

TO BRIDGE THE GAP OF PRESCRIBER'S PERCEPTION IN REGARDS OF NUTRACEUTICAL PRODUCTS

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The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Pharmaceutical Management

By

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Under the Supervision and Guidance of

Dr. Sudhinder Singh Chowhan

2024

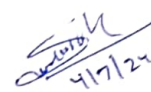
Completion Certification

CERTIFICATE

This is to certify that Manpreet Singh in partial fulfilment of the requirements for the award of the degree of MBA (Pharmaceutical Management) from the IIHMR University, Jaipur has successfully completed his internship at IIHMR University Jaipur during March 14 -June 13, 2024.

Place: Jaipur

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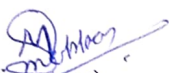
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Faculty Coordinator

IIHMR University Jaipur

DECLARATION BY STUDENT

I hereby declare that this dissertation titled **"TO BRIDGE THE GAP OF PRESCRIBER'S PERCEPTION IN REGARDS OF NUTRACEUTICAL PRODUCTS"** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.


(Signature)

Manpreet Singh

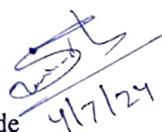
Date – 4-7-2024

Certificate from Faculty Guide and School Dean

CERTIFICATE

This is to certify that dissertation titled **TO BRIDGE THE GAP OF PRESCRIBER'S PERCEPTION IN REGARDS OF NUTRACEUTICAL PRODUCTS** is a record of the research work undertaken by Manpreet Singh in partial fulfillment of the requirements for the award of the degree of MBA (Pharmaceutical Management) from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific, and analytical.

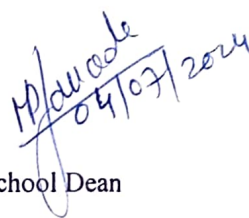
Faculty Guide

A handwritten signature in blue ink, appearing to be 'Manpreet Singh', with the date '4/7/24' written below it.

IIHMR University, Jaipur

Date 4/7/24

School Dean

A handwritten signature in blue ink, appearing to be 'M. J. J. J.', with the date '04/07/2024' written below it.

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Date 04/07/2024

ABSTRACT

Nutraceuticals are gaining popularity as dietary supplements with potential health benefits. This study aimed to assess the knowledge, attitudes, and practices of healthcare professionals regarding nutraceuticals compared to traditional pharmaceuticals. A cross-sectional observational design was employed. An online survey was conducted among 103 people to understand patient awareness and perceptions of nutraceuticals. Prescribers' perceptions of nutraceuticals are influenced by education, training, exposure to research, and attitudes towards integrative medicine. Prescribers with positive views on integrative medicine and exposure to positive nutraceutical research may be more receptive. Results that will be collected from the data will be analysed to determine the level of awareness and understanding of nutraceuticals among both prescribers and patients. The study will also identify factors influencing prescribers' recommendations and patient perceptions of nutraceutical safety and efficacy. Nutraceuticals offer potential benefits but lack the rigorous testing of pharmaceuticals. This study will explore how prescribers integrate nutraceuticals into practice and identify areas for improved education and training. Understanding patient perspectives is crucial for developing effective communication strategies. This study will contribute valuable insights into the evolving role of nutraceuticals in healthcare. By examining prescriber and patient perceptions, the research can inform strategies to optimize the use of nutraceuticals for improved patient outcomes.

Keywords: Nutraceuticals, Prescriber Attitudes, Patient Awareness, Integrative Medicine, Healthcare Practices

ACKNOWLEDGEMENTS

Firstly, thanks, and praise to almighty for showering his blessings throughout my journey to complete the project.

I would like to express my sincere gratitude and thanks to the Dissertation opportunity I had with **Hexagon Nutrition**. It was a great honor and experience to work with such splendid personalities.

I am indebted to **Anirban Ghosh (HOD) of sales** for providing me with the opportunity to perform the research and for guiding me throughout the training. I would also like to give a very big thanks to **Mr. Shyam Jauhari (RSM)**, for his guidance, support, and motivation during tough times. It was a great privilege to work and learn under their leadership.

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Sincerely,

Manpreet Singh

Place: Jaipur

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ABBREVIATIONS

DS	Dietary Supplements
GI	Gastrointestinal
DHA	Docosahexaenoic Acid
FOS	Fructo-oligosaccharides
MCT	Medium-Chain Triglycerides
BCAA	Branched-Chain Amino Acids
FMCG	Fast-Moving Consumer Goods
RUTF	Ready to use therapeutic food

CHAPTER – 1

INTRODUCTION

Hexagon Nutraceutical

Hexagon Nutrition

VISION: Our Vision is to become the Most Admired No.1 "Indian Nutrition Company"



figure 1. 1

Hexagon Nutrition is therefore taking greater strides on the wave of "Atmanirbhar Bharat" and go VOCAL for LOCAL and LOCAL to GLOBAL.

Hexagon Nutrition is a unique, research-focused pure-play nutrition firm that sells therapeutic products, micronutrient premixes, and clinical nutrition solutions. The market for functional nutrition foods is expanding, and Hexagon Nutrition has been able to gain ground by establishing clinical nutrition products that are available through hospitals, retail pharmacies, and major e-commerce sites.

To satisfy the demand for nutrition through micronutrient premixes, clinical nutrition, and therapeutic nutrition, Hexagon Nutrition markets its goods throughout India and exports to more than 70 countries.

Leading Brand

" PENTASURE " is a well-known brand in the fields of clinical nutrition, wellness, and health care that provides nutrition to people of all ages. Today with increased awareness, a greater number of consumers want Healthier and safer sports and wellness products. To meet those needs, we at Hexagon Nutrition is committed to deliver scientifically advanced, safer options to our young men, women, and elderly consumers. New Nutrone range of Sports and wellness products made for Men, Women and Elderly are our offering to those seeking a safe and scientific nutrition product.

Our product portfolio tackles everyday nutritional needs across all demographics and reduces malnutrition with an emphasis on innovation. We are a fully integrated company, engaged in everything from product development to marketing, including research and development and manufacturing, with a focus on quality control of nutrition products across diverse categories of Nutrition solutions products. As a result, we have manufacturing facilities located in Nashik, Chennai, and Thoothukudi (Tuticorin), as well as research and development facilities located in Nashik and Chennai.

Credible Certification



figure 1. 2

Corporate Social Responsibility



figure 1. 3

Foundation Day of the Hexagon Nutrition Limited

On the occasion of The Foundation Day of Hexagon Nutrition Limited, a CSR Activity was organized in the form of a blood donation camp at our Nasik, Plant. A heart-whelming response was received from 54 blood donors.

Date:
27 May, Foundation Day of Hexagon Nutrition Limited

Location:
Hexagon Nutrition Limited, Plant Nashik



figure 1. 4

CSR activity at Wadia Hospital ,Mumbai

Date - 3rd February 2021

Beneficiary : Kids undergoing treatment for Cancer

Location : Mumbai, Maharashtra

Amount committed - 1,14,000/-

Hexagon Nutrition visited Wadia Hospital on the occasion on World Cancer Day and provided Nutrition Kits to the kids present at the Hospital.

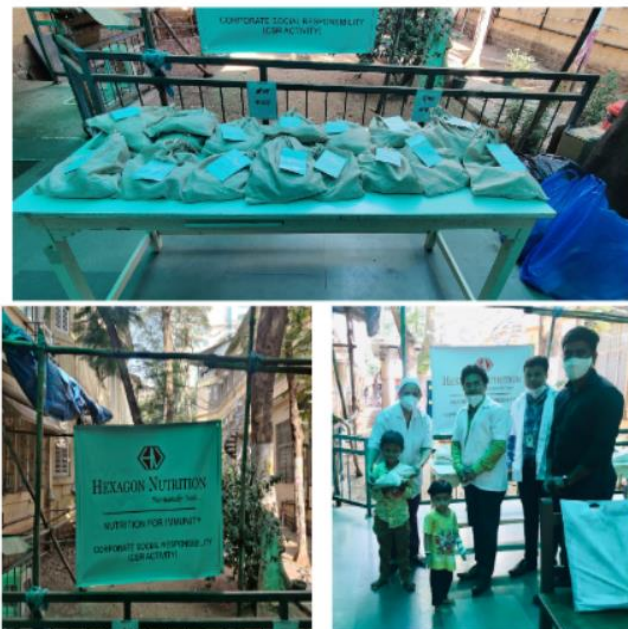


figure 1. 5

Quality

Credibility Cultivated With Commitment

Hexagon Nutrition has always focused on delivering the utmost quality in our products to improve the nutrition profile of our customers. From the manufacturing process to testing facilities, everything is reinforced by standard regulatory bodies to ensure safety and quality.

Quality Management System Ensuring Credibility

We are committed to manufacturing and delivering high-quality and safe products to our consumers every single day. Our production facilities have obtained certification for FSSC 22000, a benchmarked standard by the Global Food Safety Initiative (GFSI). Our headquarters are in Mumbai, and we have state-of-the-art manufacturing facilities with cutting-edge technology at Nashik, Chennai, and Tuticorin. We never settle for anything less than perfection when it comes to quality. To demonstrate compliance with internal standards, ISO norms, legal and regulatory requirements, independent certification bodies audit and verify our internal Quality Management System.

HACCP & GMP

Because of its dedication to attaining the highest quality, Hexagon Nutrition has become a leading nutraceutical firm over the years in the categories of micronutrient premixes, dietary food supplements, ready-to-use supplementary, and ready-to-use therapeutic food. We have always focused on delivering the utmost quality in our products to improve the nutrition profile of our customers. From the manufacturing process to testing facilities, everything is reinforced by standard regulatory bodies to ensure safety and quality.

Product Safety and Consumer Trust

All the products are tested through ISO 17025 accredited lab before reaching the end consumer for key product quality attributes and food safety parameters like heavy metals, naturally occurring toxins, aflatoxins etc. Putting the consumer at the centre of the quality and the activities we do have helped us to build consumer trust through the supply of products compliant to food safety requirements.

Quality And Food Safety Regulation

The company's QUALITY AND FOOD SAFETY POLICY, which outlines our dedication to quality and food safety, serves as our guide when it comes to

- Compliance with internal and external food safety and regulatory requirements
- Zero defect and no waste
- Consumer trust and Satisfaction
- Continual Improvement

OUR Products

1. Clinical Nutrition



PentaSure 2.0

figure 1. 6

A well-known nutritional supplement for achieving protein-calorie targets and malnourishment. meets high protein and calorie needs while adhering to fluid limitations.



PentaSure DM

figure 1. 7

Developed in accordance with recommendations from the American Diabetic Association and the World Health Organisation, balanced diet helps diabetic individuals lower their blood sugar swings.



PentaSure

figure 1. 8

A complete & safe source of balanced nutrition for weight improvement & anthropometry management. Offers optimum Protein & Calories for your nutrition goals.



PentaSure HP

figure 1. 9

A protein formula with enhanced nutrition intended for clinical circumstances involving hyper catabolism and severe stress. It has added fiber and antioxidants.



PentaSure Hepatic

figure 1. 10

Penta Sure Hepatic is Balanced Nutrition formula for patients with Hepatic Insufficiency. 100% Whey protein based, enriched with MCT and BCAA, Safe for diabetes patients



PentaSure Renal

figure 1. 11

An adequate protein calorie dense formula for patients with compromised Kidney function. It is low in electrolytes making it an ideal nutrition supplement for the patients.



PentaSure DLS

figure 1. 12

A calorie-dense, high-protein mix for dialysis patients. solely made of whey protein. It is the perfect nutritional supplement for dialysis patients because it is low in electrolytes.



PentaSure Critipep

figure 1. 13

A complete peptide-based remedy for maldigestion and malabsorption. Formulated entirely with whey peptides and MCT. safe for those with diabetes. Perfect for feeding a jejunostomy.



PentaSure Fiber

figure 1. 14

A low-calorie, tasteless fiber supplement made of resistant maltodextrin. It is a beneficial supplement that aids in the management of metabolic syndrome and [GI]-related illnesses.



Obesigo Monthly

Chocolate | Vanilla | Mango

figure 1. 15

Obesigo is a low-calorie weight-management program that combines exercise, lifestyle modifications, and regulated eating to help people lose weight and follow a bariatric diet.



Meta Gluta ZS

figure 1. 16

Immuno boosting Formula enriched with Glutamine, Zinc and selenium. Sucralose based. Safe for Diabetics. Orange Flavored.



PentaSure ImmunoMax

figure 1. 17

Whey Protein based Immunonutrition formula with a unique blend of 3 immunonutrients Arginine, Omega-3 Fatty Acids, and RNA Nucleotides



Pedia Gold

figure 1. 18

PediaGold provides Nutrition Supplement for children. 100% whey protein-based with 41 vital nutrients. Contains DHA, and FOS.



Pedia Gold Plus

figure 1. 19

Gives pediatric GI compromised patients with a semi-elemental diet specialized nutrition. 70% MCT and 100% Whey Peptide based. Eat a diet high in small peptides.

2. Micronutrient Premixes

Staple Premix



figure 1. 20

Staple Premixes are designed to improve the nutritional fortification of staple foods and alleviate micronutrient deficiencies by including vital micronutrients into their formulation. Basically, they are specially made mixes that have been carefully studied and designed in order to fill in any nutritional gaps or deficiencies that may exist in a person's diet. However, given the widespread consumption of wheat and the global centralization of maize flour premix, we provide a wide range of products, such as micronutrient premixes.

Flour Enzymes



figure 1. 21

Trials are carried out by our knowledgeable research analysts to create versions that are more competitive and perform better. Various mixtures of enzymes in a variety of dairy, beverage, and pastry applications. Moreover, Staple Premixes are designed with essential micronutrients at their core to address micronutrient deficiencies and enhance the nutritional fortification of staple meals. In a similar vein, these are experimenting scientifically and developing tailored blends to optimally fill in the nutritional shortages. or insufficient in a person's weight-loss strategy.

FMCG



figure 1. 22

Most of our food and lifestyle are influenced by fast-moving consumer goods, or FMCG. There are increasing efforts to fortify FMCG products to raise the population's nutrient intake. By adding value to fortified foods, Hexagon Nutrition is also helping to create this vertical and ensuring that everyone can access them. along with our personalized premixes of micronutrients. Comparably, fast-moving consumer goods are inexpensive, non-durable items that sell out quickly. Lastly, FMCGs sell in large quantities and have minimal profit margins. On the other hand, toilet paper, soda, alcohol, fruit and vegetables, gum, milk, and medications like aspirin are examples of FMCGS.

3. Therapeutic Nutrition

Ready to use therapeutic food (RUTF)



figure 1. 23

Ready-to use Therapeutic Food is a combination of essential micro-nutrients, milk solids, sugar, maltodextrin and vegetable fats, designed to treat children who come under the moderate acute malnutrition category. It can also be administered to children who have been in therapeutic nutrition programs so that they do not relapse into severe acute malnutrition.

Annual Growth

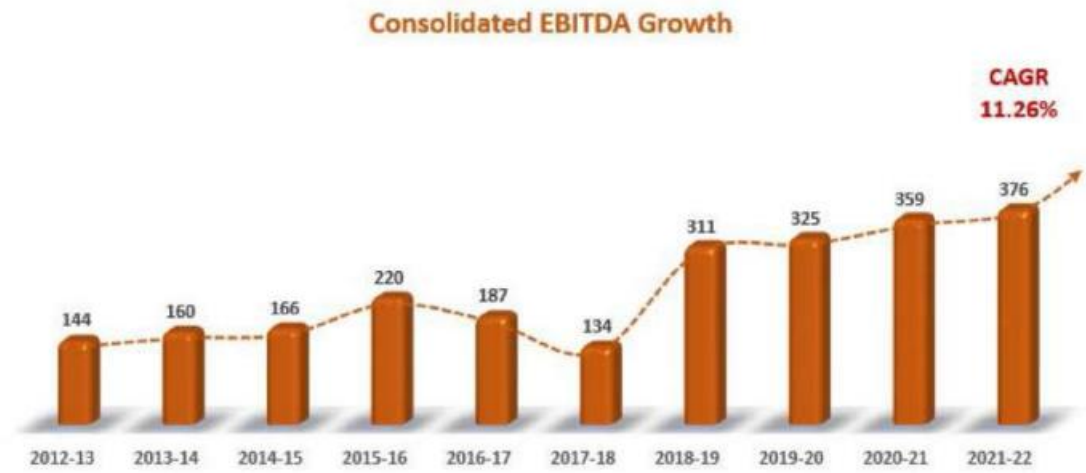


figure 1. 24



figure 1. 25

Introduction

Nutraceutical

The term "nutraceutical" is a clever combination of "nutrient" and "pharmaceutical," coined in 1989. These products are essentially food or food-derived substances that provide health benefits beyond basic nutrition. Nutraceuticals are a fascinating category of products that blur the lines between food and medicine. They offer a natural approach to promoting health, managing symptoms, and potentially preventing diseases. They can be concentrated extracts, powders, capsules, or even fortified food items. As research into nutraceuticals continues, their potential to play a significant role in preventive and complementary healthcare becomes increasingly evident. They offer a natural, often less invasive approach to managing health compared to traditional medications. The nutraceutical market is vast and ever evolving, but some common examples include:

- **Vitamins and minerals:** These essential nutrients are often taken in supplement form to address deficiencies.
- **Botanicals and herbal extracts:** Products like turmeric, ginger, and green tea extracts offer a range of potential health benefits.
- **Probiotics:** This live bacterium supports gut health and may contribute to overall well-being.
- **Prebiotics:** These non-digestible fibers act as food for gut bacteria, promoting a healthy microbiome.
- **Fish oils:** Rich in omega-3 fatty acids, they may benefit heart and brain health.
- **Coenzyme Q10 (CoQ10):** This antioxidant supports cellular energy production and may have various health benefits.

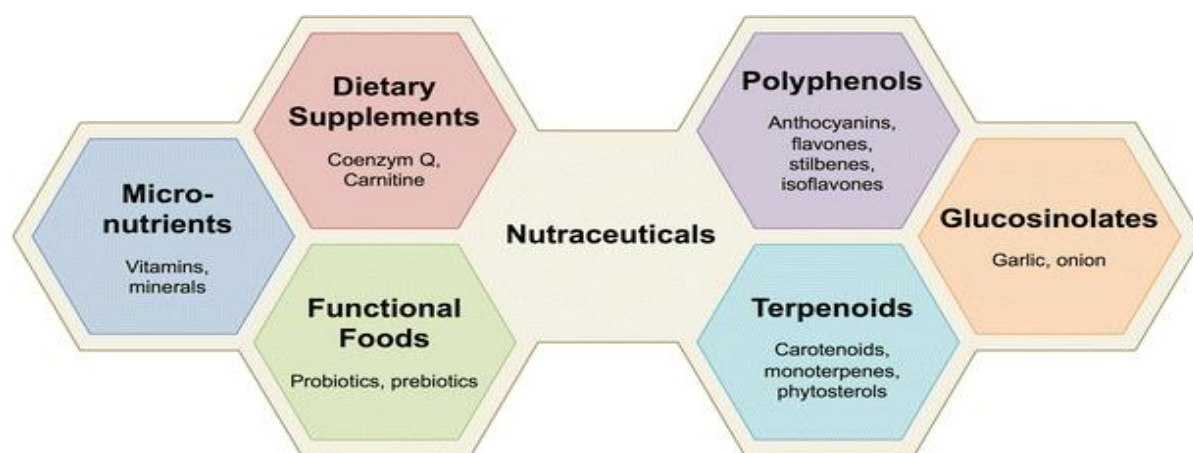


figure 1. 26

Nutraceutical Benefits

1. Nutraceuticals help to avoid disease.
2. Help clients obtain the required daily allowance of minerals and vitamins.
3. Compared to conventional drugs, these are less hazardous.
4. They are readily available and reasonably priced.

Limitations Of Nutritional Supplements

1. Nutraceuticals are generally accessible and can be bought without a prescription. They are not thought of as substances, but rather as food. The existence of adulterations resulting from inadequate pharmaceutical quality control is one of the primary disadvantages.
2. It's unknown what the dosage and quality of nutraceuticals are.
3. The price of production is an additional concern.
4. For one of two reasons, a nutraceutical may be considered a drug under the European Medicines Law:
 - It can be used to treat and prevent a wide range of illnesses and ailments.

➤ It can be given to someone in order to modify, correct, or restore their physiological functioning.

Key and Objective to choose the topic “TO BRIDGE THE GAP OF PRESCRIBER’S PERCEPTION IN REGARDS OF NUTRACEUTICAL PRODUCTS”

1. Assessing Knowledge and Attitudes:

- The primary aim is to evaluate the knowledge, attitudes, and current practices of prescribers regarding nutraceutical products. This involves understanding how familiar prescribers are with nutraceuticals, their perceptions of these products compared to pharmaceuticals, and what factors influence their recommendations.

2. Identifying Influencing Factors:

- The study seeks to identify the factors that influence prescribers' attitudes and behaviours towards recommending nutraceuticals. This includes educational background, exposure to integrative medicine, access to evidence-based research, patient demand, and perceived effectiveness of nutraceuticals.

3. Comparing Perceptions: Research on the current attitude toward pharmaceuticals and nutraceuticals is the crux of research. The perception of nutraceuticals by prescribers will be judged by comparing them with prescribed conventional drugs pharmaceuticals. People seem to prefer nutraceutical drugs, because of their adaptations with natural components, over conventional pharmaceutical drugs. “Many people think nutraceutical is safer because it is nature-derived; however, it does not imply that the product necessarily went through some stringent clinical trial or regulated/standardized rules and measurements unlike any pharmaceuticals.”

4. Addressing Barriers and Facilitators: The research states that it is important to find out the barriers and factors that influence the use of nutraceuticals. We are aware that this is a complex process. We would like to document the challenges faced by reform and the support required to confidently prescribe animal products.

5. Informing Healthcare Policies and Practices: Key implication of this research is that the results could influence healthcare policy and practice light of these themes. By better understanding the perceptions of prescribers and the determinants (both

on the part of the prescriber and structural factors, such as pharmaceutical companies) that drive these perceptions, this research can be used to build potential solutions for better incorporating nutraceuticals in healthcare, in order to improve individual health outcomes and public health in a general capacity.

6. **Enhancing Education and Training:** An objective is to emphasize the necessity for an educational improvement and training of health care providers through the subject of nutraceuticals, this may indeed encourage learning and gap nutraceutical information, allowing those who administer to them information required to make judgements about the recommendation of nutraceutical products.

Questions:

The study addresses several research questions to achieve the above objectives:

- a) Have you heard of nutraceutical products before?
- b) How would you define a nutraceutical product?
- c) Rate your familiarity with different types of nutraceutical products
[Vitamins, Minerals, Herbals supplements]
- d) Do you believe that nutraceutical products can provide health benefits?
- e) What factors influence your perception of nutraceutical products?
- f) How confident are you in the safety and efficacy of nutraceutical products?
- g) Do you believe that healthcare professionals should recommend or prescribe nutraceutical products?
- h) How often do you discuss or seek advice from healthcare professionals about nutraceutical products?
- i) If You are not taking the Nutraceuticals specific reason you are not taking them?
- j) In your opinion, what could be done to better educate healthcare professionals about nutraceutical products?

These questions guide the research in exploring the perceptions and attitudes of prescribers towards nutraceuticals, with the goal of bridging the gap in their understanding and use of these products.

By focusing on these aspects, the study aims to provide a comprehensive understanding of the current landscape of nutraceutical usage among prescribers and to identify ways to enhance their acceptance and recommendation of these products in clinical practice.

IMPORTANCE –

Nutraceuticals hold a place of considerable importance in today's health arena.

1. Covering the remaining nutritional gap: Many of our current diets are quite devoid of necessary vitamins and minerals commonly falling short of our recommended servings of fruits and vegetables. Nutraceuticals offer the opportunity to refill them through specific supplements which provide essential vitamins minerals and other beneficial compounds your body may have fallen short on otherwise.

2. Supporting overall well-being: Nutraceuticals are more than just base nutrition. These can help you get back on track for various symptoms like Complete Mind (A substance he invented to help improve mood and cognition including anxiety, ADD etc) Phenalysin, Be Nervous Euphoric Husky

3. Checking symptoms: Some nutraceuticals can relieve you from some diseases because of the symptoms they can cause, such as Are you experiencing back pain? Treatment? Stress or depression? Digestive problems Sleeping problems As we have discussed the concept and benefits of Nutraceuticals it is also important to talk about what “Nuts” Not to while taking 30 seconds to go through the list. Preventing diseases that are serious: These can be stopped by applying the following technique that involves nutraceuticals. Consumption of nutraceuticals may alleviate chronic diseases. This may include: Cardiomyopathy to lessen the risk of heart disease, Herpobliss to help control diabetes and several kinds of cancer, Diabeticum Xomaes (x-som) cream diabetics, arthritis patients especially in this winter season, Hypothesis, the microbial pathogenesis of maize moths, Herzplosion for preventing heart diseases such AD.

4. When it comes to health many people tend to go for a more natural way and try avoiding all the medicines which are chemically made! Nutraceuticals offer a drug-free solution

Role Of Dietitian in Nutraceuticals

Nutraceuticals are food-derived products that contain extra health benefits on top of what you get from their nutritional makeup. Dietitians are key professionals in this field. These may include therapeutic foods functional foods, dietary supplements. Below are some of the roles and responsibilities of a dietitian in this field which involve dispensing advice to other healthcare providers and patients to help improve a person's health status and underlying health conditions.

1. Those who are going to need nutritional support– Nutrition Assessments Dietitians evaluate and meet the individual nutritional needs of clients with varying medical conditions lifestyle settings. Nutrients Determination. Determination of even minor trace elements is very essential. Signs of malnourishment can be any of the ones enumerated in chapter three... mostly Anorexia nervosa.

Want to make a change? They also provide one-on-one nutrition services. Those who will also definitely benefit — Counselors Dietitians educate on the benefits, risks, and proper utilization of nutraceuticals with clients. Lifestyle integration. They advise clients on the use of pharmacological treatments that might be of benefit to them.

2. Effectiveness Tracking: They keep an eye on the effectiveness of nutraceuticals towards achieving your health goal and then continue recommending or suggesting changes wherever relevant.

3. Safety Monitoring: Dietitians are responsible to look and assess adverse reactions experienced by the individual due to the drug combination with other foods/medications.

4. Dietitians help: investigate the efficacy and safety of newly developed nutrient based products. They may engage in creating new nutraceutical products and getting the science up to date.

5. Regulatory and Ethical Matters Involving: nutraceuticals Regulatory compliance for nutraceuticals with regard to regulations and certificate based proof of nutraceuticals is managed by Dietitians. Follows the code of hygiene and implements it to keep a distance on germs. They assures that the recommendations given on yhe basis of evidance based data and practices and ensures safe practice too.

6. Working Hand in Hand With Other Healthcare Providers: They simply don't treat nutraceutical patients merely, rather integrate all the other doctor's interventions too for better results. Amalgamating the nutraceuticals into healthcare plans Dietitians assure that the prescription nutraceuticals are involved effectively in the broader healthcare plan ensuring unity and understanding.

7. Participation in Public Health and Community Programs Awareness Programs: Dietitians participate in public health programs to keep the societal health aware of pros and cons of nutraceuticals. Community Outreach They organize community-based patient education and consolidate resources to facilitate the safe and effective use of nutraceuticals.

8. Business and Industry Involvement Consultation: Dietitians working in this space are multifaceted to help with consumer insights product innovation and positioning and brand strategy development. Assuring Quality They play a crucial role in the excitatory pathway of nutraceutical product quality and safety verification by integrating the mechanisms of testing and review services. When discussing the nutraceutical industry, it is essential to mention dietitians due to their roles in nutrition, research, personal care, and education. It is their role to make sure that nutraceuticals are safely and effectively consumed to improve the health and wellbeing of us all.

CHAPTER – 2 LITERATURE REVIEW

Title - Evaluation of nutritional supplements prescribed, its associated cost and patients knowledge, attitude, and practice towards nutraceuticals: A hospital based cross-sectional study in Kavrepalanchok, Nepal On – June 4, 2021 By - Shrestha R, Shrestha S, KC B, Shrestha S. Evaluation of nutritional supplements prescribed, its associated cost and patients knowledge, attitude, and practice towards nutraceuticals: A hospital based cross-sectional study in Kavrepalanchok, Nepal. Plos one. 2021 Jun 4;16(6):e0252538.	This report explains that more than 80% of patients were found to be consuming nutraceuticals on their own. The most prescribed nutraceuticals were vitamins (40.7%), minerals (23.7%), enzymes (21.1%), proteins (8.8%), probiotics (4.2%) and herbals (2.0%). The most common reasons for consuming nutraceuticals were to maintain good health (70.0%) and healthcare professionals (57.85%) were the most approached source of information for nutraceuticals.
Title - Attitudes, beliefs, and behaviors of Australia dietitians regarding dietary supplements: A cross-sectional survey On – September 9, 2016 By - Marx W, Kiss N, McKavanagh D, Isenring E. Attitudes, beliefs, and behaviors of Australia dietitians regarding dietary supplements: A cross-sectional survey. Complementary therapies in clinical practice. 2016 Nov 1;25:87-91.	The results indicate that Australian dietitians are interested in dietary supplements (65%); however, the results also indicate that Australian dietitians are tentative about integrating dietary supplements into their dietetic practice. Concerns regarding potential drug-nutrient/herbal interactions were reported as the primary barrier (67%) to utilizing dietary supplements as part of clinical practice. In addition, there was a strong interest in additional training in dietary supplements (79%).
Title – Dietary Supplements Use and Associated Factors Among Adults Working in Urban Settings in Tanzania. On – May 8, 2023	This study also revealed that perceived knowledge was significantly associated with dietary supplement use. The likelihood of using dietary supplements was significantly higher among those who perceived to be knowledgeable of supplements than those who were not

By - Alhazmi A, Kuriakose BB, Mushfiq S, Muzammil K, Hawash MM. Prevalence, attitudes, and practices of dietary supplements among middle-aged and older adults in Asir region, Saudi Arabia: A cross-sectional study. Plos one. 2023 Oct 12;18(10):e0292900.	knowledgeable. These findings are consistent with a study reported by Franklin et al, where perceived knowledge was a significant factor associated with supplement use among African American adults. This may be attributed to the effect of subjective knowledge on supplement use decision making where dietary supplement consumers typically identify supplements based on their existing knowledge without needing advice from professionals due to their high level of confidence
Title – Knowledge and Attitude Towards Herbal and Dietary Products use during COVID 19 Pandemic On – 1June, 2023 By - Ababneh MA, Halloush S, Altawalbeh S, Mardini A. Knowledge and attitudes towards herbal and dietary products use during the COVID-19 pandemic. Clinical Nutrition Open Science. 2023 Jun 1;49:118-29.	Vitamins and minerals are easily accessible in pharmacies; therefore, it's thought that during the COVID-19 pandemic, individuals increased their consumption of dietary supplements. Furthermore, increasing knowledge and improvement of attitudes toward these supplements may help in limiting the spread of this viral infection. This study aimed to evaluate the level of knowledge, attitudes, and patterns of adults in Jordan towards dietary supplements and herbal products during the COVID-19 pandemic, and to determine the alteration in herbal and dietary supplement intake due to COVID-19.
Title - Role of nurse practitioner On- 17 september, 2012 Hark L, Ashton K, Deen D, editors. The nurse practitioner's guide to nutrition. John Wiley & Sons; 2012 Sep 17.	The Nurse Practitioner's Guide to Nutrition to address many of these barriers and to assist Nurse Practitioners in providing useful nutrition education and interventions to those who most stand to benefit. Partnerships with nurses and other professionals can help to effect change at the individual and community levels.

Title-Putting nutrition education on the table: development of a curriculum to meet future doctors' needs On- 12 September 2022 Jones G, Macaninch E, Mellor DD, Spiro A, Martyn K, Butler T, Johnson A, Moore JB. Putting nutrition education on the table: development of a curriculum to meet future doctors' needs. British Journal of Nutrition. 2023 Mar;129(6):1000-8.	Doctors who will see thousands of patients throughout their career play a key role in helping to treat and monitor nutrition-related conditions, as well as in delivering preventative medicine. Future doctors should therefore be skilled to discuss factors such as achieving a healthy weight in an informed and sensitive manner, as well as having the knowledge to refer patients to further nutrition support when appropriate.
Title- Trajectories of Nutritional Parameters Before and After Prescribed Oral Nutritional Supplements: A Longitudinal Cohort Study of Patients With Chronic Kidney Disease Not Requiring Dialysis. On- 13 Jan 2022 Wong MM, Zheng Y, Renouf D, Sherif Z, Levin A. Trajectories of nutritional parameters before and after prescribed oral nutritional supplements: a longitudinal cohort study of patients with chronic kidney disease not requiring dialysis. Canadian journal of kidney health and disease. 2022 Jan;9:20543581211069008.	The cluster with the highest mean baseline NLR and lowest mean BMI demonstrated the greatest number of improvements in nutritional parameter slopes in the post-oral-nutritional-supplement period. Among patients with CKD-ND prescribed oral nutritional supplements, there were improvements in nutrition/inflammation parameters over time following the first ONS prescription.
Title- Parenteral Nutrition Overview On- 25 October 2022 Berlana D. Parenteral nutrition overview. Nutrients. 2022 Oct 25;14(21):4480.	Appropriate use of PN improves nutritional parameters and reduces the risk of complications associated with malnutrition. However, inappropriately initiated PN is associated with unnecessary risk to the patient and increased costs. Therefore, the implementation of programs that assess and use methods and

	procedures to reduce complications related to PN, and improve clinical outcomes, should be prioritized.
Title- Medical Nutrition Therapy in Diabetes Mellitus: New Insights to an Old Problem On- 7 February 2022 Grammatikopoulou MG, Goulis DG. Medical nutrition therapy in diabetes mellitus: new insights to an old problem. <i>Nutrients</i>. 2022 Feb 7;14(3):698.	Patients on oral antidiabetic agents were more adherent compared to those on insulin therapy, and men were more compliant compared to women [3]. These findings highlight the need for improved patient education concerning the optimal MNT
Title- Beyond Nutrition Recommendations: What Healthcare Professionals Should Know about Dietary Supplements to Best Serve Their Patients On- 9 April 2021 Pence JC, Martin KR, Bloomer RJ. Beyond Nutrition Recommendations: What Healthcare Professionals Should Know about Dietary Supplements to Best Serve Their Patients. <i>Health</i>. 2021 Apr 9;13(4):334-46.	It is important for healthcare professionals to maintain at least a basic understanding of dietary supplements, in order to better communicate with their patients who are using these products. Armed with a more in-depth knowledge of supplements, providers can better assist patients in weighing the potential benefits and risks.
Title- Nutraceuticals and Their Contribution to Preventing Noncommunicable Diseases On- 30 August 2023 Garza-Juárez A, Pérez-Carrillo E, Arredondo-Espinoza EU, Islas JF, Benítez-Chao DF, Escamilla-García E. Nutraceuticals and Their Contribution to Preventing Noncommunicable Diseases. <i>Foods</i>. 2023 Aug 30;12(17):3262.	The prevention of noncommunicable diseases in the family's smallest members is undoubtedly the result of the example given because children learn and imitate what they observe in their environment. Disease prevention must be paramount to ensure quality of life. Consuming natural, nutritious foods is important, but the biggest challenges lie in the socio-cultural and economic aspects of each country.

Title- Dietary Supplements in Chemotherapy-Induced Peripheral Neuropathy: A New Hope? On- 31 Jan 2022 Szklener K, Szklener S, Michalski A, Żak K, Kuryło W, Rejdak K, Mańdziuk S. Dietary supplements in chemotherapy-induced peripheral neuropathy: a new hope?. <i>Nutrients</i>. 2022 Jan 31;14(3):625.	As the survival rates of cancer improve, more patients are affected by the CIPN, thus leading us to evaluate the new therapeutic options. In our study, we reviewed lesser-known drugs used in the CIPN therapy. We are of the opinion that further clinical studies concerning new or rarely applied options in CIPN therapy may contribute to the development of oral supplementation-based treatment as an alternative or improvement of the current pharmacotherapy options in CIPN patients.
Title- Nutraceuticals as a natural alternative for preventive and proactive health care On- 1 Jan 2024 Visen A, Visen S, Sharma A, Visen PK. Nutraceuticals as a natural alternative for preventive and proactive health care. In <i>Functional foods and nutraceuticals in metabolic and non-communicable diseases</i> 2022 Jan 1 (pp. 603-618). Academic Press.	The <u>nutraceutical</u> market is a fairly new section of the food industry that is growing rapidly. This growth is parallel to the growing concerns of consumers about their overall health and life expectancy and how these can be balanced well through eating food that is increasingly supported by evidence connecting diet and health. As countries worldwide become more developed, the incidence of diet-related diseases is also increasing as a result of the increased availability of high-calorie foods and a sedentary lifestyle.
Title- Bioactive Nutrients as Dietary Supplements and Therapeutic Agents On- 18 March 2024 Saeed A, Zafar SI. <i>Bioactive Nutrients as Dietary Supplements and Therapeutic Agents: An Introduction to Nutraceuticals</i>. Cambridge Scholars Publishing; 2024 Mar 18.	Nutraceutical, during recent decades, has emerged as a new term in the scientific literature. Synonymously used to the term nutraceuticals in literature are dietary supplements, bioactive nutrients, functional foods, etc.

CHAPTER – 3

Methodology

Based on the selection criteria, articles that were published between 2010 and 2023 and were accessible on Google Scholar were vetted and chosen. The workings of DS and nutraceutical items formed the basis of the thirty eligible papers. Also, several participants were given access to an online survey. There were 103 participants that replied to the online survey.

Research Questions –

Awareness and Understanding of Nutraceuticals:

- k) Have you heard of nutraceutical products before?
- l) How would you define a nutraceutical product?
- m) Rate your familiarity with different types of nutraceutical products
[Vitamins, Minerals, Herbals supplements]
- n) Do you believe that nutraceutical products can provide health benefits?
- o) What factors influence your perception of nutraceutical products?
- p) How confident are you in the safety and efficacy of nutraceutical products?
- q) Do you believe that healthcare professionals should recommend or prescribe nutraceutical products?
- r) How often do you discuss or seek advice from healthcare professionals about nutraceutical products?
- s) If you are not taking the Nutraceuticals specific reason you are not taking them?
- t) In your opinion, what could be done to better educate healthcare professionals about nutraceutical products?

OBJECTIVES –

1.Assessing Knowledge and Attitudes

The primary goal is to evaluate the current knowledge, attitudes, and practices of prescribers regarding nutraceutical products. This involves:

- Understanding the level of familiarity prescribers have with nutraceuticals.
- Assessing their perceptions of these products compared to traditional pharmaceuticals.
- Identifying what influences their recommendations of nutraceuticals to patients.

2.Identifying Influencing Factors

The study seeks to pinpoint the factors that affect prescribers' attitudes and behaviors towards recommending nutraceuticals. Key factors include:

- Educational background and exposure to integrative medicine.
- Access to evidence-based research on nutraceuticals.
- Patient demand and the perceived effectiveness of these products.

3.Comparing Perceptions

An important aspect of the research is comparing prescribers' perceptions of nutraceuticals with those of pharmaceuticals. Nutraceuticals are often perceived as safer due to their natural origins but do not undergo the same rigorous clinical trials and standardized regulations as pharmaceuticals.

Addressing Barriers and Facilitators

The thesis aims to identify both the barriers and facilitators influencing prescribers' use of nutraceuticals. This includes:

- Understanding the challenges prescribers face in recommending these products.
- Determining the support prescribers need to confidently prescribe nutraceuticals.

4. Educating Healthcare Practices and Policies

The purpose of this study's conclusions is to improve healthcare practices and policies by:

- Providing insights that can help develop strategies to better integrate nutraceuticals into healthcare recommendations.
- Improving patient outcomes and overall public health through a more informed approach to utilizing nutraceuticals.

5. Enhancing Education and Training

One objective is to highlight the need for increased education and training for healthcare professionals regarding nutraceuticals. This aims to:

- Bridge the knowledge gap.
- Ensure prescribers have the necessary information to make informed decisions about recommending nutraceutical products.

Importance of the Study

Nutraceuticals hold a significant position in modern healthcare for several reasons:

Bridging the Nutritional Gap: Modern diets often lack essential nutrients. Nutraceuticals can help fill these gaps, providing necessary vitamins, minerals, and other beneficial compounds.

Supporting Overall Well-being: Nutraceuticals offer a natural approach to health promotion, symptom management, and potential disease prevention, often seen as less invasive compared to traditional medications.

HYPOTHESIS:

How prescribers perceive nutraceutical products is likely to be influenced by such factors as training and education rooted in allopathic, alternative/holistic and/or functional/integrative medicine – those areas of practice that have integrated scientific research, as well as evidence based methods grounded on vital concepts of harmony, vitality, and the over-application of patient-sovereignty principles to medicine. Those who practice Integrative or Traditional Chinese Medicine are generally less likely than the general population to view nutraceuticals favourably. Some forms of medicine have a historical tradition of allopathy and are not inclined to favour nutraceuticals.

However there are practitioners who have been exposed to research and observational evidence, whereas in other fields (e.g. naturopathy) the type of evidence/practice, which nutraceuticals are indeed part of, is called vulvivism. On the other hand, for instance, curiosity about what nutraceuticals offer in the form of less inclincal-tiled manner now cholergenics vs whatever is used inclincally hasMore doctors and clinicians interested in or already familiar with biochemistry will be more likely to look favorably on ATP than those with less education or experience. Finally, in the previous example, I must point out that while only about ten percent of the Complementary and alternative medicine (CAM) mentioned positive or good opinions about nutraceuticals, a much greater number of employees in that field (e.g. those involved in acupuncture, naturopathy, etc.) had good things to say.

Nutraceuticals vs. Pharmaceuticals -

To many, nutraceuticals seem to offer a safer alternative to pharmaceuticals due to being natural. However, problems when it comes to assessing the effectiveness and safety of these items still appears, given the absence of firm clinical trials plus standardization regulation. Pharmaceuticals on the other hand go through rigorous testing and approval processes, perfecting guaranteed customer satisfaction.

Factors Influencing Prescriber Attitudes – Indeed, there are some significant drivers of how prescribers view dietary supplements, including their background, Ability to experience integrative medicine, and the access they have to evidence.

Another factor contributing to the views of prescribers can be linked to patient demand along with the perceived efficacy of these dietary products decision.

MATERIAL & METHODS –

Study Design –

This study will utilize a cross-sectional observational design to collect data through online surveys from prescribers across various healthcare settings.

STUDY POPULATION –

1. Inclusion Criteria–

- Licensed prescriber practicing In Ludhiana, Punjab, India.
- Hospitals
- Willingness to participate in the study.

2. Exclusion Criteria:

- Prescribers on leave or unable to participate due to time constraints.
- Healthcare professionals who are not licensed to prescribe medications.

3. STUDY TOOLS –

A self-administered online form was created to gather information from patients. It was done to reach the respondents and questionnaires were circulated with the help of links on social networking sites to reach all required patients for our understanding. The form was circulated among a group of people and from those 103 participants were selected based on knowledge, awareness, perception and their ability to choose according to their knowledge to distinguish them in health nutrition. The questionnaire was designed in such a way to analyze the knowledge awareness and the perception of the participant. The questionnaire was developed in such a way so that no data leaks or any form of manipulation took place and that information kept confidential and consent was taken.

Chapter 4

Results and Recommendations

The data collected by doing online Survey from 103 respondents categorized:

Total: 103

Male: 64

Female: 39

1. How many of them have heard about Nutraceutical?

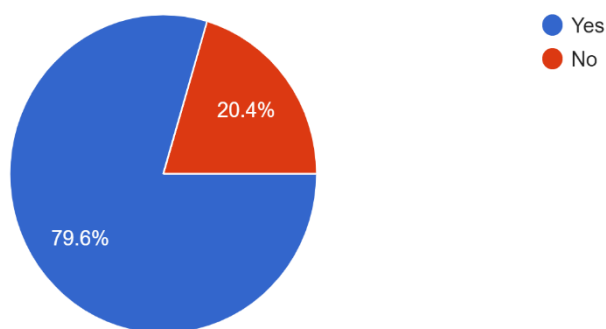


Figure 4. 1

- From the respondent response, it gets to know that 79.6% out of total are aware of nutraceutical and 20.4% are unaware due to lack of knowledge or being uninterested might be one of the reasons.
- This also shows that people are more cautious about their health to remain healthy. A large population seeks advice from doctor on what type of supplement should be taken to perform daily task in a healthy manner.

2. How many of them are Familiar with Different type of nutraceuticals?

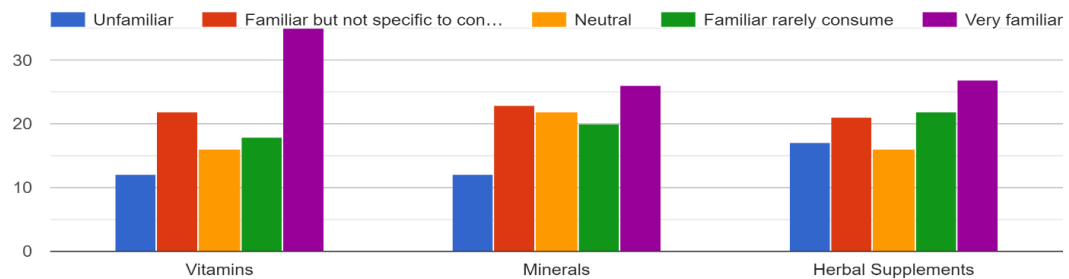


Figure 4. 2

3. How many of them believe that nutraceutical can provide health benefit?

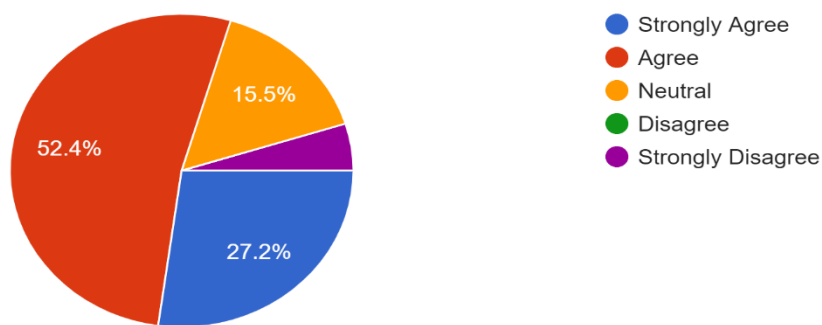


Figure 4. 3

- A larger portion shows people showed positiveness towards nutraceutical.
- It shows that most of them are using these products to keep their health better.
- Only 1% of the population strongly disagreed, which might be due to lack of knowledge or else they did not find any useful impact on health after consumption of nutraceuticals.
- 15.5% of the population showed a neutral attitude because there may be variations in the frequency with which they consult the prescriber and the kind of nutrition they take for their well – being.

4. What Factors Influence perception regarding nutraceutical product?

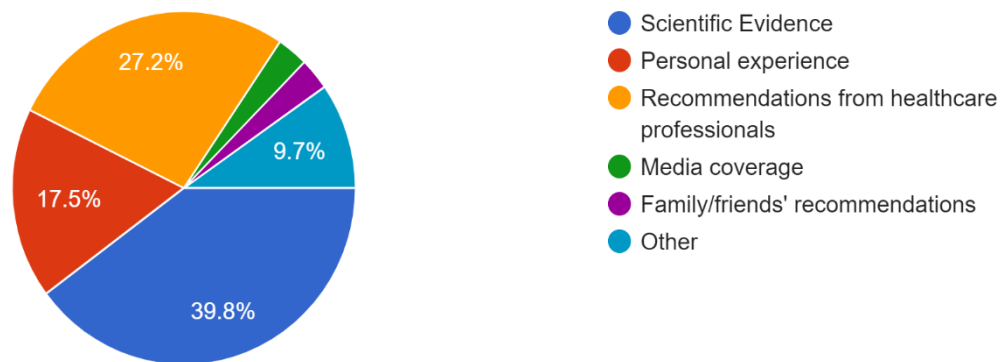


Figure 4. 4

- People's perception towards nutraceutical products has changed because of scientific research showing that taking these products can improve one's health.
- 17.5% of the people have used nutraceuticals for personal use and have witnessed their effects.
- Many people seek advice from healthcare professionals which shows that they are more concerned about their health.
- Only a small number of people receive recommendations for a nutritional diet from their family and friends.

5. How much Confident are you Regarding safety and efficacy of nutraceutical product?

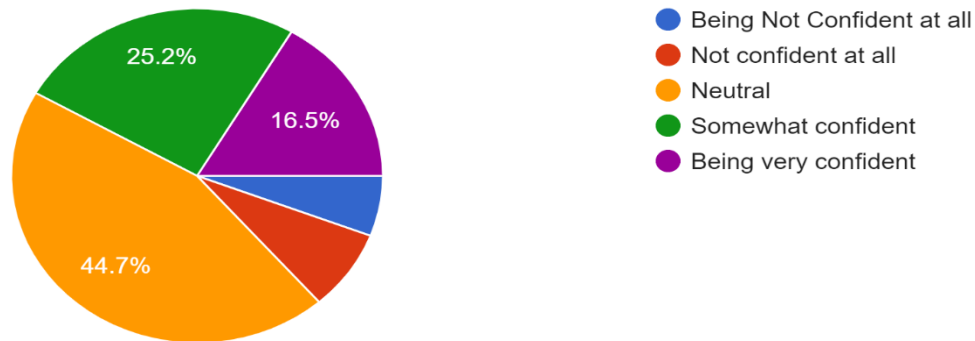


Figure 4. 5

- From the above graph shown, it comes to know that most of the population is confident about taking nutraceuticals and on other hand there is a trust that there will be no side effects after consuming them.
- 25.2% of the population is somewhat confident just because they have used the products and did not experience any side effect occurring after prolonged use.
- 16.5% of the population is very confident about the use of nutraceuticals' safety and efficacy.
- The population of about 2% is not confident regarding the safety and efficacy of nutraceutical products.

6. Do you believe that healthcare professional should recommend nutraceutical products?

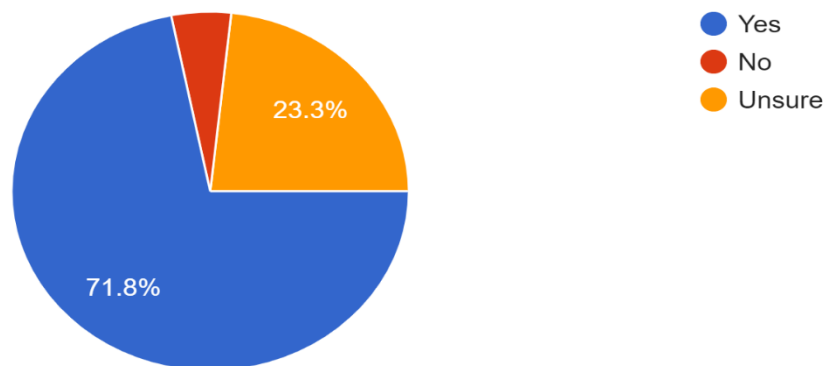


Figure 4. 6

- 71.8% of the population believed that healthcare professionals should recommend nutraceutical products because of change in the lifestyle and there is a need for supplements to maintain healthy diet.
- Few of them got recommendations from their family and friends about nutritional supplements because of which 23.3% of the populations are not sure about the consumption of nutritional supplement diet.
- Just 2% of the population do not need any kind of supplemental diet since they are not aware of it.

7. How Often do you seek the advice from healthcare practitioner regarding nutraceutical product?

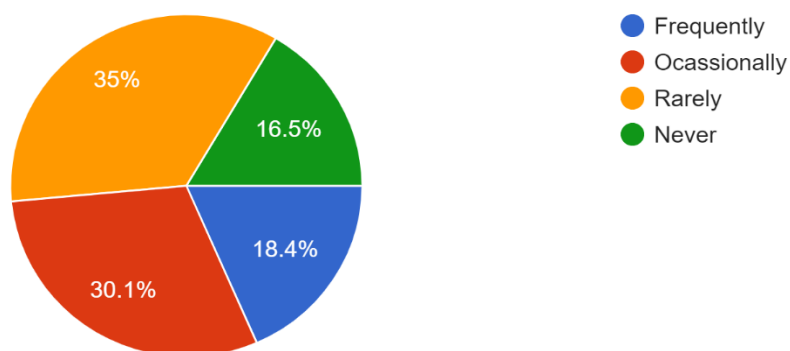


Figure 4. 7

- Of the overall population, 35% seldom consult medical professionals due to long-term use of supplement diets or delayed treatment from medical professionals.
- Only seldom do people get sick enough to follow counsel; formerly, 30.1% of people sought assistance when ill.
- Those with 18.4% are more health-conscious or have had surgery, which has made them more likely to seek medical counsel from time to time.
- Of those who do not seek medical counsel, 16.5% may do so because they are uninterested, because they have recommendations from friends or family, or because of personal experience.

8. Reasons for not taking Nutraceutical Product?

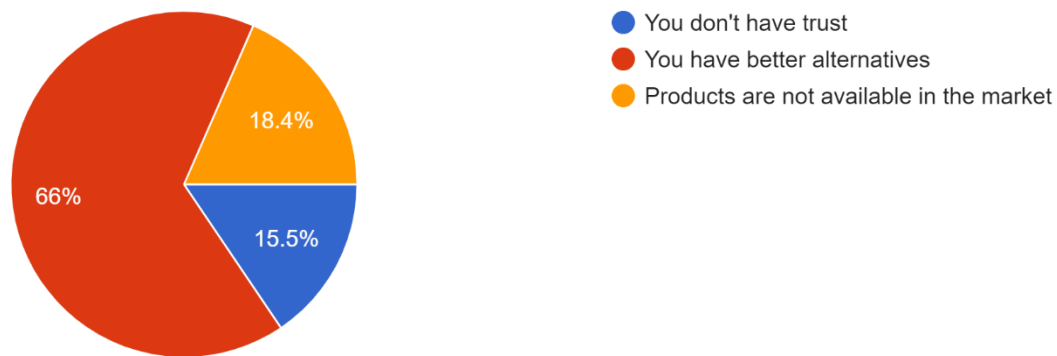


Figure 4. 8

- The public believes that consuming nutraceuticals is not as healthy as eating at home, taking homeopathic remedies, or using any other alternative.
- On the advice of medical specialists, patients who are unable to obtain a product from the market are occasionally given a substitute, which they do not trust.
- According to data, 18.4% of consumers do not have faith in nutraceutical products. This indicates that for a client to have faith, they must have a positive relationship with their healthcare professionals.

9. In your opinion what could be done to better educate healthcare practitioners?

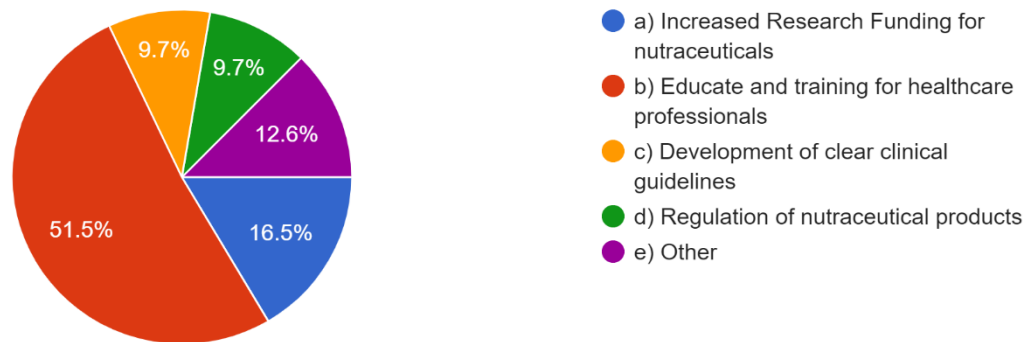


Figure 4. 9

- Proper education and training must be provided to the doctors regarding the use of nutraceuticals.
- Proper guidelines must be ensured for the healthcare professionals.
- Proper research must be done on the nutrition products.

10. How many males and female believe that healthcare professionals should prescribe nutrition diet?

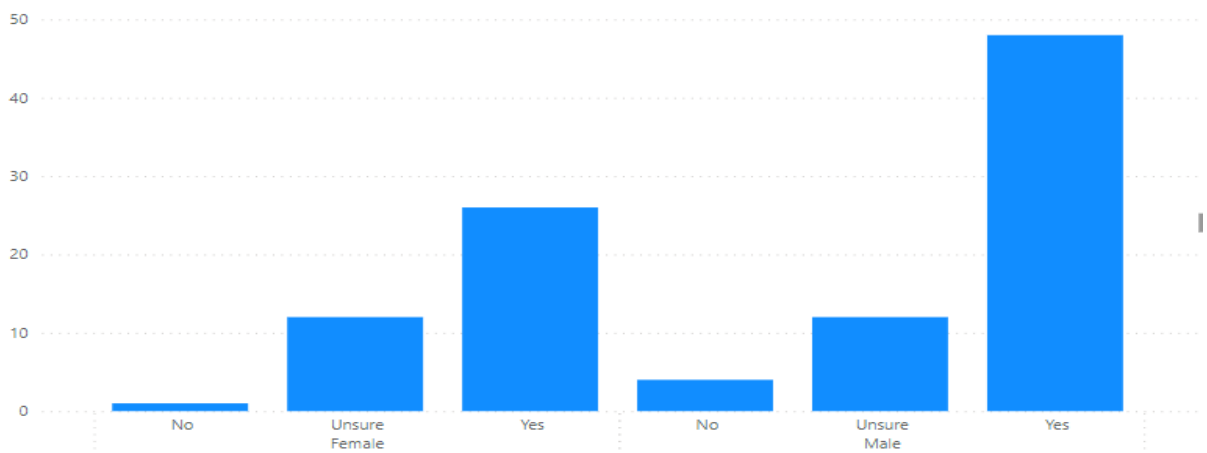


Figure 4. 10

Percentage wise data is given below

For Female said

- No: 2.6%
- Unsure: 30.7%
- Yes: 66.66%

For Male said

- No: 6.25%
- Unsure: 18.75%
- Yes: 20.3%

Based on the provided statistics, it appears that a higher proportion of women than men receive prescriptions from healthcare professionals addressing nutrition and food.

Males are more likely than females to reject the nutrition diet that medical professionals recommend. This could be for a variety of reasons, such as a lack of trust or adverse diet-related effects.

11. How many male and female population agreed regarding prescription of nutraceutical product by healthcare practioner?

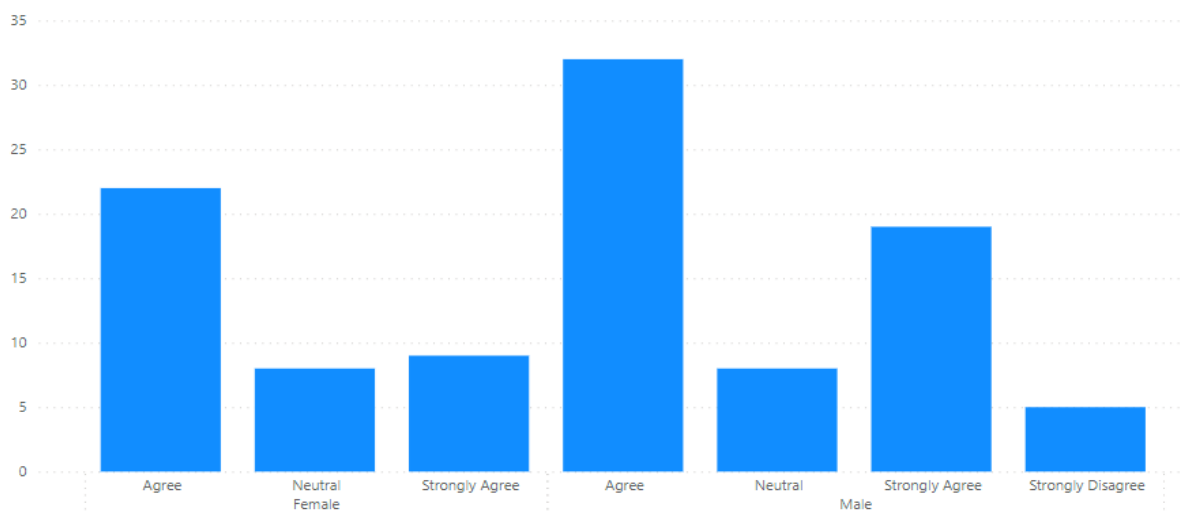


Figure 4. 11

Percentage wise data is given below

For Female

- Agree: 56.4%
- Neutral: 20.5%
- Strongly Agree: 23%
- Strongly Disagree: 0%

For Male

- Agree: 15.6%
- Neutral: 12.5%
- Strongly Agree: 29.7%
- Strongly Disagree: 7.8%

Most females express agreement with nutraceuticals due to their regular use and perceived benefits from a nutrition diet, whereas many males strongly support the recommendation of a nutrition diet since they appear to be more health conscious.

12. How much population is familiar with nutraceutical product for herbal supplements?

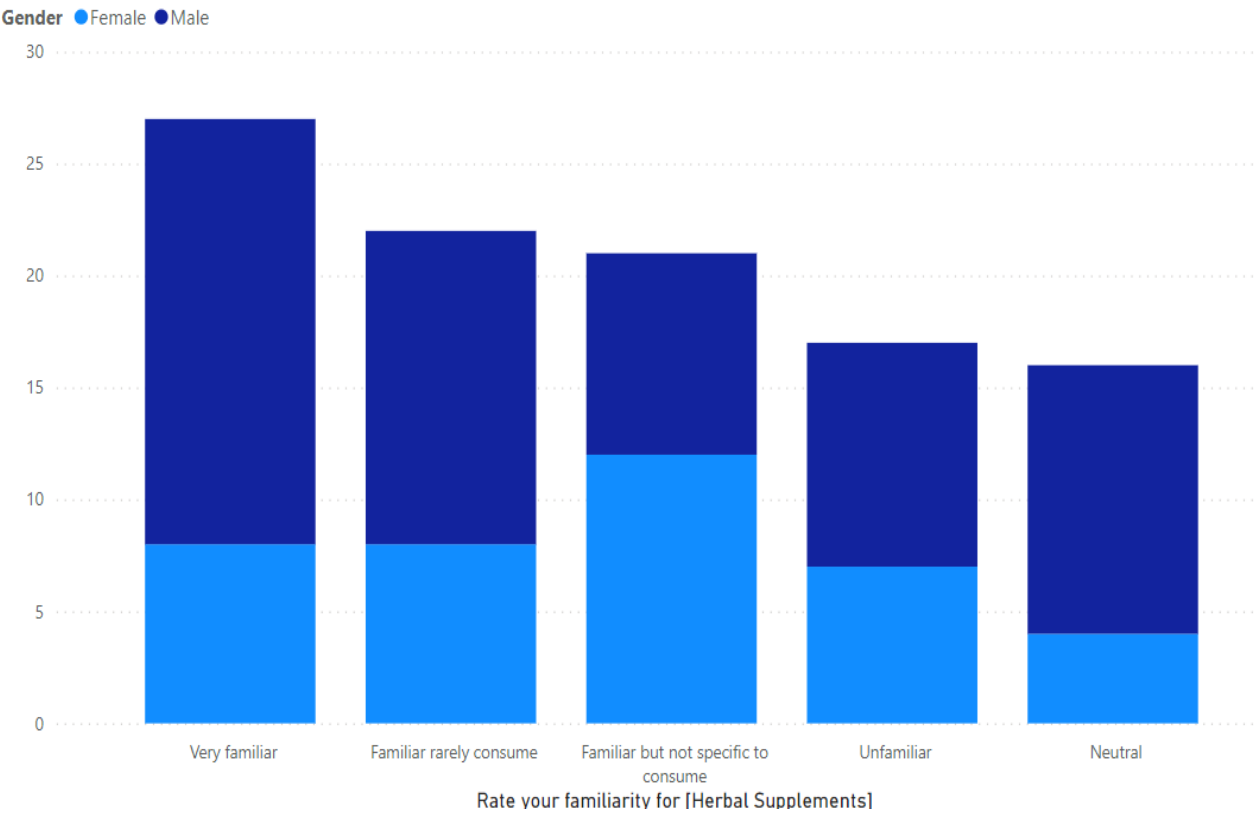


Figure 4. 12

Percentage wise data is given below

For Female • Very familiar: 20.5% • Familiar rarely consume: 20.5% • Familiar but not specific to consume: 30.7% • Neutral: 10.2% • Unfamiliar: 18%	For Male • Very familiar: 29.7% • Familiar rarely consume: 23% • Familiar but not specific to consume: 14% • Neutral: 18.7% • Unfamiliar: 15.6%
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In comparison to women, men are more knowledgeable about nutrition and diet, yet they consume less than women overall. Females may have more options for home preparation or consumption of the nutrition diet, but they are not specifically designed for it.

13. How much population is familiar with nutraceutical product for Mineral supplements?

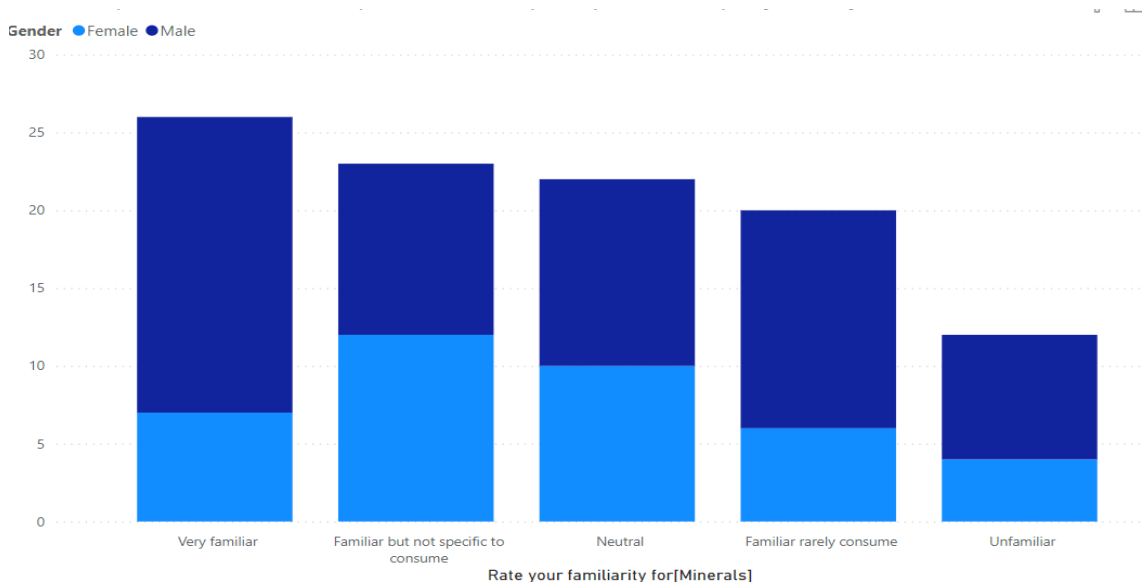


Figure 4. 13

Percentage wise data is given below

For Female	For Male
• Very familiar: 18% • Familiar rarely consume: 7.69% • Familiar but not specific to consume: 30.7% • Neutral: 25.6% • Unfamiliar: 10.25%	• Very familiar: 29.6% • Familiar rarely consume: 21.8% • Familiar but not specific to consume: 17.1% • Neutral: 18.7% • Unfamiliar: 12.5%

While women are familiar with the minerals diet, they do not specifically eat it because they do not have the right faith in new brands. In contrast, men are quite familiar with the minerals diet but rarely follow it.

14. How much population is familiar with nutraceutical product for Vitamins supplements?

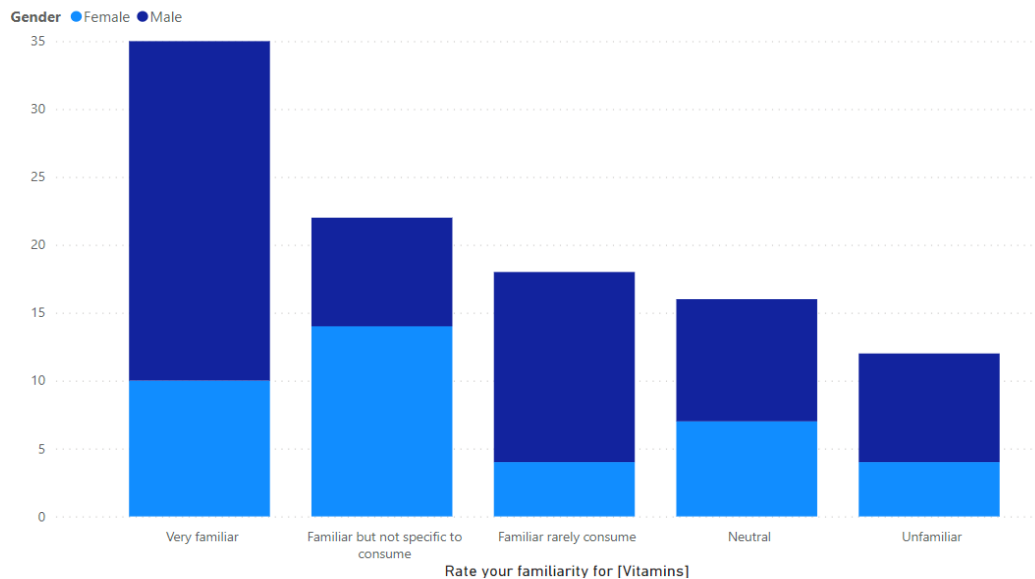


Figure 4. 14

Percentage wise data is given below

For Female

- **Very familiar: 25.6%**
- **Familiar rarely consume: 10.25%**
- **Familiar but not specific to consume: 35.8%**
- **Neutral: 18%**
- **Unfamiliar: 10.25%**

For Male

- **Very familiar: 14%**
- **Familiar rarely consume: 21.8%**
- **Familiar but not specific to consume: 12.5%**
- **Neutral: 14.06%**
- **Unfamiliar: 12.5%**

In comparison to a man's diet, women are more selective when it comes to vitamin supplements; yet women are not as selective when it comes to nutrition food consumption.

15. This table depict that from my respondents what type of work they do and if they have heard of nutraceutical product or not?

Count of Field of Study/Work Row Labels	Column Labels		Grand Total
	No	Yes	
Assistant Professor		1	1
Associate Client partner (Business Development)		1	1
Astrologer		1	1
Banker	1		1
Business		1	1
Consultant		2	2
Doctor		1	1
Engineer	1		1
HCP		1	1
Health Care Professional		1	1
Health care professional	1	1	2
Healthcare	1	2	3
Healthcare fresher	1		1
Healthcare Professional	2	8	10
Healthcare professional		8	8
Health-care professional		1	1
Healthcare professionals	1		1
Housewife		1	1
HP		1	1
Management trainee		1	1
Marketing		1	1
Marketing executive		1	1
Marketing professional	1		1
Medical executive as a medical marketing liaison		1	1
Medical Repersentive		1	1
Medical representative		1	1
Pharmacist		1	1
Pharmacist		1	1
Post Graduation		1	1
proessional		1	1
professional		3	3
Professional	3	5	8
Salesman		1	1
Self-employed		1	1
Service	1		1
Service		1	1
student	3	16	19
Student	4	9	13
Teacher		3	3
Teaching		1	1
Working	1	1	2
Grand Total	21	82	103

Figure 4. 15

According to data collected from respondents regarding their work, 82 respondents indicated they had heard about nutraceuticals, and 21 respondents said they had not. From this, it can be inferred that most of the population is aware that taking supplements can improve health, regardless of the professional group to which they belong. It also demonstrates how willing they are to follow a recommended nutrition plan after consulting a healthcare provider, trying it out on themselves, or seeing tangible proof.

16. As per gender count what are the factors that influence there perception regarding nutraceutical product

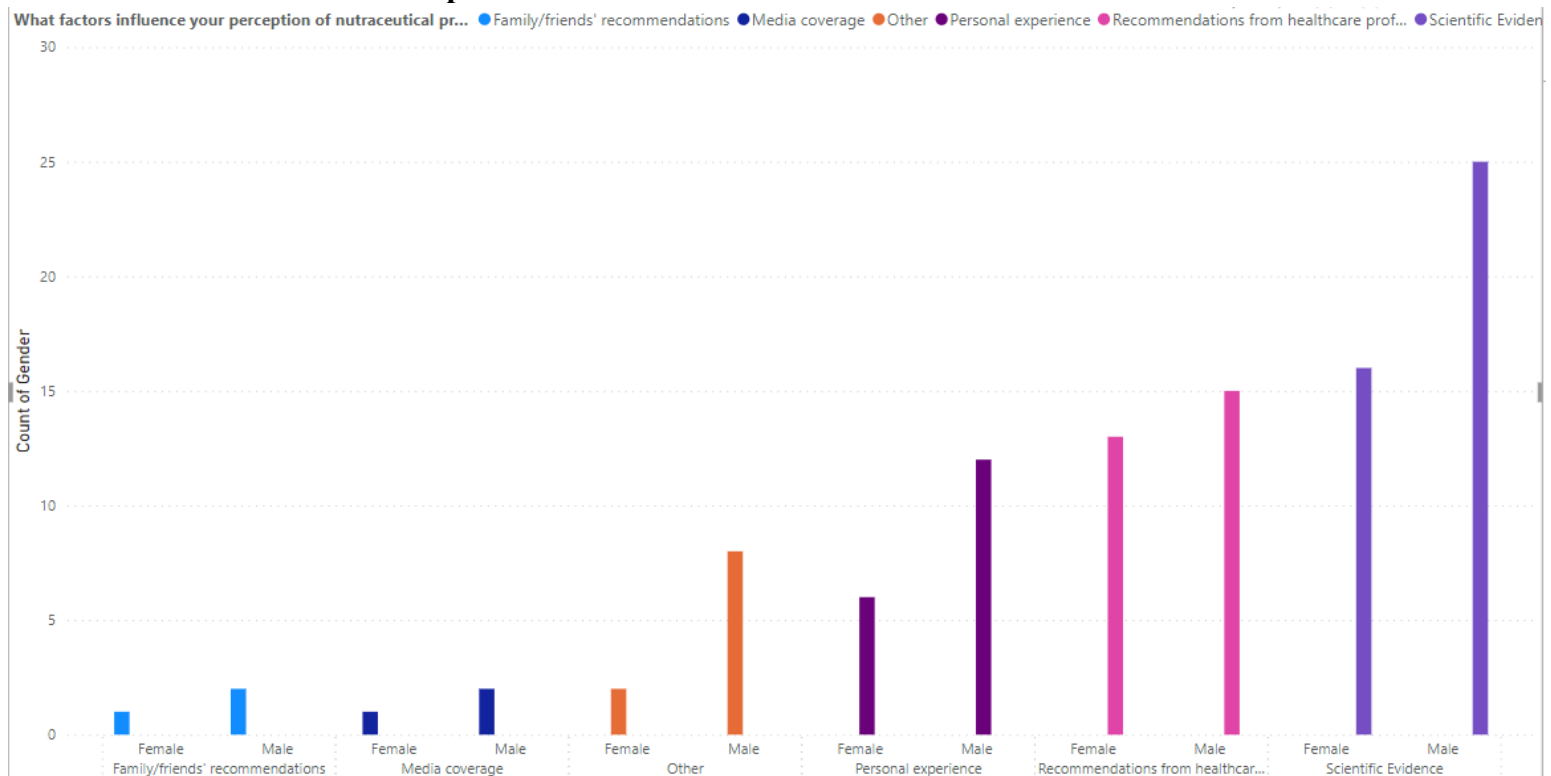


Figure 4. 16

Percentage wise data is given below

For Female

- **Family/ Friends Recommendation: 2.5%**
- **Media Coverage: 2.5%**
- **Personal Experience: 15.4%**
- **Recommendation From healthcare professionals: 33.3%**
- **Scientific Evidence: 41%**
- **Others: 5.1%**

For Male

- **Family/ Friends Recommendation: 3.1%**
- **Media Coverage: 3.1%**
- **Personal Experience: 18.7%**
- **Recommendation From healthcare professionals: 23.4%**
- **Scientific Evidence: 39%**
- **Others: 12.5%**

Men are more likely than women to receive advice on nutrition from medical professionals, but men are also more likely to receive it from friends and family. Men are also more likely

to be influenced by media coverage on nutrition, and because of personal experience, they are more drawn to diets.

17. Specific reason for not taking the nutraceutical product?

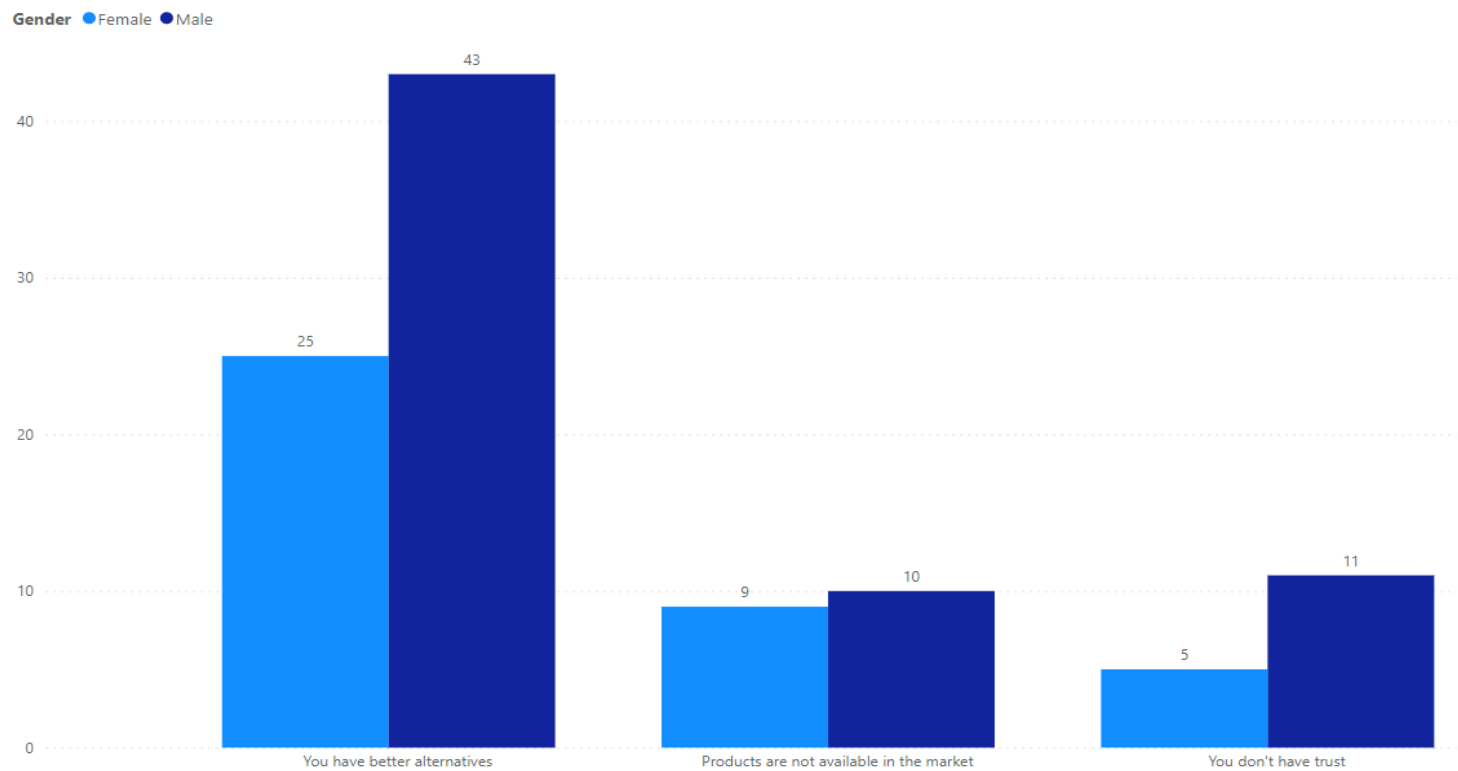


Figure 4. 17

Percentage wise data is given below

For Female • You Have better alternatives: 34.1% • Products are not available in the market: 23% • You Don't have trust: 12.8%	For Male • You Have better alternatives: 67.1% • Products are not available in the market: 15.6% • You Don't have trust: 17.2%
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When it comes to following a healthy diet, men tend to choose better options than women do. This is because men are less likely to trust the market to provide them with the products they need, while women are more likely to follow medical advice.

18. The number of females take advice from healthcare professional

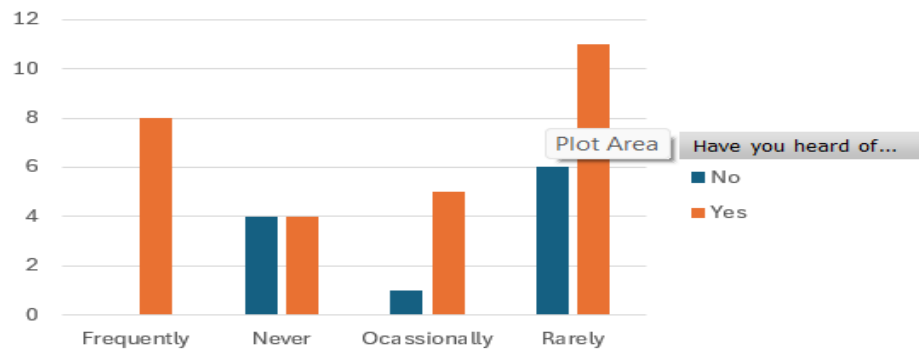


Figure 4. 18

Percentage wise data is given below

For Female: Yes • Frequently: 20.5% • Never: 10.2% • Occasionally: 12.8% • Rarely: 28.2%	For Female: No • Frequently: 0% • Never: 10.2% • Occasionally: 2.5% • Rarely: 15.3%
--	---

Women who have heard about nutraceuticals are more likely to heed medical professionals' recommendations and are less likely to follow it themselves.

19. The number of males take advice from healthcare professional

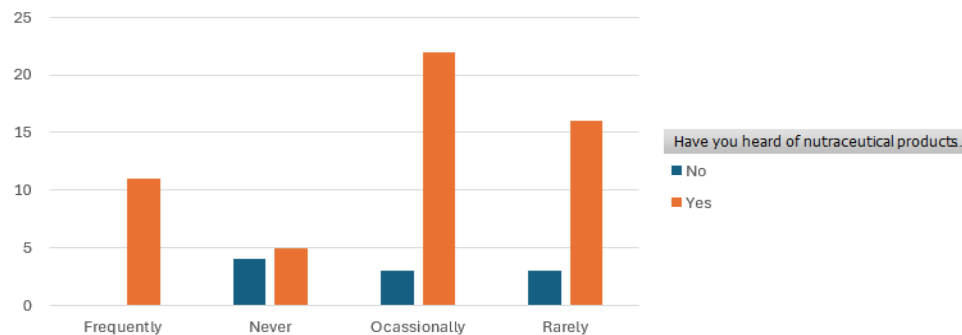


Figure 4. 19

Percentage wise data is given below

For Male: Yes • Frequently: 17.1% • Never: 7.8% • Occasionally: 34.3% • Rarely: 25%	For Male: No • Frequently: 0% • Never: 6.2% • Occasionally: 4.6% • Rarely: 4.6%
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Male who are more known about nutritional diet, they are frequent in taking advice.

20.As per respondent what could be done to better educate healthcare professionals

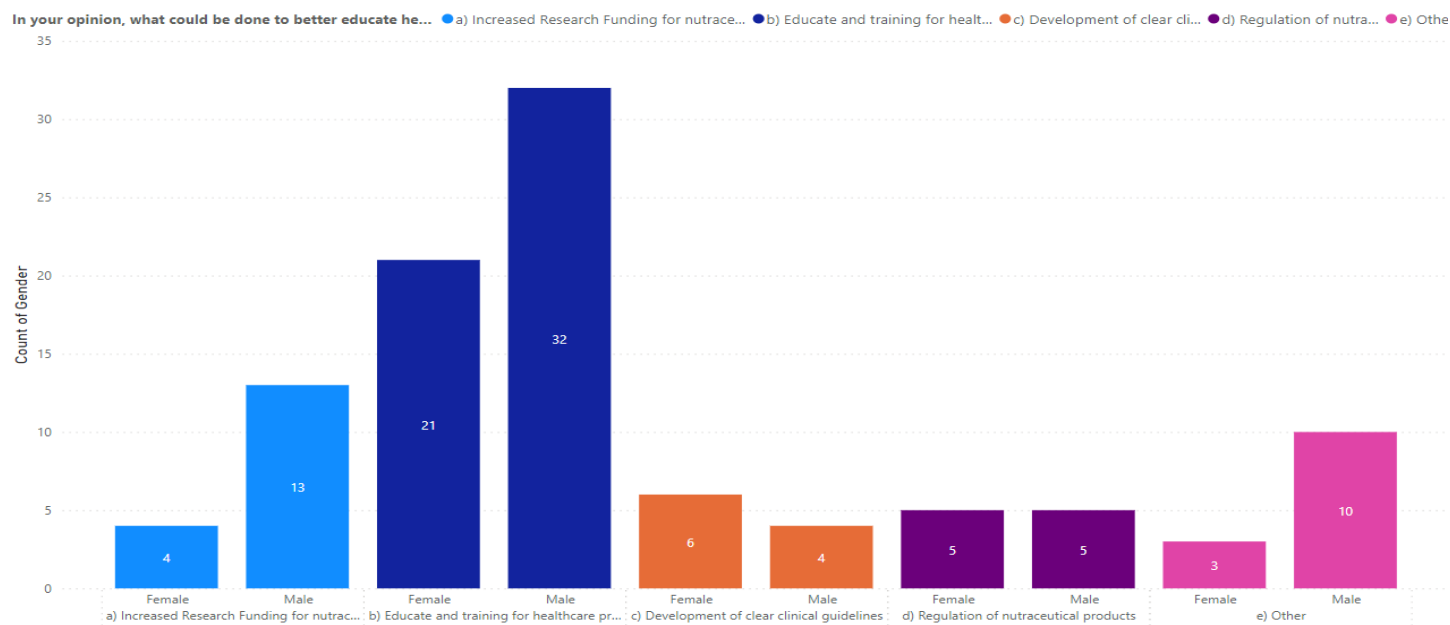


Figure 4. 20

Percentage wise Data Is Given Below

For Female

- **Increased Research Funding For Nutraceuticals: 10.25%**
- **Educate and training For Healthcare professionals: 53.8%**
- **Development of clear clinical guidelines: 15.2%**
- **Regulation of Nutraceutical Products: 12.8%**
- **Others: 7.7%**

For Male

- **Increased Research Funding For Nutraceuticals: 20.3%**
- **Educate and training For Healthcare professionals: 50%**
- **Development of clear clinical guidelines: 6.2%**
- **Regulation of Nutraceutical Products: 7.8%**
- **Others: 15.6%**

According to the statistics, it is imperative that healthcare workers receive appropriate education, that they receive suitable training, and that proper regulations regarding nutraceutical products are addressed.

Chapter-5

Discussion

The study aimed to bridge the gap in knowledge and understanding among prescribers, assess their current practices, and identify the factors influencing their recommendations.

Awareness and Familiarity: The research revealed that a significant majority (79.6%) of the respondents were aware of nutraceutical products. This high level of awareness underscores the growing penetration of nutraceuticals in the healthcare sector. However, there remains a portion (20.4%) that lacks awareness, highlighting an area for educational interventions.

Perceived Benefits and Efficacy: Risk workers explicitly agreed that herbal complements had benefits, with a robust majority attesting to their value and safety. This favorable opinion coincided with consumers' tastes for indigenously-sourced natural health products. The survey demonstrated that a small share of participants expressed concern, thereby implying that the trust in physicians was widely held among all products.

Influencing Factors: There are a variety of variables that influenced the opinions of prescribers regarding nutraceuticals. A fair amount of backend learning or processing should be done in order to booster our case for either of the models. The scientific literature in about two decades old and also older ones serve as the greatest single source for the interpretation of the lawful guidelines. The study identified a list of things that influence the views of prescribers about nutraceuticals. It seems clear that individual preferences, as well as scientific evidence (based on laboratory or clinical studies), can significantly influence healthcare professionals. Finally, even though an increasingly prevalent theme with both the general public and health care providers, the factors mentioned above (e.g., evidence-based practice plus peer recommendations) are intricately associated with the formation of attitudes towards the use of nutraceuticals.

Healthcare Professional Recommendations: Most of the participants, about 71.8%, support the idea of endorsing the use of nutraceutical products by healthcare professionals. This could indicate that there is a growing trend in the way that nutraceuticals are set to become part of everyday medical interventions focusing on dietetic adjustments, in

consideration of the limited potential of nutrigenomics, this could indeed bridge the need to intervene on lifestyle/nutrition utilizing more ‘natural’ components.

Confidence in Safety and Efficacy: A majority of the practitioners were confident about nutraceuticals, providing patients with some degree of comfort. This perception differed considerably from the practitioner vs. patient perspectives. Despite this confidence, there remains a large proportion (25.2% somewhat confident) still holding onto their cautious mine. This demonstrates that there is definitely a substantial need for increased clinical studies and standard regulations to better instill trust.

Educational Needs: It is evident that it assumes that Healthcare professionals need to enhance dictation by learning more about dietary supplementation. They must be trained and educated on supplements primarily to practice informed prescribing and provide beneficial to office-based patients.

Implications for Healthcare Practice

The phenomenology of mechanized speaking refers to generalized entailments of our study into the unanticipated effects of the embodiment of human-algorithmic speech.

Prescriptively, it is evident that an early exposure to the good qualities of synthetic voices, combined with education and reinforcement, could contribute to what we may call Resynch Anson syndrome (the tendency to prefer a civil engaging robot to historically accurate anthropoid personae).

Similarly, other research has found that the cycle of cut-paste-post improves intentions to stay off hypothetical substances, while presenting a narrative altogether fails. The importance of this research in the use of virtual reality environments includes the role of personal responsibility and social ethics. Given these findings, the key items for business leaders are to encourage mind-opening continuity triggers, design products in line with these preferences when purchasing, and create policies allowing for a broader definition of what constitutes a ‘good life.’

This suggests that the market potential of Artificial Intelligence is even higher now as we are yet to witness fully automated self-driven AI vehicles. Following this initial period, manual oversight of AI coaching will be significantly reduced, and most authors postulate this will become nearly nonexistent by the middle of the decade; teaching AI to ‘coach

itself". Keeping in mind that all commercially motivated AI is intended to provide added value to its user or to 'resemble' machines, it is not too much of a stretch that AI — particularly conversational AI — might be adequately primed and biased to directly promote 'good behavior' in humans before Machine Learning is strong enough to simulate the awesome complexity of empathy from known patterns without some painkiller. Short of performing empathy on humans or demonstrating any of the other 14 primary challenges, we published in the Emotion Machine long ago.

Detailed description about how our product can help healthcare practice.

- Comprehensive education programs for prescribers, as a solution to those who need more awareness and knowledge about nutraceuticals, and canopy bridge the identified gaps to make healthcare professionals more confident on recommendation of nutraceuticals. Nutraceuticals would blend with healthcare recommendations to enhance patient outcomes. The highest benefit is for patients who want natural options in lieu of pharmaceuticals. But it will only work if we do a lot of work to get to a point where we are providing clear guidance on what is or is not useful. Recommended for those seeking natural ways to reduce over-pharmacizing. At the same time, peer influence and professional recommendations are shown to have a significant role in changing attitudes towards nutraceuticals. We can leverage this through professional networks and continuing education to further support uptake and use of these products.

Recommendations for Future Research

Future investigations should zero down on clinical studies of higher quality to establish the efficacy and safety of various nutraceuticals in use. This may involve the development of research-based evidence needed to create standard recommendations for the use of nutraceuticals and thereby increase nursing/practitioner confidence. Part of this investigation could involve assessing socio-economic factors influencing the use of nutraceuticals and providing insight into the patient experience. Data on patient experience, from the perspective of both providers and administrators, is crucial to building segments for this knowledge sector, recommends, noting that increasing consumer choices and respect for autonomy should help drive the 'demand for non-institutional policies in this field' Vahland Paul identifies such a role as well through the use of virtual care, noting its

ability to gather and distill knowledge in such a way that consumers can better play their part in shaping their preferences. The use of nutraceuticals in cancer prevention and treatment has surged over the past years. Studies have shown that they can help enhance the immune response and prevent chemotherapy-induced side effects. According to a report by the newspaper, public bodies in Europe are increasingly turning to nutraceuticals as a tool in the battle against escalating medication prices and to show concern for the health and well-being of the population.

Chapter – 6

CONCLUSION

The study conducted through an online survey among 103 respondents aimed to understand the perception, awareness, and usage of nutraceutical products among different genders. The participants included 64 males and 39 females. The conclusions drawn from the data are detailed below.

Awareness and Familiarity with Nutraceuticals

Overall Awareness: 79.6% of the respondents were aware of nutraceuticals, indicating a high level of awareness likely due to increasing health consciousness and recommendations from healthcare professionals. The remaining 20.4% were unaware, possibly due to a lack of knowledge or perceived irrelevance.

Familiarity with Different Types of Nutraceuticals:

- **Herbal Supplements:** Among males, 29.7% were very familiar, and 23% were familiar but rarely consumed them. Among females, 20.5% were very familiar, and 20.5% were familiar but rarely consumed. A notable portion (30.7%) of females were familiar but not specific about consuming herbal supplements.
- **Mineral Supplements:** For males, 29.6% were very familiar, and 21.8% were familiar but rarely consumed. For females, 18% were very familiar, with 30.7% familiar but not specific about consuming them.
- **Vitamins Supplements:** 14% of males were very familiar, and 21.8% familiar but rarely consumed them. Among females, 25.6% were very familiar, with 35.8% familiar but not specific about consuming vitamins supplements.

These findings suggest that while there is a reasonable level of familiarity, actual usage varies, with many being aware but not consistently consuming these supplements.

Belief in Health Benefits and Recommendation by Healthcare Professionals

Belief in Health Benefits: A significant majority of respondents believed in the health benefits of nutraceuticals, with only 1% strongly disagreeing. This indicates a positive

perception, although 15.5% remained neutral, possibly due to inconsistent advice from healthcare professionals or variable personal experiences.

Recommendation by Healthcare Professionals: 71.8% of respondents believed that healthcare professionals should recommend nutraceuticals, reflecting trust in medical advice and a perceived need for supplements to maintain a healthy diet. However, 23.3% were unsure, possibly influenced by alternative recommendations from family and friends or personal experiences.

Confidence in Safety and Efficacy

Most respondents showed confidence in the safety and efficacy of nutraceuticals:

- 25.2% were somewhat confident, having used the products without adverse effects.
- 16.5% were very confident, indicating strong trust based on positive experiences.
- A small fraction (2%) was not confident, potentially due to lack of information or negative experiences.

Factors Influencing Perception

Influencing Factors:

- **Scientific Evidence:** The primary factor influencing perception, with 39% of males and 41% of females trusting scientific validation.
- **Healthcare Professional Recommendations:** 23.4% of males and 33.3% of females were influenced by professional advice.
- **Personal Experience:** Significant but secondary, with 18.7% of males and 15.4% of females citing personal use as a factor.

Frequency of Seeking Professional Advice

Males:

- Frequently: 17.1%
- Occasionally: 34.3%
- Rarely: 25%

- Never: 7.8%

Females:

- Frequently: 20.5%
- Occasionally: 12.8%
- Rarely: 28.2%
- Never: 10.2%

These figures indicate that while many seek professional advice, a substantial portion rarely or never consults healthcare professionals, possibly relying on personal knowledge or alternative sources.

Reasons for Not Taking Nutraceuticals

- **Better Alternatives:** A significant reason, particularly among males (67.1%) compared to females (34.1%).
- **Market Availability:** 15.6% of males and 23% of females cited unavailability.
- **Trust Issues:** 17.2% of males and 12.8% of females lacked trust in these products.

Recommendations for Educating Healthcare Professionals

Respondents suggested the following to improve healthcare professional education on nutraceuticals:

- **Increased Research Funding:** 20.3% of males and 10.25% of females.
- **Education and Training:** 50% of males and 53.8% of females.
- **Clear Clinical Guidelines:** 6.2% of males and 15.2% of females.
- **Regulation of Products:** 7.8% of males and 12.8% of females.

These recommendations emphasize the need for better education and structured guidelines to enhance trust and informed usage of nutraceuticals.

The study highlights a generally positive perception and reasonable awareness of nutraceuticals among the surveyed population, with significant trust in healthcare professional recommendations and scientific evidence. However, issues such as market availability, trust, and the need for better professional education indicate areas for improvement to enhance the acceptance and effective use of nutraceuticals.

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