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## Consumer Behaviour Towards Nutraceuticals in Different Groups of Patients: A Review

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### ABSTRACT:

Nutraceuticals are widely consumed by patients as a complementary therapy for various health conditions. This review aims to provide an overview of consumer behavior towards nutraceuticals in different groups of patients. A comprehensive search of databases such as PubMed, Scopus, and Google Scholar were conducted for relevant studies published from 2010 to 2022. The review summarizes the factors that influence consumer behavior, such as age, gender, education, income, health status, and belief in traditional medicine. It also explores the types of nutraceuticals preferred by different patient groups and the reasons behind their use. The review highlights the need for healthcare professionals to be aware of patient preferences and attitudes towards nutraceuticals in order to provide appropriate advice and support. Future research should focus on the efficacy and safety of nutraceuticals, as well as their potential interactions with conventional medicines.

**KEYWORDS:** Nutraceuticals, Consumer behavior, Pharmacy, Patient groups, North Gujarat Dietary supplements, Health and wellness

### INTRODUCTION <sup>[1-10]</sup>

In recent years, there has been a growing interest in nutraceuticals, which are defined as foods or food components that offer potential health benefits beyond their basic nutritional value. Nutraceuticals have gained popularity among consumers because they are perceived to be natural, safe, and effective in promoting health and preventing diseases. Nutraceuticals are available in various forms, including tablets, capsules, powders, and drinks, and are often marketed as dietary supplements.

Consumer behaviour towards nutraceuticals is a topic of great interest to researchers, healthcare providers, and the nutraceutical industry. The use of nutraceuticals is influenced by a range of factors, including demographic characteristics, health status, and personal beliefs and attitudes. Understanding consumer behaviour towards nutraceuticals can help identify target groups for nutraceutical interventions, design effective nutraceutical products, and develop targeted marketing strategies.

This review aims to provide a comprehensive overview of consumer behaviour towards nutraceuticals in different groups of patients. The review will examine the factors influencing the use of nutraceuticals, including consumer demographics, health status, and beliefs and attitudes towards nutraceuticals. The review will also explore the potential health benefits of nutraceuticals and the evidence supporting their use in the prevention and treatment of various diseases.

The review will be structured as follows. First, the definition and classification of nutraceuticals will be provided, along with an overview of their potential health benefits. Next, the factors influencing consumer behaviour towards nutraceuticals will be examined, including consumer demographics, health status, and beliefs and attitudes towards nutraceuticals. The review will then examine the evidence supporting the use of nutraceuticals in the prevention and treatment of various diseases, including cardiovascular disease, diabetes, and cancer.

Finally, the implications of these findings for healthcare providers and the nutraceutical industry will be discussed. In conclusion, understanding consumer behaviour towards nutraceuticals is of great importance to healthcare providers, researchers, and the nutraceutical industry. This review aims to provide a comprehensive overview of consumer behaviour towards nutraceuticals in different groups of patients. By examining the factors influencing the use of nutraceuticals and the evidence supporting their use in the prevention and treatment of various diseases, this review aims to contribute to the development of effective nutraceutical interventions and marketing strategies. In recent years, the usage of nutraceuticals has increased in India, perhaps as a result of the rising health awareness and interest in CAM among the country's population. Nutraceuticals are foods or dietary components used for therapeutic purposes including the treatment or prevention of illness. Nutraceuticals may be derived from many different places, including plants, animals, and microbes.

Ayurveda is an age-old medical practise that has found widespread acceptance in modern-day India. Ayurvedic medicine has used nutraceuticals for hundreds of years. However, the country's expanding middle class didn't begin using nutraceuticals like vitamins and minerals to enhance the flavour of their food and treat disease until the 1990s. The rising number of persons with chronic diseases has contributed to the rise in interest in nutraceuticals as people seek for natural treatments.

The nutraceutical market in India is developing as a result of rising disposable income, shifting consumer preferences, and a greater focus on preventative medicine. Nutritional supplements, functional meals and drinks, herbal extracts, and probiotics are just few of the numerous available goods today.

The Indian government has launched a number of programmes to increase the availability of nutraceuticals and broaden the market for these products. For instance, in India, the manufacturing and distribution of nutraceuticals are subject to norms and regulations established by the Food Safety and Standards Authority of India. You may get a copy of these rules and regulations from (FSSAI). It is the job of the Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha & Homoeopathy (AYUSH) to promote and regulate the use of nutraceuticals in traditional medical practises like Ayurveda.

In conclusion, many people in India are considering the use of nutraceuticals to enhance their health. The expanding purchasing power of the Indian middle class, along with the

government's encouragement, bodes well for the future of the nutraceutical industry in the nation. In addition to improving people's health, this will open up new markets for pharmaceutical companies.

**MATERIALS AND METHODS** [11-22]

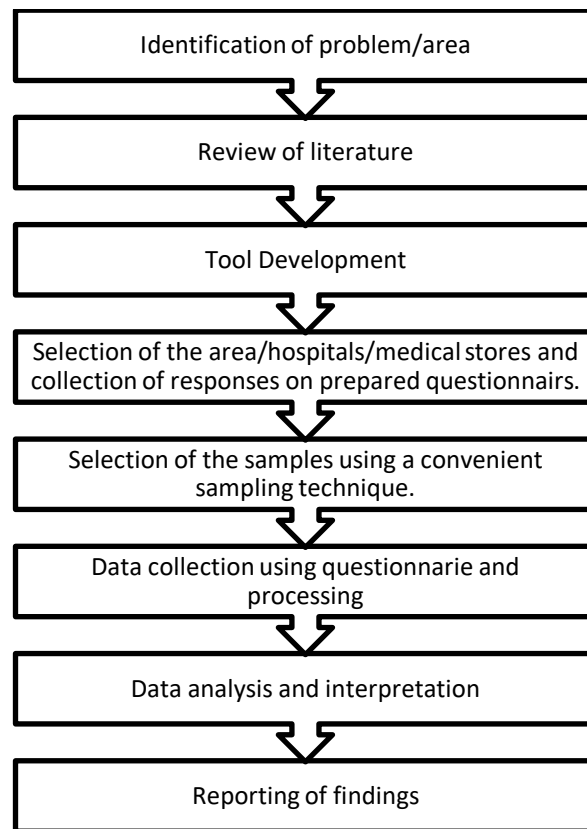


Figure 1 schematic representation of research design in various research

**Common steps in various research:**

Formulating the Problem and developing objective of the research

The formulation of the problem based on the hypothesis. The purpose of the research is to acquire pertinent information from the sample that is being targeted, and then use that information for subsequent research.

**Designing of the Research Plant**

The design of the research plan is what decides the methods and tools that will be used to carry out market research. The current investigation is a descriptive study because the problem has been adequately characterised.

**Source of Data**

- Primary data
- Secondary data

The first-hand information collected from respondents makes up the primary data. Using a questionnaire, information should be gathered regarding the various nutraceuticals that each individual patient is using. Secondary data is gathered from sources that are already

in the public domain, such as published papers, journals, magazines, and so on. Gather secondary data regarding the many services that may be offered to customers in addition to the ones you already supply.

#### Data collection Technique

Surveying either the sample units themselves or the pieces that make up the sampling units is how primary data is acquired. A questionnaire with a predetermined format will be utilised in the administration of the survey. The surveys will include both open-ended questions as well as closed-ended questions.

#### Sampling plan

In order to gain an understanding of the objectives, 1200 consumers at the pharmaceutical shop were asked questions using a questionnaire. In order to fulfil the objectives of the project for carrying out a survey, the sampling will be carried out in the region of North Gujarat utilising a straightforward random technique questionnaire. This will be produced and utilised. Personal interviews will be used as the method of data collection for the survey.

#### Analysis of collected information.

This entails transforming raw data into information that may be utilised. Tabulating information and applying statistical measures to that information in order to determine frequency distribution, as well as computing averages and dispersions, are both required steps in this process

#### RESULTS AND DISCUSSIONS [23-28]

According to Laxmi (2013), it was thought that raw papaya, sesame, coconut water, and to collect data on the gender of the respondents, the following methods may have been used:

**Survey Questionnaire:** A question on a survey questionnaire may ask respondents to choose their gender from alternatives like "male" and "female." This questionnaire might have been distributed to a sample of North Gujarat patients online, by mail, or in person.

**Face-to-face interviews with patients** could have been used by researchers to elicit information on their gender.

**Medical Records:** With the consent of the healthcare professionals, access to medical records may have revealed the gender of the patients.

Researchers might have kept track of the gender of pharmacy customers by watching them.

Once the gender data had been gathered via one or more of these techniques, the analysis and findings would have been displayed in a table.

A survey questionnaire will be created with a question asking for the respondent's age in order to gather information on the respondents' ages. The age ranges listed in the table above (below 20, between 21 and 40, between 41 and 60, and over 60) will be utilised as possible answers to this question. A random selection technique will be used to choose a sample of North Gujarat patients for the survey.

Respondents will get the survey questionnaire either in-person during interviews with experienced research assistants or online utilising tools like Google Forms or Survey Monkey. In order to promote truthful and accurate responses, the survey will be anonymous. To ascertain the frequencies and percentages of each age category, the data will be placed into a spreadsheet and analysed using statistical software such as SPSS or R. A table with the results will be shown that resembles the one in the research objectives.

To collect data on the educational qualification of the respondents, the following methods can be used:

**Survey questionnaire:** You can create a survey questionnaire that asks questions about the respondents' educational backgrounds. A sample of North Gujarat patients can receive the questionnaire either in person or online.

**Secondary data:** Secondary data sources that may be utilised to gather information on the level of education of the population in North Gujarat include academic papers, government documents, and online databases. The educational background of the study's respondents can then be inferred from this information.

**Interviews:** To learn more about the educational background of a sample of patients in North Gujarat, interviews may be undertaken. Both in-person and telephone interviews are options for the process.

**Focus group conversations:** In order to learn more about a group of patients in North Gujarat's educational background, as well as their perceptions and attitudes towards nutraceuticals, focus group discussions might be held with them.

To collect data on the occupation of the respondents, a survey questionnaire can be distributed to a representative sample of the population in North Gujarat. The survey can be conducted using a combination of online and offline methods to reach a diverse group of individuals.

The questionnaire may ask respondents about their employment status, with alternatives like self-employed, government employees, professionals, private sector workers, students, or others. The choice that best

describes the respondents' current employment might be given to them to choose.

Alternately, the survey can ask an open-ended question that allows participants to describe their job in their own terms. This strategy can aid in the identification of any new or developing occupational categories and may offer a more thorough understanding of the various sorts of occupations that exist in the population.

Statistical analysis tools can be used to determine the frequency and proportion of respondents in each employment category from the obtained data. The distribution of responses among various occupational groups can be displayed in the results using a table, similar to the one in the question.

To collect the data on the monthly income of the respondents, the following methods could be used:

**Survey Questionnaire:** Specific questions regarding the respondents' monthly income could be included in the survey questionnaire. Depending on the intended audience, the questionnaire could be given out either online or offline. The respondents might be given a set of predefined ranges, like the ones in the table above, and asked to choose their monthly income from that list.

**Interview:** Information on the respondents' monthly incomes could be gathered via an interview-based methodology. The interview could take place over the phone or in person. The interviewer could pose precise enquiries regarding the respondents' monthly income and then record their answers.

**Focus Group Discussions:** In order to get information on respondents' monthly incomes, focus groups could be held with a group of respondents. A skilled facilitator could moderate the talks, directing the conversation and enticing participants to express their opinions and experiences. The conversations might be recorded on audio or video for later examination.

**Secondary Data Sources:** It is also possible to collect information on the median monthly income of the target demographic using secondary data sources including government publications, market research reports, and published articles.

To collect data on the marital status of the respondents, the following methods can be used:

**Survey Questionnaire:** Using a survey questionnaire is the most popular and effective way to learn about the respondents' marital status. A direct question concerning the respondent's marital status might be included in the questionnaire, such as "What is your current marital status?" with the options "unmarried" or "married."

**Observation** is another technique for gathering information about the respondents' marital status. This approach entails observing the responders and noting if they are married. However, this approach could not be reliable because it might not be possible to determine each respondent's marital status through observation.

**Secondary Data:** If the study is being conducted in a medical environment, the patient's medical records may provide information about the respondents' marital status. To gather information on the respondents' marital status, the researcher can examine these records.

**Focus Group Discussion:** To gather information about the respondents' marital status, a focus group discussion may also be held. The participants' responses to questions concerning their marital status can be recorded and analysed. However, if there are many respondents, this strategy might not be appropriate.

To collect data on the tenure of purchasing nutraceutical products by the respondents, a survey questionnaire can be administered to a sample of patients in North Gujarat. A question about the respondents' history of buying dietary supplements may be included in the questionnaire, with response options given for various time periods. The survey can be disseminated through a number of channels, including local pharmacies, clinics, and hospitals, as well as internet resources and social media pages devoted to health and wellbeing. The frequency and proportion of respondents in each tenure range who purchase nutraceutical items can be determined from the provided data using statistical methods.

To collect data on the frequency of purchase of nutraceutical products by the respondents in the past six months, the following methods can be used:

A survey questionnaire can be created to get information on how frequently people buy nutraceutical items. Online or in-person administration of the questionnaire to the respondents is an option. The response alternatives to questions like "How frequently have you purchased nutraceutical products in the past six months?" include "2-3 times a week or more often," "Once a week," "Once every two weeks," and "Once a month."

**Sales data:** Information on the respondents' frequency of purchasing nutraceutical items can be gathered from the sales data of pharmacies that offer those products. The sales data can reveal details about how many purchases customers made during the previous six months.

**Focus groups:** Focus groups can be held with the respondents to collect qualitative information on how frequently they buy dietary supplements. Questions like

"How often do you buy nutraceutical products?" and "What influences your decision to buy nutraceutical products?" might be the topics of focus group talks.

Individual interviews with the respondents can be used to gather information on how frequently they purchase nutraceutical items. The interviews can offer in-depth insights on the respondents' purchasing behaviour and might be scheduled or unstructured.

To collect data on the duration of nutraceutical consumption, a survey questionnaire can be used to ask the respondents about their usage habits. Among the possible answers to the question "How long have you been using nutraceutical products?" are "More than 2 years," "Around 1-5 months," and other variations. You can ask the respondents to choose the choice that most accurately describes their usage style. The survey can be carried out in a number of ways, including online surveys, in-person interviews, and telephone interviews. To guarantee the results are generalizable, a representative sample of the population can be chosen using random sampling techniques. Descriptive statistics can be used to analyse the obtained data to identify the frequency and proportion of respondents in each category of consumption time.

To collect the above data on consuming members of Nutraceutical products, you could use the following methods:

**Online surveys:** You can design a survey questionnaire using online survey tools like SurveyMonkey, Google Forms, or Type form and distribute it by email, social media, or other online channels to a sample of the population. The survey might ask questions about using nutraceutical items, and the answers could be gathered and analysed to provide the needed information.

**In-person Interviews:** To get information on consumers of nutraceutical products, in-person interviews with a representative sample of the public could be conducted. The interviews could take place at respondents' homes or in public locations like malls, markets, or fitness centres. The responses to the interviewer's queries on eating members of nutraceutical items might be recorded and analysed afterwards.

**Phone interviews:** Another option for gathering information on consumers of nutraceutical products is to conduct phone interviews with a representative sample of the population. A list of the target population's phone numbers or random-digit dialling could be used to conduct the phone interviews. The responses to the interviewer's queries on eating members of nutraceutical items might be recorded and analysed afterwards.

**Focus Group Discussions:** To gather information on consumers of nutraceutical products, you could hold focus groups with a representative sample of the community. Questions about ingesting members of Nutraceutical products may be asked during focus group talks, which may be held in person or online. To get the needed information, the responses could be recorded and analysed later.

**Secondary Data Sources:** You can also use secondary data sources to gather information on consumers of nutraceutical products, such as market research studies, government statistics, or trade journals. These sources could give information on the frequency of dietary supplement use among various age groups, genders, and household types.

To collect data on the mode of awareness of nutraceutical products among the respondents, the following methods can be used:

**Surveys:** Using online or offline means, surveys can be conducted to gather information on the mode of awareness. The survey can include enquiries regarding the information sources used to learn about nutraceutical items.

**Interviews:** One-on-one interviews with the respondents are an option for gathering information on their level of awareness. Either in-person or phone/online video interviews are options for the interview process.

**Discussions in focus groups:** To get information on the manner of awareness, focus groups can be held with a group of people who use nutraceutical products. You can enquire of the participants' sources of knowledge regarding dietary supplements.

**Online discussion boards and social media sites:** These resources can be utilised to gather information about the manner of awareness. On these platforms, you can ask questions regarding the information sources for nutraceutical items in order to learn more.

**Observation:** Understanding the manner of awareness can be gained by seeing how people who are buying nutraceutical items behave. For instance, it can be assumed that the packaging is a source of information for a client if they read the product description on the box prior to making a purchase.

To collect data for the association between gender and purchase intention factor, the following methodology can be adopted:

**Sampling:** To pick a representative sample from the population of interest, a suitable sampling approach, such as stratified random sampling or cluster sampling, should be utilised. The sample size needs to be sufficient to

guarantee that the findings are reliable and statistically significant.

**Design of the questionnaire:** To get the required data, a structured questionnaire should be created with the right questions. The survey should ask about factors that influence purchasing intention as well as demographic data like age, gender, income, and educational background.

**Data collection:** Depending on the characteristics of the population and the available resources, data may be collected using a variety of techniques, such as online surveys, telephone interviews, in-person interviews, or postal questionnaires.

**Data analysis:** Using proper statistical methods like chi-square tests or logistic regression, the acquired data should be cleaned, coded, and analysed. Calculating the frequencies and percentages will help us understand the relationship between gender and the purchasing intention factor.

**Interpretation:** The analysis's findings ought to be understood and presented in a suitable manner, such as tables, charts, or graphs. The conclusions should be discussed in relation to the goals of the study and any pertinent literature. It is also important to talk about the study's shortcomings and suggestions for further investigation.

To collect data for the association between age group and purchase intention factor, the following methodology can be used:

**Describe the target demographic:** People who buy or use nutraceutical products should be included in the target demographic. It can be further divided into age groups, such as those under 20, between 20 and 40, between 41 and 60, and over 60.

**Sampling:** To choose a representative sample from the target population, random sampling can be utilised. To make sure that the sample size is proportional to the population size of each age group, stratified sampling can also be utilised.

**designing a questionnaire** To gather data about the respondents' age, gender, and intent to purchase, a questionnaire should be created. The questions should be structured to help differentiate between low, moderate, and high buying intentions.

**Data collection:** A variety of techniques, including online surveys, phone surveys, and in-person interviews, can be used to conduct the questionnaire. The convenience of the respondents and the study budget should be taken into consideration while selecting the data gathering technique.

**Data analysis:** After the data have been gathered, they can be examined using statistical programmes like SPSS or Excel. The frequency and proportion of each age group in the sample can be calculated from the data using descriptive statistics. The correlation between age groups and purchase intention can be found using crosstabulation and chi-square tests.

**Conclusions** about the relationship between age groups and purchase intention should be drawn from the analysis's results. To make the results easier to interpret, they should be presented as tables, graphs, and charts. There should also be a discussion of the study's limitations and suggestions for additional research.

To collect data for the association between educational level and Purchase intention factor, the following methodology can be used:

**Sampling:** A representative sample from the population being studied should be chosen at random. The sample size needs to be sufficient to guarantee that the outcomes are generalizable to the full population.

**Design of the questionnaire:** A questionnaire should be created to gather information from the chosen sample. Questions about the respondent's demographics, educational background, and intention to purchase nutraceutical items should be included in the questionnaire.

**Data collection:** The questionnaire should be distributed to the chosen sample using a variety of methods, including postal surveys, telephone interviews, in-person interviews, and online surveys.

**Data analysis:** To ascertain the relationship between educational level and purchase intention, the acquired data should be examined using statistical tools and methodologies. To comprehend the link between the two variables, it is necessary to examine the frequency distribution of the data and generate contingency tables.

**Interpretation:** Interpretations and conclusions should be made based on the results. In order to support the conclusions, the findings should be presented in a clear and succinct manner with pertinent tables and charts.

**Validation:** To assure the correctness and dependability of the results, statistical tests should be used to validate them. To ascertain whether the relationship between educational attainment and purchase intent is statistically significant, hypothesis testing can be used.

**Reporting:** A report summarising the research findings, conclusions, and suggestions should be written. The report should be provided in an approachable fashion, and it

should be backed up by pertinent graphs, charts, and tables.

To collect data for the association between occupation and purchase intention factor, the following methodology can be used:

**Identify the target market:** People who have purchased nutraceutical items in the last six months should be the target market. In terms of occupation, the sample should be representative of the general population.

**Stratified random sampling** can be used as a sampling strategy to guarantee that the sample is representative of the population. Based on occupation, the population can be broken down into the following strata: business owners, public servants, professionals, and salaried workers. Then, a random sample from each stratum can be taken.

The data can be gathered through the use of a survey questionnaire. The survey should ask the respondent's occupation, whether they intend to make a purchase, and other demographic questions (such as their age, gender, and educational background).

designing a questionnaire, the questionnaire should be created to gather data on the following topics:

**Age, gender, education, and other demographic data.**

**Occupation:** The respondents should be prompted to state their line of work.

**Purchase intention:** Participants should be questioned about their recent six-month plans to purchase nutraceutical items. On a scale of low, moderate, and high, they can be asked to rate how likely they are to make a purchase.

**Data analysis:** To ascertain whether there is a relationship between occupation and the purchase intention factor, the data can be analysed using the relevant statistical procedures, such as the chi-square test or logistic regression, after it has been gathered.

**Reporting:** The frequency and percentage of purchase intentions for each employment can be displayed in tables and graphs that show the results. The findings and their consequences ought to be discussed in the report as well.

To collect data for the association between monthly income and purchase intention factor, the following methodology can be used:

**Describe the target audience:** People from a range of income categories will make up the study's target group.

**Sampling Method:** Participants from the target demographic can be chosen using the probability sampling method. It is possible to utilise cluster sampling, stratified random sampling, or simple random sampling.

**Calculating the sample size:** The sample size will depend on the required level of precision and demographic variability. To provide a representative sample, a sample size of at least 100 people from each income category should be used.

Online surveys, in-person interviews, and phone interviews can all be used to collect data. Online platforms, social media, and email can all be used to deliver surveys. Hiring professional interviewers will enable you to conduct in-person or telephone interviews.

To gather data on monthly income and the purchasing intention component, a questionnaire will be created. The questionnaire should be created in a way that makes it simple to read and fill out.

**Data Analysis:** Descriptive and inferential statistics can be used to analyse the data that have been collected. The data can be summarised using descriptive statistics, and significant differences between income groups and the purchase intention factor can be tested using inferential statistics.

**Ethics-related considerations:** Participants must be made aware of the study's goals and their participation rights. Participants' confidentiality and anonymity should be guaranteed. Before collecting data, participants should give their informed consent.

To collect data on the association between marital status and purchase intention factor, the following methodology can be used:

**Describe the sample population:** Members of the sample population should represent a range of ages, genders, and socioeconomic statuses. Based on statistical calculations, the sample size should be chosen, and it should be sufficient to produce accurate results.

**Create a survey:** The survey should ask questions about the respondent's marital status, income, occupation, level of education, and intention to buy. Three categories—low, moderate, and high—can be used to categorise the buying intention.

**Pilot testing:** The questionnaire should be reviewed by a small group of people to discover any flaws or inconsistencies before the survey is actually conducted.

**Data collection:** The survey can be carried out through telephone, in-person, or internet interviews. To guarantee a representative sample, the respondents ought to be chosen at random. It should be planned for the survey to take between 15 and 20 minutes to complete.

**Data cleaning, coding, and analysis** should be done after data gathering. Statistical methods like chi-square or

regression analysis should be used to examine the relationship between marital status and buying intention.

**Reporting:** The study's findings should be presented in a straightforward and succinct manner. The study's methodology, findings, and conclusions should all be included in the report. Discussions should also include the study's shortcomings and recommendations for additional research.

These steps can be used to gather a trustworthy and valid dataset for studying the relationship between marital status and the purchasing intention component.

To collect data for the association between tenure of purchase and purchase intention factor, the following methodology can be used:

**Describe the population:** People who bought a certain product within the last eight years will make up the population for this study.

**Sampling technique:** For this investigation, a practical sampling technique will be adopted. The researcher will speak with people who have bought the goods from various brick-and-mortar or online retailers.

Using a sample size calculator, the sample size will be calculated based on the margin of error and the level of confidence. The sample size will be 400 and rounded up to the closest hundred, with a margin of error of 5% and a confidence level of 95%.

**Data gathering device:** Data from the participants will be gathered using a standardised questionnaire that will be created. The questionnaire will include two sections: one for demographic data and one for purchase intention.

Information on the participants' age, gender, education level, income, and tenure of purchase will be gathered in this area.

**purchasing Intention Factor:** Information on participants' purchasing intentions for the product will be gathered in this area. The Likert scale will be used to score the purchase intention element as low, moderate, or high.

The researcher will approach potential volunteers in various retail establishments or online platforms and describe the study's objectives. The participant will be provided the questionnaire to complete if they accept to participate.

**Data analysis:** To ascertain the relationship between tenure of purchase and purchase intention component, the collected data will be analysed using descriptive statistics, such as frequency and percentage distribution. The significance of the link will also be evaluated using the Chi-square test.

**Ethical considerations:** The privacy and confidentiality of the participants will be protected by keeping their personal information private and limiting the use of the data to legitimate research needs. Each participant will also provide informed consent prior to data collection.

To collect data for the association between frequency of purchase and purchase intention factor, the following methodology can be used:

**Describe the target population:** People who have bought something during the last six months can be considered members of the target population.

**Sampling:** To make sure the sample is representative of the target population, a probability sampling technique, such as basic random sampling or stratified random sampling, can be utilised.

**Sample size:** Using a sample size calculator, an appropriate sample size can be established based on the required level of precision.

**a survey's methodology** It is possible to create a survey questionnaire with questions that capture the important factors. In addition to questions on frequency of purchase and buy intention, the questionnaire should ask about demographics like age, gender, income, and education level.

To guarantee that the questions are understandable and free of errors, a pilot test should be conducted on the questionnaire.

**Data gathering:** In-person interviews or an online survey tool can both be used to gather data. To guarantee a balanced representation, the sample size should be spread equally among the four frequency of purchase groups.

**Data analysis:** Excel or SPSS statistical tools can be used to examine the gathered data. It is possible to compute descriptive statistics like frequencies, percentages, means, and standard deviation. The correlation between frequency of purchase and the factor influencing purchase intention can be found using the chi-square test of independence or logistic regression analysis.

**Reporting:** The findings should be stated succinctly and clearly. The results can be displayed using tables and graphs. Discussions of the findings' consequences as well as suggestions for additional research should be included in the report.

To collect data for the association between duration of consumption and purchase intention factor, the following methodology can be used:

**Describe the population:** People who have consumed the subject product would constitute the population.



Calculate the sample size: A sample size of 400 people can be chosen, depending on the resources and time constraints.

Convenience sampling is a sampling technique that involves choosing participants based on their availability and willingness to participate.

Data gathering device: To gather information, a survey questionnaire might be employed. The questionnaire ought to ask about how long respondents have used the product in issue and whether they plan to buy more. The Likert scale, which contains response possibilities ranging from "Low" to "High," can be used to measure purchase intention.

Pre-evaluating the survey to make sure the questions are intelligible by the participants; the questionnaire might be pre-tested.

Data gathering procedure: The survey can be completed online or in person. If an in-person survey is being conducted, participants may be approached in a variety of settings, including supermarkets, shopping centres, etc. Social networking sites or online survey tools can be utilised for online surveys.

Data analysis: Descriptive statistics can be used to analyse the acquired data to determine the frequency and proportion of each response type for both consumption duration and purchase intention. The relationship between the length of consumption and the intention to make a purchase can be discovered via cross-tabulation analysis.

Results reporting: Tables and graphs can be used to present the results. To ascertain the statistical significance of the relationship between consumption length and purchase intention, a chi-square test can be used.

The link between consumption length and purchase intention can be inferred from the findings, and recommendations for marketing tactics can be made in light of the findings.

To collect data on the association between consumption of nutraceutical products by family members and purchase intention factor, the following methodology can be used:

Describe the target demographic: People who use nutraceutical products and have relatives who do the same should be the target demographic.

The sample can be chosen using a convenience sampling technique from locations where nutraceutical items are often utilised.

Sample size: The sample size must be sufficient to get accurate results. The results are based on a sample size of 400, which is regarded as a minimal size.

Data gathering technique: To gather information, a systematic questionnaire might be employed. Questions about the use of nutraceutical goods, their frequency, duration, and likelihood of future purchases should be included in the questionnaire.

designing a questionnaire, the questionnaire should be made to gather information on the following factors:

Demographic data: This covers the respondents' age, gender, and degree of education.

Consumption of nutraceutical products: This refers to the kinds of products consumed, as well as how frequently and for how long.

Members of the family who use nutraceutical products: This covers the kind of family member who uses them.

Factor relating to purchase intention: This covers enquiries about the factor relating to purchase intention, such as the propensity to buy nutraceutical products in the future.

Data analysis: Descriptive statistics like the frequency distribution, mean, and standard deviation can be used to summarise the data once it has been collected. A chi-square test can be performed to find the relationship between family members' intake of nutraceutical products and the purchase intention component.

Ethics: Before beginning the study, ethical issues should be taken into account. These include getting participants' informed consent, maintaining participant anonymity, and adhering to the ethical standards established by the appropriate institutional review board.

To collect data for the association between mode of awareness and purchase intention factor, the following methodology can be used:

Using the population size and the level of confidence, calculate the sample size. The participants might be chosen using random sampling.

Designing a questionnaire: Create a questionnaire with questions about the method of awareness and the purchase intention element. Demographic enquiries about age, gender, income, education, and other factors should also be included in the questionnaire.

Data collection: Use different methods, such as online surveys, in-person interviews, or phone interviews, to distribute the questionnaire to the chosen participants.

Data analysis: To ascertain the relationship between the mode of awareness and the purchase intention factor, the data must be analysed using statistical techniques such the chi-square test, correlation analysis, or logistic regression.

Ethics: Ensure that the study's participants are completely informed and that their anonymity and privacy are

safeguarded. Before gathering the data, get their consent after informing them.

Limitations: Discuss the study's shortcomings, including sample size, sampling bias, and the data's generalizability.

#### CONCLUSIONS

In conclusion, this review sheds light on the consumer behavior towards nutraceuticals in different patient groups, highlighting the factors that influence their perception, attitudes, and purchasing decisions. The findings indicate that consumer behavior towards nutraceuticals is complex and multifaceted, influenced by a range of factors including demographic characteristics, health status, knowledge and awareness, perceived benefits and risks, and socio-cultural factors.

It is evident from the review that different patient groups exhibit distinct patterns of behavior towards nutraceuticals. Age, gender, education level, and income are significant demographic factors that influence consumer behavior. Younger individuals are more likely to be open to trying new nutraceutical products, while older adults may rely more on traditional medications. Patients with higher education and income levels are more likely to seek information and make informed decisions about nutraceutical usage.

Health status and specific health conditions also play a crucial role in consumer behavior. Patients with chronic diseases or those seeking preventive healthcare are more likely to consider nutraceuticals as a complementary or alternative treatment option. However, the effectiveness and safety of nutraceuticals in managing specific health conditions need to be further explored through robust scientific research.

Knowledge and awareness about nutraceuticals, including their ingredients, mechanisms of action, and potential interactions with medications, significantly influence consumer behavior. Access to reliable information from healthcare professionals, the media, and credible sources is vital in shaping consumer attitudes and behaviors.

Perceived benefits and risks associated with nutraceuticals, such as improved overall health, disease prevention, and minimal side effects, affect consumer decision-making. Regulatory factors, product quality, and marketing strategies also impact consumer trust and confidence in nutraceuticals.

Socio-cultural factors, including cultural beliefs, social norms, and peer influence, shape consumer behavior towards nutraceuticals. Cultural acceptance, perceived social approval, and the influence of family and friends play a role in the adoption and usage of nutraceutical products.

To promote responsible consumer behavior towards nutraceuticals, there is a need for comprehensive education and awareness campaigns targeting different patient groups. Healthcare professionals should play a crucial role in providing evidence-based information, clarifying misconceptions, and guiding patients in making informed decisions about nutraceutical usage.

Further research is warranted to explore the long-term efficacy, safety, and cost-effectiveness of nutraceuticals in different patient groups. Randomized controlled trials, systematic reviews, and real-world evidence studies are needed to establish a strong scientific foundation for nutraceutical use in various health conditions.

In conclusion, understanding consumer behavior towards nutraceuticals is essential for healthcare professionals, policymakers, and marketers to develop targeted strategies that ensure patient safety, promote informed decision-making, and optimize health outcomes in different patient groups. By addressing the identified factors influencing consumer behavior, we can enhance

#### CONFLICT OF INTEREST

The authors have no conflict of interest.

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