

ST. TERESA'S COLLEGE (AUTONOMOUS), ERNAKULAM




CERTIFICATE


This is to certify that the dissertation entitled, **STUDY ON MARKET ANALYSIS AND CONSUMER ATTITUDE TOWARDS AYURVEDIC PRODUCTS** is a bonafide record of the work done by **HENNA CYRIL.V** under my guidance as partial fulfillment of the award of the degree of **Bachelor of Science in Mathematics** at St. Teresa's College (Autonomous), Ernakulam affiliated to Mahatma Gandhi University, Kottayam. No part of this work has been submitted for any other degree elsewhere.

Date:24/2/2023

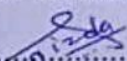
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Project Report

On

**STUDY ON MARKET ANALYSIS AND
CONSUMER ATTITUDE TOWARDS
AYURVEDIC PRODUCTS**

Submitted

in partial fulfilment of the requirements for the degree of

BACHELOR OF SCIENCE

in

MATHEMATICS

by

HENNA CYRIL.V

(REGISTER NO.AB20BMAT033)

Under the Supervision of

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APRIL 2023

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DECLARATION

I hereby declare that the work presented in this project is based on the original work done by me under the guidance of Arunima P.S, Assistant Professor, Department of Mathematics, St. Teresa's College(Autonomous), Ernakulam and has not been included in any other project submitted previously for the award of any degree.

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ACKNOWLEDGEMENT

It is a privilege to place on the record of my gratitude to all the persons who have helped me to complete this dissertation. I acknowledge my indebtedness to the guide, Arunima P.S, Assistant Professor, Department of Mathematics and Statistics, St. Teresa's College (Autonomous), Ernakulam whose valuable guidance, scholarly advice and encouragement enabled me to carry out this project successfully.

I express my sincere gratitude to Dr. Ursala Paul, Head of the Department and all other members of the faculty of Mathematics and Statistics. I am also indebted to my parents, classmates and friends for their immense and indispensable help and co-operation.

Ernakulam.
Date:24/2/2023

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Contents

<i>CERTIFICATE</i>	ii
<i>DECLARATION</i>	iii
<i>ACKNOWLEDGEMENT</i>	iv
<i>CONTENT</i>	v
1 INTRODUCTION	1
1.1 COLLECTION OF DATA	1
1.2 SCOPE OF STUDY	2
1.3 OBJECTIVES	2
1.4 SOFTWARES USED FOR THE STUDY	2
1.5 P-VALUE	3
2 DATA DESCRIPTION	4
3 METHODOLOGY	5
3.1 CHI SQUARE TEST OF INDEPENDENCE	5
3.2 FRIEDMAN TEST	6
3.3 GRAPHICAL REPRESENTATION	9
4 DATA ANALYSIS	10
4.1 CHI SQUARE TEST	10
4.2 GRAPHICAL REPRESENTATION	16
4.3 FRIEDMAN TEST	21
5 CONCLUSION	23
6 REFERENCE	24

Chapter 1

INTRODUCTION

The ancient Indian Medical System also known as Ayurveda is based on ancient writings that rely on a natural and holistic approach to physical and mental health. Ayurveda is one of the most renowned traditional systems of medicine that has survived and flourished from ages till date. Consumers of this epoch have become more concerned about their health and also tending to maintain quality of life which is reflected through the preferential consumption of those products that protect the good state of their health as well as provide utmost satisfaction. The choice and usage of a particular brand by the consumer over the time is affected by the quality benefits offered by the brand. Some of the well known Ayurvedic brands in Kerala are ; Dabur, Himalaya , Kottakkal , Patanjali , Vaidyaratnam Oushadashala , Indulekha , Biotic , Medimix , K.P Namboodiris . etc .

1.1 COLLECTION OF DATA

The type of research used in this study is descriptive and analytical. This research was focused on the typically structured investigative questions. In this case descriptions of characteristics associated with a population of consumers were formulated. The proposition of consumer attitude towards ayurvedic products was evaluated.

For the data collection we used two types of data.

A. Primary data

Data collected by an investigator for the purpose of investigation at

hand is called primary data , and for this study primary data was collected by administering a detailed questionnaire.

B. Secondary data

Secondary data are those that are already collected by an investigator , and for this study secondary data was collected from various sources such as books, internet etc.

1.2 SCOPE OF STUDY

It is to analyse the relevance of ayurvedic products in the wide spread market among other chemical laden products. The study was helpful in understanding the consumer attitude of people belonging to different strata , especially in Ernakulam district. The classification of different strata of people was done gender wise ,age wise and also the factors influencing the buying behaviour of consumers.

1.3 OBJECTIVES

- 1.To analyse consumers awareness and satisfaction level towards ayurvedic products.
- 2.To study the various factors influencing the consumers to use ayurvedic products.
- 3.To study the present scenario of ayurvedic products in market.

1.4 SOFTWARES USED FOR THE STUDY

1. SPSS

SPSS means "Statistical Package for the Social Sciences" and was first launched in 1968. Since SPSS was acquired by IBM in 2009, it is officially known as IBM SPSS Statistics but most users still just refer to it as "SPSS". SPSS is a software for editing and analyzing all sorts of data. These data may come from basically any source: scientific research, a customer data base, google analytics or even the server log files of a website. SPSS can open all file formats that are commonly

used for structured data such as spreadsheets from MS Excel or Open Office: plain text file (.txt or csv); relational (SQL) databases; Stata and SAS. After opening data, SPSS displays them in a spreadsheet like fashion. This sheet is called data view, which always displays our data values. An SPSS data file always has a second sheet called variable view. It shows the metadata associated with the data. Metadata is information about the meaning of variables and data values. This is generally known as the "codebook" but in SPSS it is called the Dictionary. SPSS Output items, typically tables and charts, are easily copy pasted into other programmes. For instance, many SPSS users use a word processor such as MS Word, Open Office or GoogleDocs for reporting. Tables are usually copied in rich format, which means they will retain their styling such as fonts and borders. SPSS is a powerful tool used to manage and use our data. With this service, we can process almost any form of information from virtually any source. All data is managed in a cleanly integrated interface.

2. MICROSOFT EXCEL

Microsoft Excel is a spreadsheet developed by Microsoft for Windows, macOS, Android or iOS. It features calculation for computation capabilities, graphing tools, pivot tables, and a macro programming language called Visual Basic for Applications. Excel forms part of the Microsoft Office suite of Software.

1.5 P-VALUE

The value expresses the probability of type I error. That is, the probability of rejecting the null hypothesis, when it is true. In other words, p-value is defined as the probability that the value of the statistics fall in the critical region given the null hypothesis is true. Smaller the p-value, smaller is the probability that we would be making mistakes by rejecting the null hypothesis. The cut-off value often used is 0.05, i.e., reject the hypothesis when, p-value is less than 0.05.

Chapter 2

DATA DESCRIPTION

Here we use primary data for the study of market analysis and consumer attitude towards ayurvedic products. The collection of data was done by circulating google forms and target was the people of Ernakulam district.

GENDER : Whether the person is male or female.

AGE : Age of the person filling the google form was recorded.

PROFESSION : Whether the person is employed, student or any other.

MONTHLY INCOME : Monthly income of the person filling the form was recorded.

TYPE OF FAMILY : Whether the person filling the google form belongs to joint family or nuclear family.

Age and Monthly income are the quantitative variables.

Gender, Profession and Type of Family are the qualitative variables.

Chapter 3

METHODOLOGY

Methodology simply refers to the method we use to conduct an investigation. Methodology of data includes sources of data, sampling design and presentation. Here we use Chi square test, Friedman test and Graphical representation to study the market analysis and consumer attitude towards ayurvedic products.

3.1 CHI SQUARE TEST OF INDEPENDENCE

The chi square test of independence is used to determine the association between the categorical variables. It is considered as a non parametric test. It is mostly used to test statistical independence. For this test, the data must meet the following requirements:

- Two categorical variables.
- Relatively large sample size.
- Categories of variables (two or more)
- Independence of observations.

STEPS OF CHI SQUARE TEST:

1. Specify the null and alternative hypothesis:

- The null hypothesis (H_0) is a statement of no effect or association between two or more variables.
- The alternative hypothesis (H_1) is the statement that there is an effect

or association between the variables.

2. Specify the level of significance:

The significance level is generally set at 0.05. This means that there is a 5% chance to reject the null hypothesis.

3. Calculate the value of χ^2 :

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

where,

O = Observed value

E = Expected value

The degree of freedom = $(r-1)(c-1)$

where,

r is the number of rows

c is the number of column

4. Find the corresponding p value:

5. Draw a conclusion:

If the p value is numerically less than the significance level, we reject the null hypothesis. Otherwise we say, we fail to reject the null hypothesis.

3.2 FRIEDMAN TEST

Friedman test is a non-parametric test for finding differences in treatments across multiple attempts. Non parametric means the test don't assume your data comes from a particular distribution (like the normal distribution). Basically, it's used in place of the ANOVA test when you don't know the distribution of your data. For this test, the data must meet the following requirements:

- Data should be ordinal or continuous.
- Data comes from a single group, measured on at least three different occasions.
- The sample must be created with a random sampling method.
- Blocks are mutually independent(i.e,all of the pairs are independent-one doesn't effect the other.
- Observations are ranked within blocks with no ties.

STEPS OF FRIEDMAN TEST:

1. Specify the null and alternative hypothesis

- The null hypothesis is the statement that there is no difference between the three conditions.
- The alternative hypothesis is the statement that there is a difference between the three conditions.

2. Specify the level of significance

The significance level is generally set at 0.05, this means that there is a 5 % chance to reject the null hypothesis.

3. Specify the rank

- Rank each row (block) together and independently of the other rows. When there are ties, the average ranks of the observations are considered.
- Sum the ranks for each column and then sum the squared columns total.

4. Calculate the test statistics

$$F = \frac{12}{nk(k+1)} \sum R^2 - 3n(k+1)$$

where,

n = number of rows

k = number of columns

R = sum of ranks

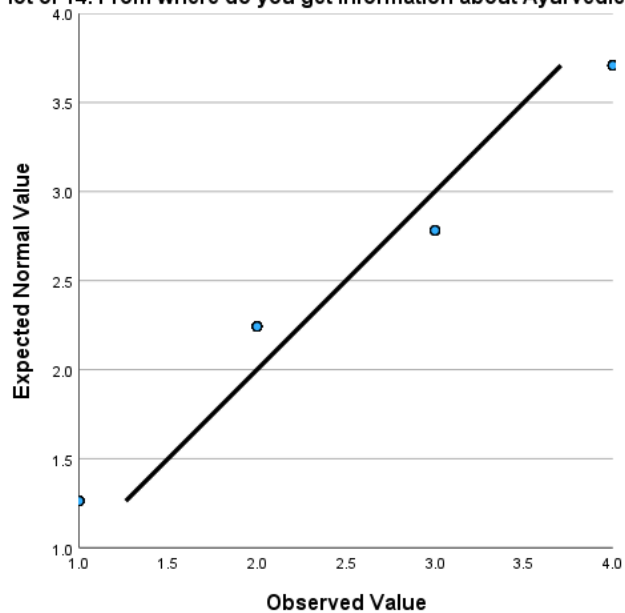
5. Find the corresponding p value.

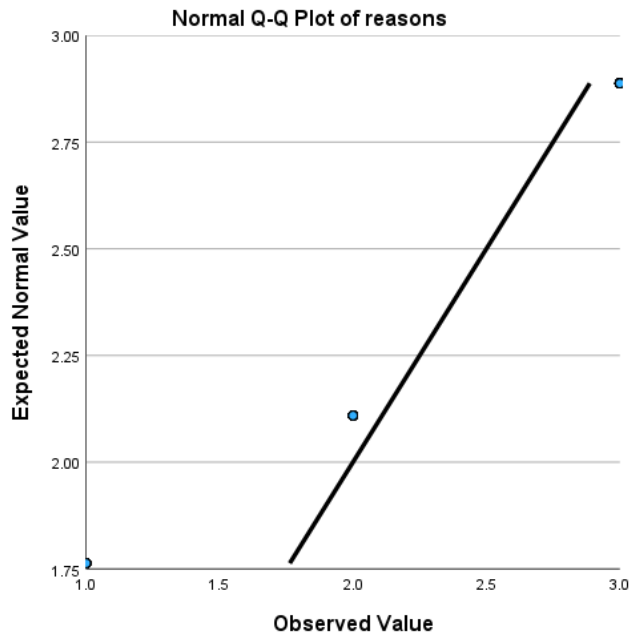
6. Draw a conclusion

If the p value is numerically less than the significance level, we reject the null hypothesis. Otherwise we say, we fail to reject the null hypothesis.

Normality:

Normal Q-Q Plot of 14. From where do you get information about Ayurvedic Products ?





3.3 GRAPHICAL REPRESENTATION

Graphical representation is used for analysing numerical data using charts and graphs. In graph, statistical data is represented in the form of lines or curves. Representational graphics can quickly illustrate general behaviour and highlight phenomena and relationships between data points that may otherwise be overlooked and may contribute to predictions and better data driven decisions. There are different types of graphical representations. Some of them are bar graphs, line graphs, histograms, line plot, frequency table, stem and leaf plot, circle graph, etc.

Chapter 4

DATA ANALYSIS

4.1 CHI SQUARE TEST

Our objective is to compare the demographic profile of the respondents with their satisfaction level towards ayurvedic products.

1. H_0 : There is no association between gender and satisfaction.

H_1 : There is association between gender and satisfaction.

Observed Value (O)				
	High	Medium	Low	Total
Female	45	4	112	161
Male	27	10	54	91
Total	72	14	166	252

Expected Value (E)			
	High	Medium	Low
Female	46	8.944444444	106.0555556
Male	26	5.055555556	59.94444444

(O-E) ² /E			
	High	Medium	Low
Female	0.02173913043	2.73326432	0.3331878238
Male	0.03846153846	4.835775336	0.5894861497

χ^2	8.551914298
df	2
p-value	0.01389873918
	0.01389873918

Here p value is less than 0.05 .

So we reject H_0 and therefore there is association between gender and satisfaction level.

2. H_0 : There is no association between age and satisfaction.

H_1 : There is association between age and satisfaction.

Observed Value (O)				
	High	Medium	Low	Total
16-20	38	93	9	140
21-25	10	38	3	51
26-30	4	18	2	24
31-35	3	6	0	9
36-40	3	0	0	3
41-45	3	2	0	5
46-50	2	3	0	5
51-55	5	1	0	6
56-60	3	2	0	5
61-65	1	0	0	1
66-70	0	1	0	1
71-75	0	1	0	1
76-80	0	1	0	1
Total	72	166	14	252

Expected Value (E)			
	High	Medium	Low
16-20	40	92.22222222	7.777777778
21-25	14.57142857	33.5952381	2.833333333
26-30	6.857142857	15.80952381	1.333333333
31-35	2.571428571	5.928571429	0.5
36-40	0.8571428571	1.976190476	0.1666666667
41-45	1.428571429	3.293650794	0.2777777778
46-50	1.428571429	3.293650794	0.2777777778
51-55	1.714285714	3.952380952	0.3333333333
56-60	1.428571429	3.293650794	0.2777777778
61-65	0.2857142857	0.6587301587	0.05555555556
66-70	0.2857142857	0.6587301587	0.05555555556
71-75	0.2857142857	0.6587301587	0.05555555556
76-80	0.2857142857	0.6587301587	0.05555555556

(O-E) ² /E	High	Medium	Low
16-20	0.1	0.00655957162	0.1920634921
21-25	1.434173669	0.5775201647	0.009803921569
26-30	1.19047619	0.3034997131	0.3333333333
31-35	0.07142857143	0.0008605851979	0.5
36-40	5.357142857	1.976190476	0.1666666667
41-45	1.728571429	0.508108625	0.2777777778
46-50	0.2285714286	0.02618091413	0.2777777778
51-55	6.297619048	2.205393001	0.3333333333
56-60	1.728571429	0.508108625	0.2777777778
61-65	1.785714286	0.6587301587	0.05555555556
66-70	0.2857142857	0.1768024479	0.05555555556
71-75	0.2857142857	0.1768024479	0.05555555556
76-80	0.2857142857	0.1768024479	0.05555555556

χ^2	30.67172725
df	24
p-value	0.1634750787
	0.1634750787

Here p value is greater than 0.05 .

So we accept H_0 and therefore there is no association between age and satisfaction level.

3. H_0 : There is no association between profession and satisfaction.

H_1 : There is association between profession and satisfaction.

Observed Value (O)	High	Medium	Low	Total
Employed	21	37	2	60
Student	44	119	11	174
Others	7	10	1	18
Total	72	166	14	252

Expected Value (E)	High	Medium	Low
Employed	17.14285714	39.52380952	3.333333333
Student	49.71428571	114.6190476	9.666666667
Others	5.142857143	11.85714286	1

(O-E) $\hat{2}$ /E			
	High	Medium	Low
Employed	0.8678571429	0.1611589214	0.5333333333
Student	0.6568144499	0.1674481176	0.183908046
Others	0.6706349206	0.2908777969	0

X $\hat{2}$	3.532032729
df	4
p-value	0.4730244432
	0.4730244432

Here p value is greater than 0.05 .

So we accept H_0 and therefore there is no association between profession and satisfaction level.

4. H_0 : There is no association between type of family and satisfaction.

H_1 : There is association between type of family and satisfaction.

Observed(O)				
	high	medium	low	total
Joint family	10	23	1	34
Nuclear family	62	143	13	218
total	72	166	14	252

Expected(E)			
	high	medium	low
Joint family	9.714285714	22.3968254	1.888888889
Nuclear family	62.28571429	143.6031746	12.11111111

(O-E) $\hat{2}$ /E			
	high	medium	low
Joint family	0.008403361345	0.0162442487	0.4183006536
Nuclear family	0.00131061599	0.002533506679	0.06523955148

χ^2	0.5120319378
df	2
p value	0.7741296067
	0.7741296067

Here p value is greater than 0.05 .

So we accept H_0 and therefore there is no association between type of family and satisfaction level.

5. H_0 : There is no association between monthly income and satisfaction.

H_1 : There is association between monthly income and satisfaction.

Observed(O)				
	high	medium	low	total
below15000	51	125	12	188
15000-30000	6	14	0	20
30000-50000	7	13	2	22
above50000	8	14	0	22
total	72	166	14	252

Expected(E)			
	high	medium	low
below15000	53.71428571	123.8412698	10.44444444
15000-30000	5.714285714	13.17460317	1.111111111
30000-50000	6.285714286	14.49206349	1.222222222
above50000	6.285714286	14.49206349	1.222222222

$(O-E)^2/E$			
	high	medium	low
below15000	0.1371580547	0.01084174591	0.231678487
15000-30000	0.01428571429	0.05171160834	1.111111111
30000-50000	0.08116883117	0.1536188042	0.4949494949
above50000	0.4675324675	0.01670752273	1.222222222

χ^2	3.992986064
df	6
pvalue	0.6776256482
	0.6776256482

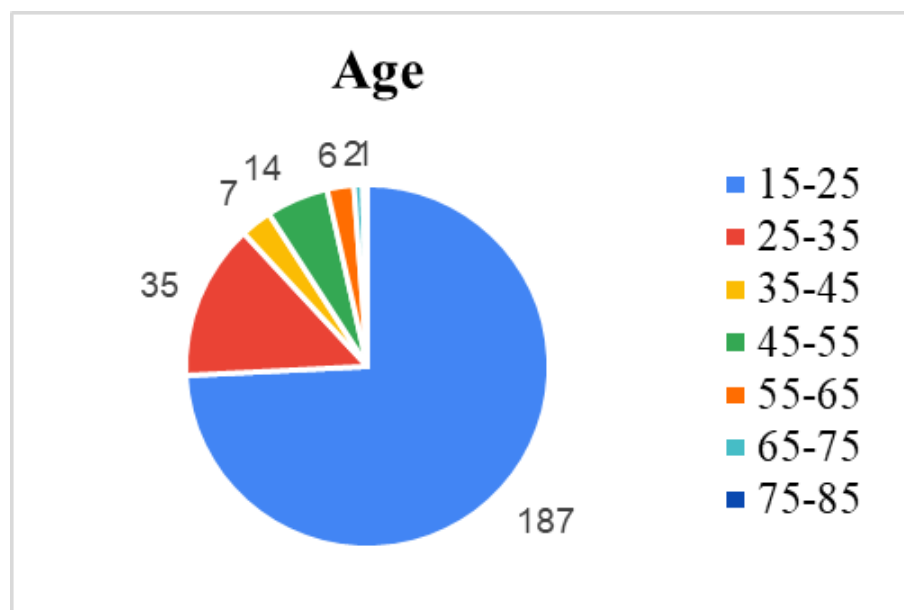
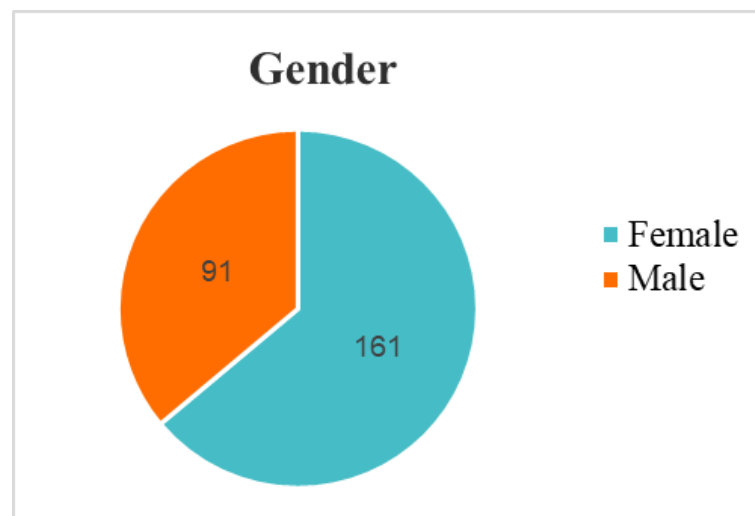
Here p value is greater than 0.05.

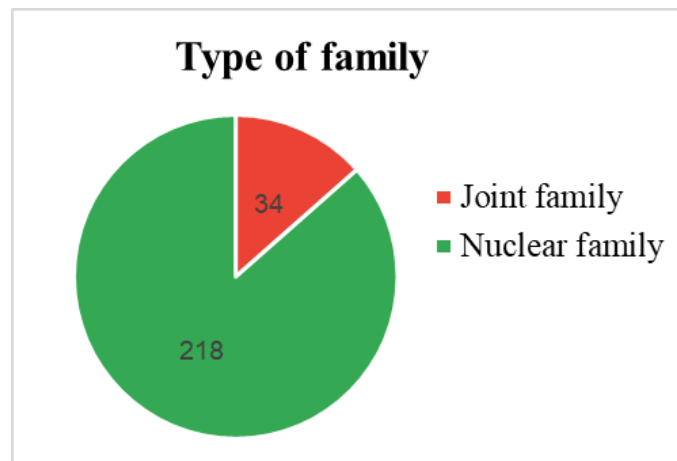
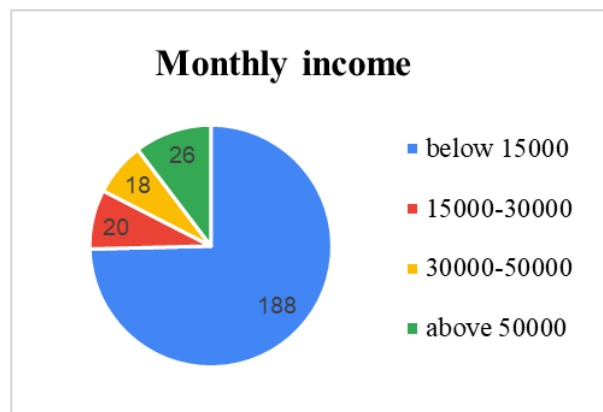
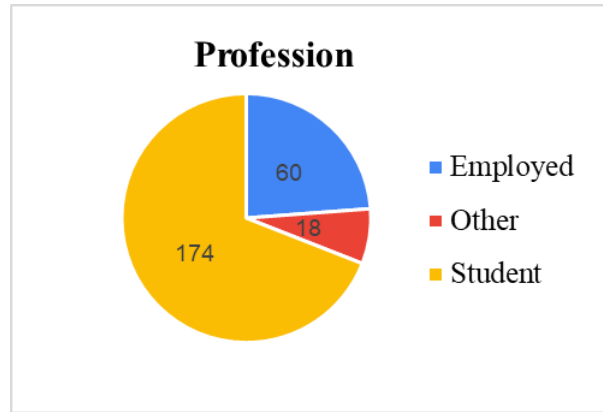
So we accept H_0 and therefore there is no association between monthly income and satisfaction level.

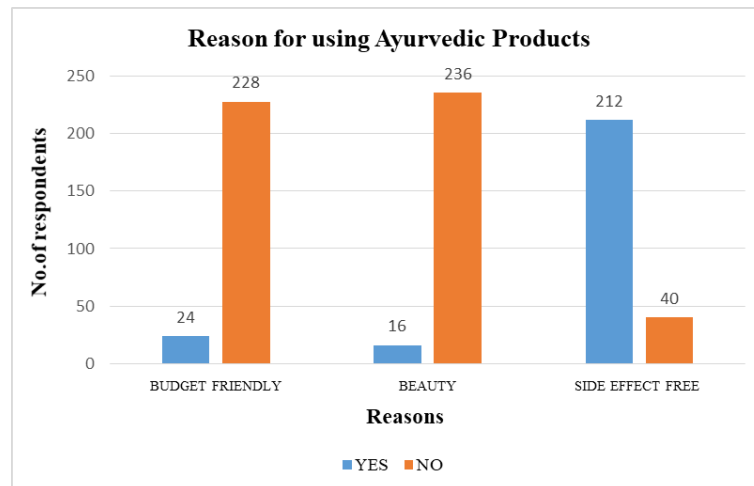
4.2 GRAPHICAL REPRESENTATION

Graphical representation refers to the use of charts and graphs to visually display, analyse, clarify and interpret numerical data and other qualitative structures.

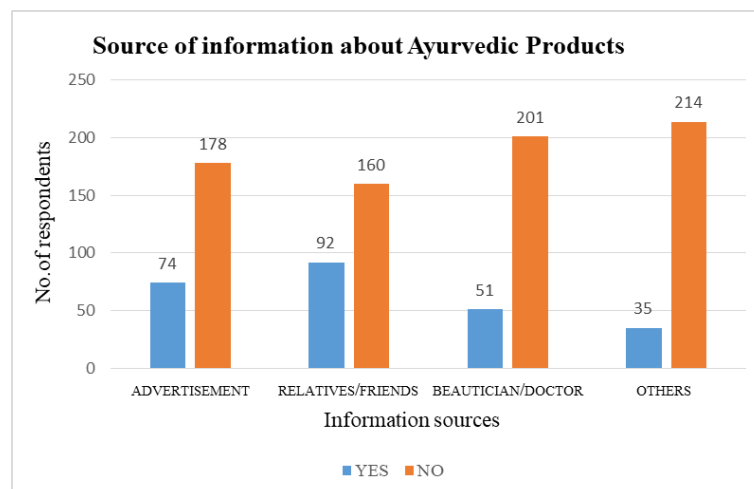
Demographic profile of the respondents are represented in the form of pie charts:



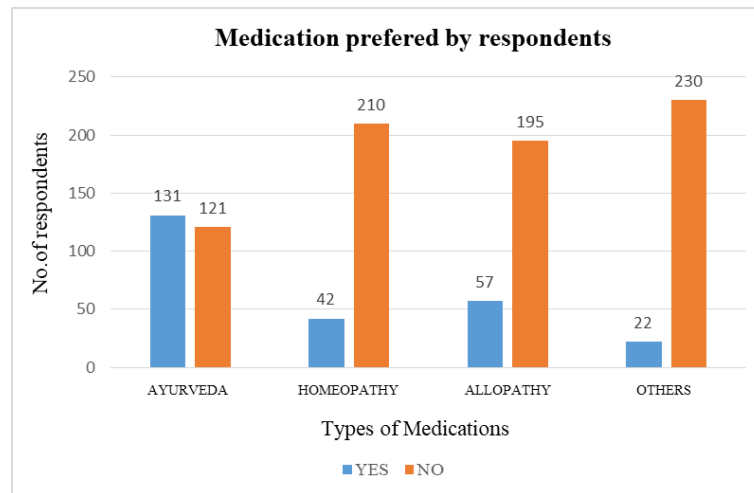




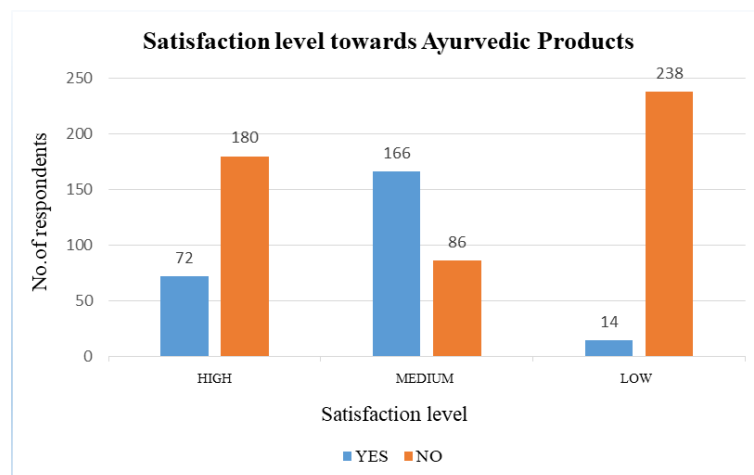
212 respondents lying in the range 200-250 selected side effects free as a reason for using ayurvedic products. 24 respondents lying in the range 0-50 selected budget friendly. 16 respondents lying in the range 0-50 selected beauty. Among these three, most of the respondents selected side effects free as a reason for using ayurvedic products.



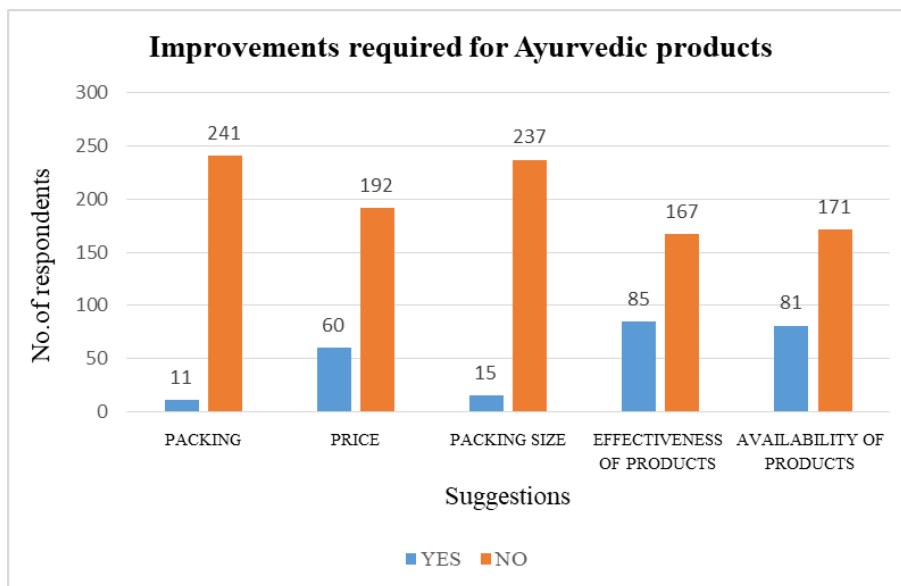
92 respondents lying in the range 50-100 got information from relatives/friends. 74 respondents lying in the range 50-100 got the information from advertisement. 51 respondents lying in the range around 50 got information from beautician/doctor. Among these three, most of the respondents got information from relatives/friends.



131 respondents lying in the range 100-150 choose Ayurveda. 57 respondents lying in the range 50-100 choose Allopathy. 42 respondents lying in the range 0-50 choose Homeopathy. Among these three, most of the respondents preferred Ayurveda as a better medication.



166 respondents lying in the range 150-200 showed medium satisfaction. 72 respondents lying in the range 50-100 showed high satisfaction. 14 respondents lying in the range 0-50 showed low satisfaction. Among these three, most of the respondents have medium satisfaction level towards ayurvedic products.



85 respondents lying in the range 50-100 suggested improvements in the effectiveness of product. 81 respondents lying in the range 50-100 suggested improvements in the availability of product. 60 respondents lying in the range 50-100 suggested improvements in price of the product. 15 respondents lying in the range 0-50 suggested improvements in packing size. 11 respondents lying in the range 0-50 suggested improvements in packing. Among these five, most of the respondents suggested improvements in effectiveness of product.

4.3 FRIEDMAN TEST

1. H_0 : There is no significant difference between the three conditions such as side effects free, beauty and budget friendly.

H_1 : There is significant difference between the three conditions such as side effects free, beauty and budget friendly.

Ranks

	Mean Rank
side effect free	2.54
budget friendly	2.26
beauty	1.20

Test Statistics^a

N	252
Chi-Square	250.484
df	2
Asymp. Sig.	<.001

a. Friedman Test

Here the p-value is less than 0.05.

So we reject the null hypothesis and there is significant difference between the three conditions such as side effects free, beauty and budget friendly.

2. H_0 : There is no significant difference between the three conditions such as relatives/friends, beautician/doctor and advertisement.

H_1 : There is significant difference between the three conditions such as relatives/friends, beautician/doctor and advertisement.

Ranks

	Mean Rank
relatives/friends	2.25
advertisements	2.16
beautician /doctor	1.59

Test Statistics^a

N	252
Chi-Square	64.745
df	2
Asymp. Sig.	<.001

a. Friedman Test

Here the p-value is less than 0.05.

So we reject the null hypothesis and there is significant difference between the three conditions such as relatives/friends, beautician/doctor and advertisement.

Chapter 5

CONCLUSION

This study was focused on the market analysis and consumer attitude towards Ayurvedic products.

Consumers nowadays have a high level of awareness regarding the availability of products which are manufactured and sold under the label of Ayurveda, as well as its effectiveness and merits with comparison to synthetic products. Majority of the consumers who use Ayurvedic products are satisfied with such products they use.

As per the data, most of the respondents prefer Ayurvedic products for hair care. It is evident from the analysis that majority of the respondents prefer to purchase ayurvedic products from medical shops. The findings indicate that the respondents make their purchase decision after planning beforehand rather than making a spot decision and most of them choose Ayurvedic products for their side effects free nature. The respondents mostly get information about Ayurvedic products from relatives/friends and majority of the consumers are influenced by doctors/beauticians on choice of a particular brand of the Ayurvedic products.

Therefore from the study it is clear that Ayurvedic products are still widely used among the people as a system of primary health care and interest in it is growing globally. Ayurveda calls each and everyone of us to take back our power and claim our ability to manifest a healthy life.

Chapter 6

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