference is 2.71, which can be approximated to Neutral to the question concerning factors of brand preference based on five-scaled likert’s Criterion. This shows majority of the respondents were neutral to the question for evaluating factors of brand preference in private pharmacies and drug stores in Hawassa city.

1. Statistical Methods to Measure Relationship and Test of Hypothesis

Beyond the descriptive explanation of the relationship between the independent variable (price difference, availability of products, social status, prior brand experience, professional information, and country of origin) and the dependent variable (brand preference of pharmaceutical products) correlation analysis was performed in order to find out any association which exists between the independent and dependent variables. Besides, to test the null hypotheses multiple linear regression was employed to predict the effect of the independent variables on the dependent variable. Nevertheless, before multiple regressions were performed the normality (normal distribution) (Appendix, 1) and multi-co linearity (VIF and Tolerance) assumptions were assessed

Correlation is a measure of the linear relationship between two variables. It is used when a researcher wishes to describe the strength and direction of the relationship between two variables. The correlation value is in the range of -1 and 1. For example -1 indicates that the independent variable has perfect relationship with the dependent variable but its direction is negative. That means if independent variable increases the dependent variable decreasing and vice versa. Similarly, if the value of correlation is +1 the correlation is very significant and the direction is positive. According to (O’Brien&Sharkey, 2012), If the correlation result is between 0 and .33 ($0 < r < .33$) there is weak correlation. For correlation results, which falls in between, .34 and .66 ($.34 < r < .66$) there is moderate correlation and for correlation ($.67 < r < 1$) strong correlation exists between the independent and dependent variables. For this study, spearman correlation (rho) used to assess the relationship between the factors of preference (independent variables) and brand preference (dependent variable). The spearman correlation was used because both the dependent and independent variable of this study have ordinal measurement scale. there are significant negative relationships between dependent variable (brand preference) and the independent variable (price difference) of the current study at significance level 0.01. This shows as price difference increases, brand preference of chronic patients significantly alters negatively. On the other hand, the dependent variable (brand preference) has weak relationship with independent variables of product availability ($r = .102, p < 0.05$), Professional information ($r = .268, P < 0.05$), prior brand experience ($r = -.147, p < 0.05$) while and social status ($r = .049, P > 0.05$) and Country of origin ($r = -.078, P > 0.05$) have insignificant relationship (Appendix, I).

2). *Assumptions of multiple regressions & Regression analysis to test hypotheses:* The regression analysis is a statistical method to deal with the formulation of mathematical model depicting relationship amongst variables which can be used for the purpose of prediction of the values of dependent variable, given the values of the independent variable (Kothari, 2004). A small sample size may obtain a result that does not generalize with other samples. Tabachnick and Fidell(2001, cited in pallant,2005) gave a formula for calculating sample size requirements, taking into account the number of independent variables that you wish to use: $N > 50 + 8m$ (where $m =$ number of independent variables). $N > 50 * 6 = 371 > 300$. Hence the assumption of sample size requirements has been fulfilled in this research.

Multi-co linearity is a problem when for any predictor the R-square between that predictor and the remaining predictors is very high. This problem is associated with a lack of stability of the regression coefficients. Multi-co linearity is used to analyze the

interdependency between the independent variables selected for this study. When the value of VIF (Variance Inflation Factor) is between 1 and 10, there is no multicollinearity between independent variables. If the value of VIF falls either below 1 or above 10, there is multicollinearity between the independent variables. Tolerance (T) is the reciprocal of VIF ($T = 1/VIF$). Therefore, the value of Tolerance falls between 0.1 and 1. Very low values of tolerance (.1 or less) indicates a problem (O'Brien D, 2012).

TABLE VI
COLLINEARITY TEST OF INDEPENDENT VARIABLES

No	Model	Collinearity Statistics	
		Tolerance	VIF
1	Product Availability	0.954	1.048
2	Country of origin	0.941	1.062
3	Professional information	0.886	1.128
4	Price difference	0.892	1.121
5	Prior Experience	0.962	1.039
6	Social status	0.941	1.062

Source: Survey data (2019)

As shown in Table VI above, The Tolerance value is between 0.1 and 1. In the same way, the value of VIF for all independent variable is between 1 and 10. Hence there is no multicollinearity existed between independent variables selected for this study. Normality test(Normal P-P plot) is conducted (Appendix, II).

TABLE VII
MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
	.742a	.551	.543	.518	2.147

Source: Survey data (2019)

a. Predictors: (Constant), Social status, Country of origin, Professional information, Prior experience, Product availability, Price difference

b, dependent Variable: Brand Preference of Chronic Patients

Source: Survey data (2019)

From the model summary in table VII above the value (R=.742) indicated the multiple correlation coefficient between independent variables: Product Availability, Country of origin, Professional information, Price difference, Prior Experience, Social status and the dependent variable (brand preference of pharmaceutical products. On the other hand, the value of R square (0.551) demonstrated that the fair fit of the model to explain the relationship between the independent and dependent variables. Therefore, the independent variables of the current study (Product Availability, Country of origin, Professional information, Price difference, Prior brand Experience, and Social status) accounted for a variation of brand preference of chronic patients by 55.1%. The remaining 44.9% variation of brand preference was not explained by the listed independent variables on this study, rather it might be by other factors which are not considered in this study.

TABLE VIII
ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	119.527	6	19.921	74.379	.000b
Residual	97.491	364	.268		
Total	217.019	370			

- a. Dependent Variable: Brand preference of chronic patients
- b. Predictors: (Constant), Social status, Country of origin, Professional information, Prior experience, Product availability, Price difference

The ANOVA table, table VIII above showed whether the model result is significantly a good degree of prediction of the outcome variable (Field, 2009). The table indicated that the value of sum of the square is 119.527, the value of degree of freedom (df) is 6, and the value of the mean square is 19.921. The F-statistics value is 74.379 which is statistically significant at $p < 0.001$. This shows the selected model can predict the influence of independent variable on the dependent variable.

TABLE IX.
REGRESSION COEFFICIENTS

Model	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	Beta(β)	Std. Error	Beta(β)		
(Constant)	4.561	.305		14.931	.000
Price differences of drugs	-.593	.031	-.713	-19.181	.000
Country of origin	0.085	.051	.060	1.663	.097
Product Availability	.080	.036	.080	2.230	.026
Professional information	.041	.026	.058	1.543	.124
Social status	.124	.040	.112	3.100	.002
Prior brand experience	-.153	.036	-.151	-4.206	.000

a. Dependent Variable: Brand preference of Chronic patients
Source: Survey data (2019)

Upon reviewing the Standardized Coefficient Beta (β) column, the t of each coefficient β needs to be greater than 2 or less than -2; and the sig. level less than .05 for identifying statistically significant contribution of independent variables. The regression coefficients in table IX above revealed the β, t values as well as significance level (P value). The standardized regression coefficient; Beta (β) value shows the rate of change in the dependent variable due to one unit deviation in the independent variable, and the significant level less than .05 for identifying the statistically significant contribution of independent variables (O'Brien & Sharkey Scott, 2012).

Coefficients of Model Equations

$$\hat{Y} = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + b_6x_6 + \epsilon$$

From Table XI, above the following Sample Model equation had been formulated:

$$\hat{Y} = 4.561 + -.713 x_1 + .060x_2 + .080 x_3 + .058x_4 + .112 x_5 + -.151 x_6 + .305$$

By keeping other factors constant, we would have summarized the following interpretations.

In table IX above, Coefficients having a p-value of less than alpha value ($P < .05$) were considered as statistically significant. Therefore, coefficients of Price difference, product availability, and social status, and prior brand experience have statistically significant influence ($P < .05$) on brand preference of pharmaceutical products / drugs of chronic patients. On the contrary, country

of origin and professional information has statistically insignificant influence ($P>.05$) on brand preference of drugs of chronic patients

TABLE X

SUMMARY OF HYPOTHESIS TESTING

	Hypothesis	Tool	Result
H ₀₁	Price differences of drugs has no effect on significant influence on chronic patients brand preference of pharmaceutical products	Regression	Rejected
H ₀₂	Country of origin has no significant influence on chronic patients brand preference of pharmaceutical products	Regression	accepted
H ₀₃	Product availability has no significant influence on chronic patients brand preference of pharmaceutical products	Regression	Rejected
H ₀₄	Professional information has no significant influence on chronic patients brand preference of pharmaceutical products	Regression	accepted
H ₀₅	Social status has no significant influence on chronic patients brand preference of pharmaceutical products	Regression	Rejected
H ₀₆	Prior Brand experience has no significant influence on chronic patients brand preference of pharmaceutical products	Regression	Rejected

Source: survey data (2019)

VI. Conclusion

The main objective of this study is to identify the factors affecting pharmaceutical brand preference of chronic patients. Among the sample chronic patients coming to refill their drugs to drugs stores and pharmacies of Hawassa city, the Diabetic Mellitus patients' number is high, followed by chronic Arthritis, Hypertensive, Epileptic, Asthmatic, and other patients. These respondents indicated that they agreed on product availability, Prior brand experience, price difference influence on their choice of pharmaceutical brands, while the patients are neutral for country of origin and professional information. On the contrary, they are disagreed in social status influence on their preference of pharmaceutical brands. The finding of study also revealed that product availability, country of origin, Price difference, Prior experience, and Social status have statistically significant effect on brand preference of pharmaceutical products / drugs of chronic patients. The findings of the study identified the factors that contribute more to brand preference of pharmaceutical products which will be more useful for manufacturers, dealers and local pharmacies, experts in the field, responsible government bodies, and other stake holders. Hence, the research findings implied that the actors mentioned above need to consider these factors to formulate effective pharmaceutical brand strategy and enhance brand choice of chronic patients. It also recommends special attention should be given by the market players and responsible bodies to price differences of drugs and prior experience of chronic patients.

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Appendix I

TABLE VI
CORRELATION ANALYSIS

Variables		Brand Preference of Chronic Patients	Product Availability	Country of origin	Professional information	Price Difference	Prior Experience	Social status
Brand Preference	Rho	1	0.102	-0.078	.268**	-.693**	-.147**	0.049
	Sig.	.	0.05	0.132	0	0	0.005	0.349
Product Availability	Rho	0.102	1	-.151**	.149**	-0.015	-0.02	0.016
	Sig.	0.05	.	0.004	0.004	0.772	0.698	0.76
Country of origin	Rho	-0.078	-.151**	1	0.046	.160**	0.042	-0.019
	Sig.	0.132	0.004	.	0.372	0.002	0.421	0.719
Professional information	Rho	.268**	.149**	0.046	1	-.274**	-0.096	-.140**
	Sig.	0.	0.004	0.372	.	0	0.066	0.007
Price Difference	Rho	-.693**	-0.015	.160**	-.274**	1	-0.022	.135**
	Sig.	0.	0.772	0.002	0	.	0.673	0.009
Prior brand Experience	Rho	-.147**	-0.02	0.042	-0.096	-0.022	1	.199**
	Sig.	0.005	0.698	0.421	0.066	0.673	.	0
Social status	Rho	0.049	0.016	-0.019	-.140**	.135**	.199**	1
	Sig.	0.349	0.76	0.719	0.007	0.009	0	.

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Survey data (2019)

Appendix II

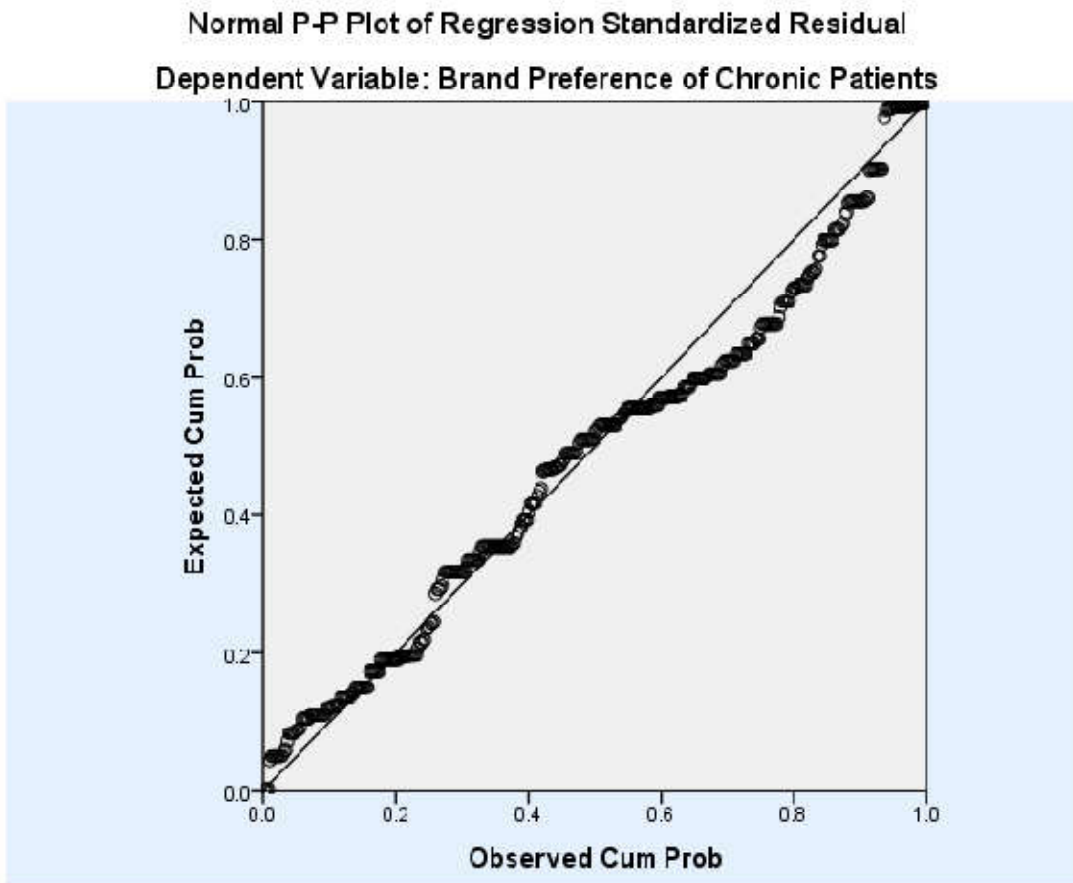


Fig.4. Normality Test

Source: Survey data (2019)

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