

CLINICIAN PERCEPTION ON FACTOR INFLUENCING TOWARDS USAGE OF THERAPEUTIC NUTRITIONAL POWDER

Dissertation Submitted to



The IIHMR University, Jaipur

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Master of Business Administration (MBA)

in

Pharmaceutical Management

By

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Under the Supervision and Guidance of

Mr. Rahul Sharma

2024

DECLARATION BY STUDENT

I hereby declare that this dissertation titled "Clinician perception on factor influencing towards usage of therapeutic nutritional powder" is the Bonafede 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 Information derived from the published or unpublished work of others has been duly acknowledged in the text.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) 

Name of Student: Suraj Ahuja

Date: 03/07/2024

CERTIFICATE

This is to certify that dissertation titled “Clinician perception on factor influencing towards usage of therapeutic nutritional powder” is a record of the research work undertaken by Suraj Ahuja in partial fulfilment of the requirements for the award of the degree of MBA (Pharmaceutical Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.

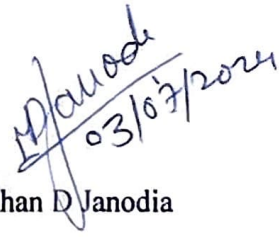


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Date:

ABSTRACT

TITLE: Clinician perception on factor influencing towards usage of therapeutic nutritional powder.

AUTHOR NAME: Suraj Ahuja

ADVISOR NAME:

KEYWORD:

Physicians, Therapeutic Nutraceuticals, Powdered Dietary Supplement, Usage Factors, Health Services, Clinical Decision Making, Dietary Supplements, Dietary Guidelines, Dietary Guidelines

BACKGROUND: - The use of therapeutic nutritional powders has become ever more vital in the clinical setting. It builds an environment and offers some of the core nutrients to patients with various diseases. Such powders are formulated to fulfill specific nutritional requirements and to support the general health and recovery of the patient. While the advantages of using such nutrition supplements exist, there could be various factors affecting their use by physicians, such as clinical guidelines, perceived effectiveness, patient compliance, and side effects. This will be instrumental in understanding perceptions of the physicians and factors that influence their decisions in recommending or prescribing these nutritional powders. This facilitates strategies toward improvement of use, so as to provide optimal nutritional support for patients as part of routine treatment.

OBJECTIVE:

This present research primarily aims at determining and understanding the factors that relate to physicians' perceptions and decisions on the use of therapeutic nutritional powders within clinical practice. It tries to provide an understanding of the barriers and facilitators having an impact on the recommendation and prescription of these supplements by identifying impacting factors. This will include the determination of clinical guidelines, perceived efficacy, patient compliance, and possible side effects. These are factors that must be understood to achieve changes in clinical practice and to assure patients that they are given the right nutrition for maintaining health and recovery.

The research will further develop evidence-based ways to enhance the acceptance and use of therapeutic nutritional powders among health professionals. Analysis of data collected by physicians wishes to identify key areas in which intervention and trainings could be induced with expectation of an improvement in outcome for patients. This review aims to integrate clinical knowledge and practice in order to achieve optimal patient care benefits by

integrating nutritional supplements with regard to patient care plans across healthcare settings.

METHODS:

For the present study, a sample of 201 physicians from different streams of practice—nutrition, medicine, surgery, orthopedics, and gynecology—was selected. This study was carried out in the following three prominent hospitals of Jaipur: Mahatma Gandhi Hospital and Eternal.

EHCC) and Fortis Hospital. A structured questionnaire was prepared to get information about physicians' perception, experiences, and factors which would impact the use of therapeutic nutritional powders. Closed-ended and open-ended questions elicited quantitative data and qualitative insights. The instrument thus comprised closed and open-ended questions. Doctors from different departments and hospitals were selected in order that transcendental understanding of the factors impacting the use of dietary supplements may be achieved in different clinical settings. The survey was carried out in both direct form and through electronic media in order to achieve a good response rate and reliable data collection. The collected data was analyzed by statistical methods for trend identification, correlation, and important factors influencing doctors' decisions. This methodology provided a strong base for formulating meaningful deductions and strategies for bringing into practice implementation that would improve the use of therapeutic nutritional powders.

RESULTS/FINDINGS:

Results to questions related to this showed that 61% of the physicians rated the protein digestibility of an amino acid score in a protein supplement as very important, while 39% rated it as moderately important. Moreover, nearly 87% of physicians believe a PDCAAS score of 0.96 is good—this indicates an overwhelmingly positive reception by the medical fraternity. High protein content, source, and amount of essential nutrients remain the most critical considerations in the prescription of protein supplements by doctors—a pointer to the quest for maximum nutritional benefits for patients.

CONCLUSIONS:

This study proves that PDCAAS scores play an important role in the decision-making process of a doctor to choose therapeutic nutritional powder, and most have the realization behind it.

A PDCAAS score of 0.96 is strongly supported by the underlying importance of protein quality from a medical professional's point of view. Moreover, the emphasis on high protein content, source, and amount of important nutrients while prescribing dietary supplements indicates a holistic approach toward the optimization of the diet of a patient. These findings suggest that increased awareness and education on quality indicators of protein and nutritional value will further support clinicians in making informed choices and improve patient outcomes..

CHAPTER 1 INTRODUCTION

The Purpose of the Study

Increasing malnutrition and protein deficiency in clinical conditions pave the way for the development and usage of effective dietary supplements. The purpose of the study is to identify the factors for

The present study tried to find out the main considerations and preferences that guide health professionals for prescribing protein supplements, with a focus on PDCAAS, among those influencing the doctor's choice of therapeutic nutritional powders, including 201 doctors from several departments in three major hospitals in Jaipur.

Problem under study

Malnutrition and protein deficiency have been recognized as significant health-care challenges affecting, at some point in their care, a patient's recovery and overall health outcomes. While several proteins supplement exists on the market, little is known about how clinicians make decisions between those products and what elements they consider most critical. PDCAAS is widely accepted as an appropriate measure for the assessment of protein quality, but its perceived importance and impact on clinical decision have not been studied yet. Furthermore, the specific factors that physicians would want in protein supplements related to glycemic index, amino acid pieces, and total nutritional value should be carefully sought and investigated in order to enhance patient care and the effectiveness of any supplement used. The present study has been elucidated in order to redress this gap by advancing the perspectives of physicians from different specialties while

Health services.

Context and Importance of the Problem

Effective management of the nutritional needs of patients in clinical practice can, therefore, be very instrumental in promoting recovery, principally so in those with chronic illnesses, surgical patients, and metabolic disorders. Protein supplements provide additional intake of the necessary nutrients that are not derived so easily from normal diets. PDCAAS, which evaluates a protein's digestibility and amino acid profile, is the basis upon which the quality of these supplements is often claimed. The higher the value of PDCAAS, the more efficiently the human body can make use of the protein; hence, it is one of the leading factors taken into consideration.

The process of selecting which supplement to prescribe, however, is complex. Benefits associated with high protein content must be weighed against other factors, including the level of glycaemia, the presence of specific amino acids such as arginine and glutamine, in addition to other characteristics related to flavor and sugar content. Knowing how these various factors interact to bear on clinical decisions is very important in the development of better nutritional products and guidelines that align with healthcare professionals' needs and improve patient outcomes.

Aim and Objective of the Study

The primary aim of this study is to investigate the perceptions and factors that influence clinician's choices of therapeutic nutritional powders. By surveying doctors across multiple specialties, the research seeks to:

- 1. Assess the importance of PDCAAS in selecting high-protein formulas:**
 - Determine how critical the PDCAAS score is to clinicians when choosing protein supplements.
 - Explore the level of consensus among doctors regarding the PDCAAS score as a quality metric.
- 2. Evaluate the acceptance of protein formulas with specific attributes:**
 - Understand clinician's agreement on the efficacy of protein formulas with a glycaemic index of 33.

- Investigate the perceived benefits of specific amino acids, such as arginine and glutamine, in patient recovery.
- 3. Identify the key elements prioritized by clinicians when prescribing protein supplements:**
- Determine which attributes (e.g., high protein content, source of protein, PDCAAS score, low glycaemic index) are most important to doctor.
 - Provide insights into the practical considerations that influence clinical decisions.

The study's findings will offer valuable insights into the preferences and priorities of healthcare professionals, facilitating the development of more targeted and effective nutritional supplements. By aligning product features with clinician's needs and patient outcomes, this research aims to enhance the nutritional management of patients in clinical settings.

Background and Rationale

Nutritional support is an integral part of the care of every patient. This is especially vital for patients with underlying medical conditions that alter dietary intake and nutritional status. Therapeutic nutritional powders are very useful in providing a concentrated source for essential nutrients in a form easy to administer and absorb. They are used in most clinical settings, such as hospitals and care centers, and even in outpatient settings to support patients' nutritional needs.

The PDCAAS rating is yet another measure of protein quality that has gained wide acceptance because it reflects not only digestibility but also the amino acid makeup of a protein. A higher score in the PDCAAS translates to a high-quality protein that more suitably addresses physiological requirements. Knowledge of this score by a clinician helps in appropriate decisions regarding nutritional supplements to prescribe. Although it is of vital importance, very little is known about clinicians' perception of the PDCAAS score and how it influences choices.

Besides the PDCAAS score, other key considerations that would impact clinicians' decisions are protein content, source of protein (whey, soy, casein), and number of essential nutrients contained in the supplement. These are determinants for ascertaining a prescription with

nutritional supplements that meet patients' needs, thus providing sufficient support during recovery and health promotion.

Significance of the Study

This study is important for a variety of reasons. First, the research will fill in the major gaps in literature with regard to the lack of empirical data on clinicians' perceptions of the PDCAAS score and other factors that influence the prescription of therapeutic nutritional powders. The results of this study will also help in developing standardized guidelines and educational programs to improve knowledge and practice among clinicians involved in nutritional support. Such improvements in the application of evidence-based practices could result in better patient outcomes and consistency in nutritional care throughout the continuum of healthcare.

In this study, a wide variety of clinicians across specialties and hospitals have been studied; therefore, the insights regarding determinants of usage of therapeutic nutritional powders will be enlightening. Such diversity ensures that the findings are relevant to a broad range of clinical contexts and that the study's recommendations are widely applicable.

The research henceforth therefore seeks to establish the factors that determine clinicians' perceptions and decisions concerning the usage of therapeutic nutritional powders. Specifically, this study seeks to solve the inconsistent usage problem by some key factors: PDCAAS score, protein content, source of protein, and this may help in the development of standardized guidelines and educational interventions. Ultimately, this research seeks to further expand on the adoption of therapeutic nutritional powders for the improvement of patient outcomes and providing more consistency within nutritional support for clinical practices.

CHAPTER 2 LITERATURE REVIEW

1)Homan, E. M. (2018): - This study investigated the use, knowledge, and perception of dietary supplements among college students (n=231) enrolled in a general sophomore-level nutrition course during the spring semester of 2017. 2) In this broader research effort, the approach was retrospective and cross-sectional, focusing on comparing different aspects, and it fell within the scope of a more extensive investigation. The information gathered encompassed details about people's backgrounds and their use of dietary supplements. The survey on demographics delved into various aspects such as a person's age their year in

school whether they identify as male or female their ethnic background what they are studying and their grade point average. The students also shared details about the dietary supplements they use by showing pictures of the product labels and what's in them. In exploring the intricacies of dietary supplement use the research delved into how those who use these products and those who do not hold varying views and levels of understanding.

When it came to figuring out what people think about how safe dietary supplements are how well they work and if they're looked over by any rules folks were asked to share their thoughts by either agreeing or disagreeing with certain ideas about these products' safety and effectiveness. The report highlights several crucial discoveries. Almost half of the students which is about 47.6% shared that they take dietary supplements. Most of the people in the study were first-year college students who were white and female. In studying the use of various supplements like multivitamins, minerals, single nutrients, herbal products, weight loss aids, fish oil, and fibre it was found that both men and women used them at similar rates. A lot more men used protein supplements compared to women and the difference was big enough to count ($p < 0.05$). Both groups whether they used the service or not managed to get less than half of the questions right showing there wasn't much difference in what they knew.

The perception of dietary supplements was generally neutral among both users and non-users, with no significant difference between the groups.

Descriptive statistics, independent t-tests, chi-square tests of independence, and Fisher's exact tests were used for data analysis.

2) Susan Goodin et al (2006): - This study aimed to evaluate the biological activity of a commonly used soy protein supplement in vivo and in vitro. Twelve healthy male volunteers aged 25 to 47 consumed 56 g of soy protein powder daily for 28 days. Serum testosterone levels decreased by 19% ($P = 0.021$) during the 4-week period but increased within two weeks after discontinuation. Serum luteinizing hormone (LH) levels also decreased but did not show statistically significant changes ($P = 0.20$). An in vitro estrogen receptor (ER) assay revealed that the soy protein powder acted as an agonist to ER- β . These findings indicate that soy protein powder decreases serum testosterone in healthy men and activates ER- β , suggesting potential implications for cancer prevention that require further investigation.

3) JESSICA L. CHILDS et al (2008): -This study examined consumer perceptions of protein content, type, and product claims for meal replacement beverages and bars, considering the impact of exercise frequency on these perceptions. Focus groups and an adaptive conjoint analysis survey with 138 consumers aged 18–35 was conducted. The results showed that both exercisers and no exercisers preferred bars over beverages and had no clear preferences for protein type due to low knowledge. All participants valued low-fat, calcium, all-natural, protein, vitamin/mineral, heart health, and muscle-building claims. Exercisers prioritized muscle-building claims more, while no exercisers valued heart health, calcium, and vitamin/mineral claims more. Three distinct consumer clusters were identified, with exercise frequency influencing membership in two clusters ($P < 0.05$). These findings can guide the development and marketing of meal replacement products to meet the specific needs of different consumer groups.

4) Joshua Manter (2011): - This study evaluated the taste preferences of popular protein supplements—Muscle Milk, BSN, Nesquik Vanilla Milk, and Optimum Nutrition—among 94 males and 68 females, revealing significant differences in initial and aftertaste perceptions between genders. BSN and Muscle Milk were rated as "neither good nor bad," Nesquik Milk as "good," and Optimum Nutrition as "bad." Initial taste ratings showed mean scores of 4.05 for BSN, 4.6 for Muscle Milk, 5.4 for Nesquik Milk, and 3.1 for Optimum Nutrition, all statistically significant. The study underscores the need for further research to understand the reasons behind these taste differences.

5) A.N. Schiano (2020): -This study explored consumer perceptions of the sustainability of milk, dried dairy ingredients, and their plant-based alternatives, revealing that consumers who purchase both types of products prioritize sustainability more than those who buy only dairy products. Using focus groups and two online surveys, the research identified key sustainability attributes: minimal carbon footprint/greenhouse gas emissions, few/no preservatives, animal welfare, and simple ingredients. Plant-based alternatives were generally seen as more sustainable than dairy products, influenced by factors like packaging and organic status. Product labels and websites were primary sources of sustainability information. Consumers often overlapped terms like sustainable, natural, healthy, ethical, and trustworthy but used them distinctly, indicating that dairy companies could benefit by simplifying and clarifying their sustainability messaging to differentiate their products effectively.

6) Christina Hartmann (2016): - This study examined the factors motivating protein supplement consumption among 813 Swiss adults, comparing the beliefs of 376 users and 437 non-users. Women primarily cited muscle increase (57.3%) and weight regulation (48.6%) as reasons for use, while men cited muscle increase (83.7%) and regeneration promotion (53.7%). Principal component analysis identified four benefit belief factors: nutrient restoration/weakness avoidance, fitness promotion, health/well-being, and muscle modulation/competitive performance. Both groups mainly saw protein supplements as a muscle mass modulation strategy, but users more frequently believed in health and well-being benefits ($M = 3.2$) than non-users ($M = 2.7$) ($p < 0.001$). Health-related beliefs were linked to higher intake frequency ($OR = 1.5$), whereas physical activity levels were not associated with intake frequency and showed a slight negative correlation with fitness promotion beliefs ($r = -0.14$). The findings highlight that consumers across activity levels hold various positive beliefs about protein supplements, underscoring the need for better consumer education to prevent misconceptions

7) Marija Banovic et al (2014): -This study investigated consumer preferences and perceptions of foods with increased protein content among mixed-age and older populations in four European countries, involving 52 participants in qualitative focus groups. The findings revealed limited understanding of the concept of 'increased protein' content, with participants unable to distinguish between natural protein sources and foods with added protein, regardless of whether animal or plant proteins were involved. Older participants were more sceptical of such foods compared to mixed-age participants. Foods that combined familiar protein types and carriers like conventional foods were more accepted by both groups. The future acceptance of these products will depend on addressing consumer concerns about integrating additional protein into their diets.

8) Jennifer A. O'Dea (2003): -This study aimed to gather detailed qualitative data on the types and reasons for nutritional supplement and drink consumption among adolescents. Semi-structured focus group interviews with 78 adolescents aged 11–18 from a government high school revealed that participants consumed a variety of products, including sports drinks, vitamin and mineral supplements, energy drinks, herbal supplements, guarana, creatine, high protein milk supplements, and coenzyme Q10. The main reasons for consumption were perceived short-term health benefits, illness prevention, improved immunity, parental provision, taste, energy boosts, enhanced sports performance, and rectifying poor diets. The findings suggest that adolescents consume these products for their perceived physiological benefits, often without awareness of potential risks. Health educators should recognize that

adolescents seek specific health benefits from supplements and drinks, which might be better achieved through a balanced diet, and should tailor health education programs to address the perceptions and motivations of young people to enhance their effectiveness.

9) Meng Yang et al (2023): -This study investigated the association between protein powder supplementation during early pregnancy and the risk of gestational diabetes mellitus (GDM) using data from a prospective birth cohort of 6897 participants with singleton pregnancies. The overall prevalence of GDM among women in this study was 14.6%. In the unadjusted and multivariable model, with propensity score matching and inverse probability weighting in all analyses, one coherent finding in the analysis was that women who used protein powder supplement had a higher likelihood of developing GDM in comparison to nonusers. In particular, protein powder supplementation was associated with a significant increased risk of GDM in propensity score-adjusted analyses: OR, 1.53; 95% CI, 1.10–2.12, and more specifically with GDM characterized by isolated fasting hyperglycemia: OR, 1.82; 95% CI, 1.23–2.68. These findings may hint at an unfavorable impact of protein powder supplementation on GDM risk early in pregnancy; comparative studies are further required to confirm the results and realize the underlying mechanisms.

10) Anushka Menon et al (2021): - The present study was undertaken to determine the perception, awareness, and usage of nutraceuticals amongst the public and clinicians. In the present research, a sample size of 650 and 50 clinicians has been taken. The questionnaire-based study on predicting consumer willingness towards nutraceuticals, based on age group, gender, perception of health, and occupation, was transferred to Google Forms and then circulated on social media.. Data analysis conducted with Google Sheets and Microsoft Excel highlighted affordability and employment status as significant factors influencing nutraceutical purchases. The COVID-19 pandemic notably increased consumer interest in immunity-boosting products and supplements. The study also revealed diverse consumption patterns and opinions regarding various nutraceutical products available in the market, contributing to heightened public awareness on the subject.

CHAPTER 3 METHODOLOGY

HYPOTHESIS

Primary Hypothesis (H1):

Doctors consider a combination of factors beyond just protein content when prescribing therapeutic protein powders. These factors may include:

- **Nutritional factors:** Protein digestibility corrected amino acid score (PDCAAS), sugar content, presence of specific amino acids (glutamine, arginine)
- **Patient-specific factors:** Glycaemic index (for diabetic patients), amount of protein.
- **Marketability:** Brand recognition

Null Hypothesis (H0):

Doctors primarily focus on protein content when prescribing therapeutic protein powders, and other factors have minimal influence on their decision.

Research Design

► Type of Research Design

Observational Descriptive study:

- **Observational:** I did not manipulate any variables or assign treatments, simply observed and collected data on doctor's existing prescribing practices.
- **Descriptive:** My goal is to describe the factors doctors consider when selecting therapeutic protein powders. I am not testing a hypothesis about the effect of one factor compared to another.

► Research Tool

Structured Questionnaire is used and framed in a way to derive maximum information from the different specialties of doctor such as Internal Medicine, General Surgery, Obstetrics and Gynaecology, Dietician and Orthopaedics of Jaipur regarding preference of elements which a clinician keeps in mind while prescribing a specific brand of protein powder

► Data Collection Method

Primary Data Collection

Data was collected through means of a structured questionnaire. The structured questionnaire was designed covering only open ended and questions.

It was aimed to derive maximum information from the Internal Medicine, General Surgery, Obstetrics and Gynaecology, Dietician and Orthopaedics of Jaipur

Secondary Data Collection

Data was also collected from various sites on the internet, the sources are mentioned in the reference section.

Sample Size

201 Internal Medicine, General Surgery, Obstetrics and Gynaecology, Dietician and Orthopaedics doctors.

RESEARCH QUESTIONS

- 1)How important is PDCAAS (Protein digestibility-corrected amino acid score) while choosing high-protein formula?
- 2)Protein formula with PDCAAS (Protein digestibility-corrected amino acid score) of 0.96 is good formula?
- 3)Is protein formula with glycaemic index of 33 is good formula in your clinical practice?
- 4)Are arginine & glutamine helps in faster recovery?
- 5) When choosing a protein brand, are you looking for high protein content or just protein with basic content for the recovery of patients?
- 6)Which important element you look for while prescribing the protein supplement?

The following findings are to be expected at the end of my research.

1. Importance of PDCAAS:

- The research can reveal how important PDCAAS is for doctors when choosing therapeutic protein powders. It might find doctors prioritize brands with high PDCAAS (closer to 1) as it indicates better protein absorption and utilization by the body.

2. PDCAAS Score Evaluation:

- A PDCAAS of 0.96 is generally considered excellent. The study might confirm this or provide insights into whether doctors have specific cut-off values for "good" PDCAAS scores.

3. Glycaemic Index Impact:

- The research might reveal if doctors consider the glycaemic index (GI) for specific patient groups (e.g., diabetics). It might find a preference for low GI powders (like 33) for these patients.

4. Arginine & Glutamine for Recovery:

- The study can show if doctors believe specific amino acids like arginine and glutamine aid faster recovery. It might find some doctors Favor powders containing these for specific conditions (wound healing, muscle repair).

5. High Protein vs. Basic Content:

- The research might indicate whether doctors prioritize high protein content for all patients or tailor protein content based on individual needs. It might find some patients requiring higher protein intake for specific recovery goals.

6. Key Factors for Prescription:

- This is a crucial question. The study can identify the most important elements doctors consider when prescribing protein powders. It could be a combination of factors like:
 - Protein quality (PDCAAS, amino acid profile)
 - Patient-specific needs (sugar content, GI for diabetics)
 - Safety and tolerability
 - Cost-effectiveness

- Brand reputation (to a lesser extent)

STUDY SETTING

The study setting for my research can be described using two key aspects:

1. **Location:** Jaipur, India
2. **Sampling Frame:** Convenience sampling from 3 major hospitals in Jaipur – Fortis Escortis Hospital, Mahatma Gandhi Hospital, and Eternal Hospital.

STUDY POPULATION

201 Doctors

SAMPLING TECHNIQUES

The study's main sample method, simple random sampling, is used to accomplish this. This approach minimizes selection bias by giving each doctor in the hospital population an equal chance of being chosen for the study. By doing this, it is ensured that the sample fairly reflects the doctor's perception. Randomization ensures that there are no systematic trends in the selection process that could distort the results.

STUDY INSTRUMENTS

The study instrument is the **Self-administered Questionnaire** you developed and used to collect data from the doctors.

STATISTICAL METHOD

- **Descriptive Statistics:** This will be used to summarize the data from the survey.
 - For **demographic data** (doctor specialty), I likely use frequencies and percentages to understand the distribution of doctors across different categories.
 - For **protein selection factors** (Likert scale or multiple choice), descriptive statistics will calculate frequencies and percentages for each response option, showing how doctors weigh different factors.
- **Chi-Square Test:** This test will be used to analyse the relationship between doctor specialty and the factors they consider when prescribing protein powders. Here's why:

- The survey has questions about factors doctors consider (PDCAAS, protein content, etc.). These factors are categorical (e.g., strongly agree, agree, etc.).
- We also have data on doctor specialty (categorical variable).
- The Chi-square test helps assess if there's a statistically significant association between these two categorical variables. For instance, it can reveal if there's a significant difference in how endocrinologists and cardiologists prioritize glycaemic index.

ETHICAL CONSIDERATION

Informed Consent:

- I have obtained informed consent from all participating doctors before they completed the survey. This consent should explain:
 - The purpose of the study
 - How the data will be used
 - The right to withdraw from the study at any time
 - Confidentiality of their responses

Anonymity and Confidentiality:

- I ensure the anonymity of the doctors who participated in your survey. This means their identities cannot be linked to their responses in any reports or publications.
- I maintain the confidentiality of the data I collected. This means keeping it secure and only using it for the purposes of your research.

Privacy:

- I respected the privacy of the doctors by not collecting any unnecessary data beyond what is needed to address your research questions.

Avoiding Bias:

- The design and wording of your survey questions were objective and avoid leading doctors towards specific answers.

- When analysing the data, I was mindful of potential selection bias due to your convenience sampling approach.

Data Sharing:

- I considered how I will share the research findings. Transparency is important but ensured I did so in a way that protects doctor anonymity and confidentiality.

CHAPTER-4 RESULTS

DATA ANALYSIS-1

How important is PDCAAS (Protein digestibility-corrected amino acid score) while choosing high-protein formula?

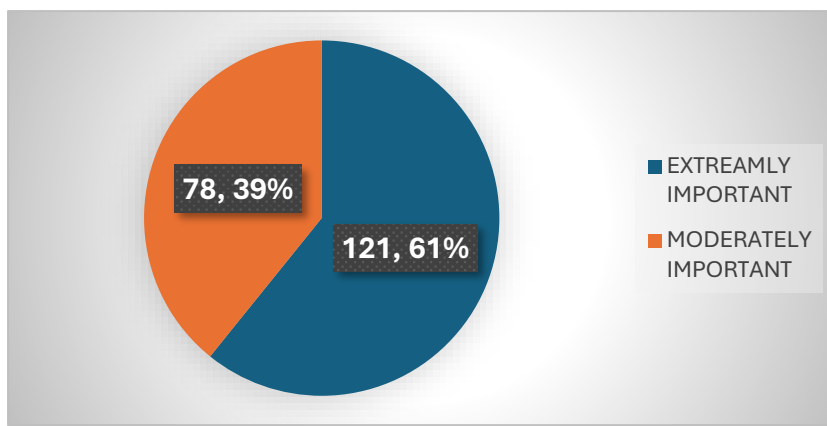


Figure 4.1

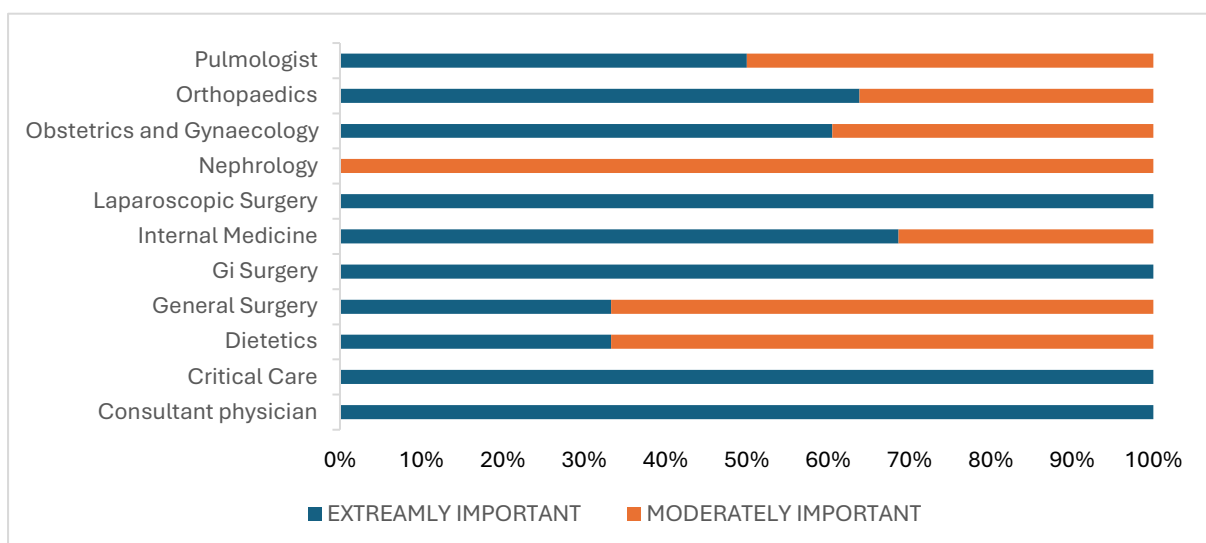


Figure 4.2

61% of doctors believe that the PDCAAS score is extremely important when choosing a protein formula, while 39% feel that it is moderately important.

General surgery, Dietetics and Nephrology specialities are the only specialities who choose more than 50% moderate importance of PDCAAS score

DATA ANALYSIS-2

Protein formula with PDCAAS (Protein digestibility-corrected amino acid score) of 0.96 is good formula in your clinical practice & aids in faster recovery?

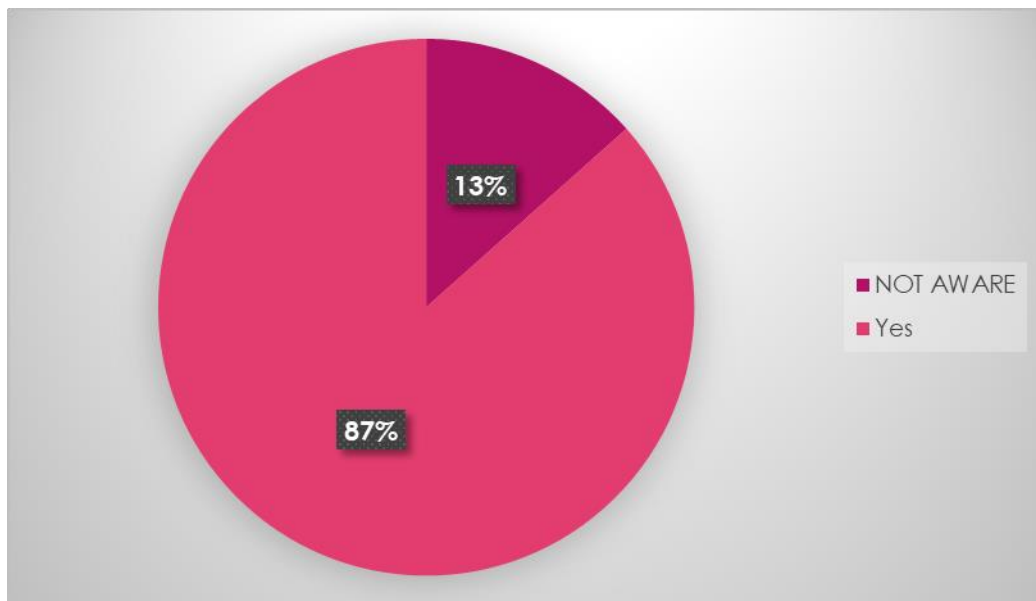


Figure 4.3

Approximately 87% of doctors believe that a PDCAAS score of 0.96 is good. This indicates strong support for this score among medical professionals.

DATA ANALYSIS-3

Do you agree protein formula with glycaemic index of 33 is good formula in your clinical practice?

About 94% doctors believe that glycaemic index of 0.33 is good formula for clinical practice

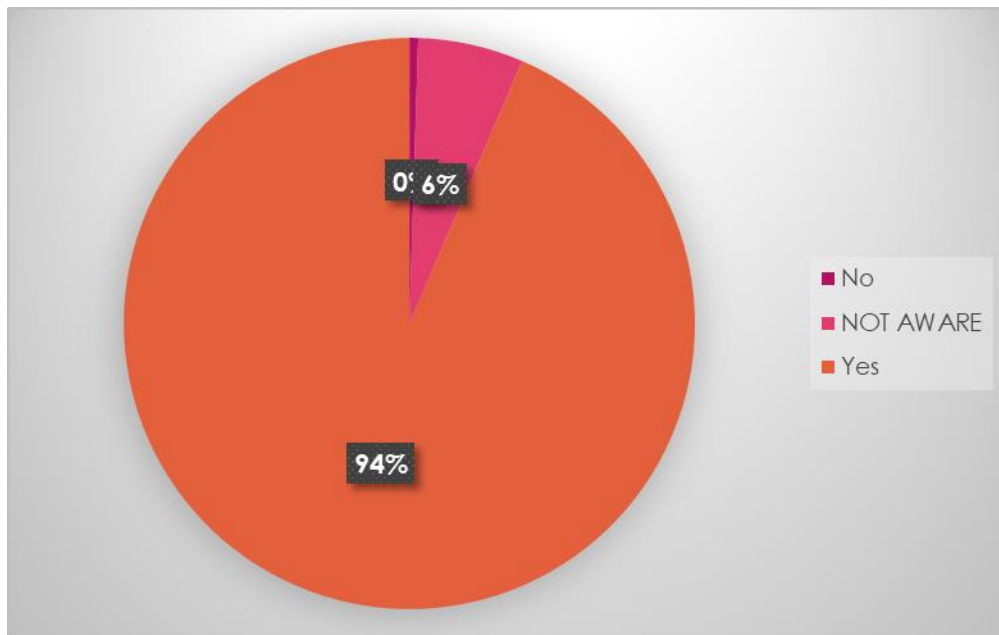


Figure 4.4

DATA ANALYSIS-4

Does arginine & glutamine help in faster recovery in your patients?

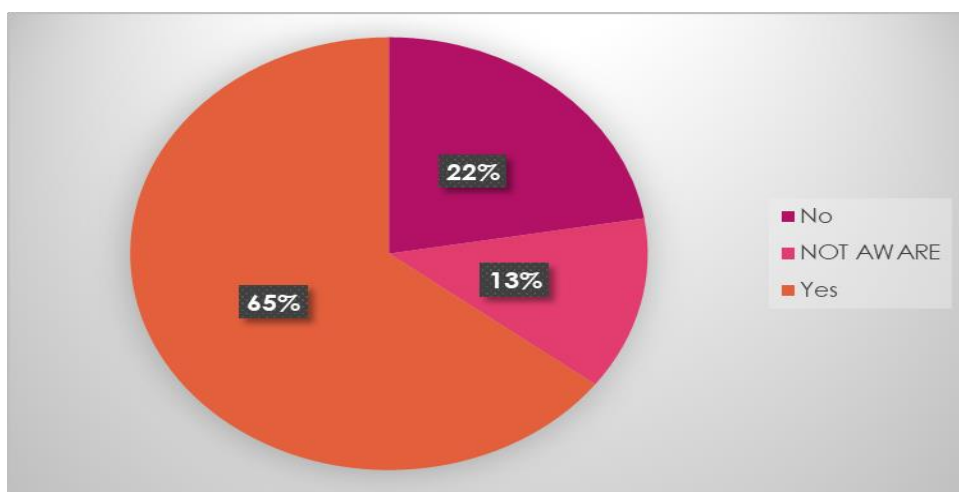


Figure 4.5

65% doctors believe that arginine and glutamine help in faster recovery in their patients.

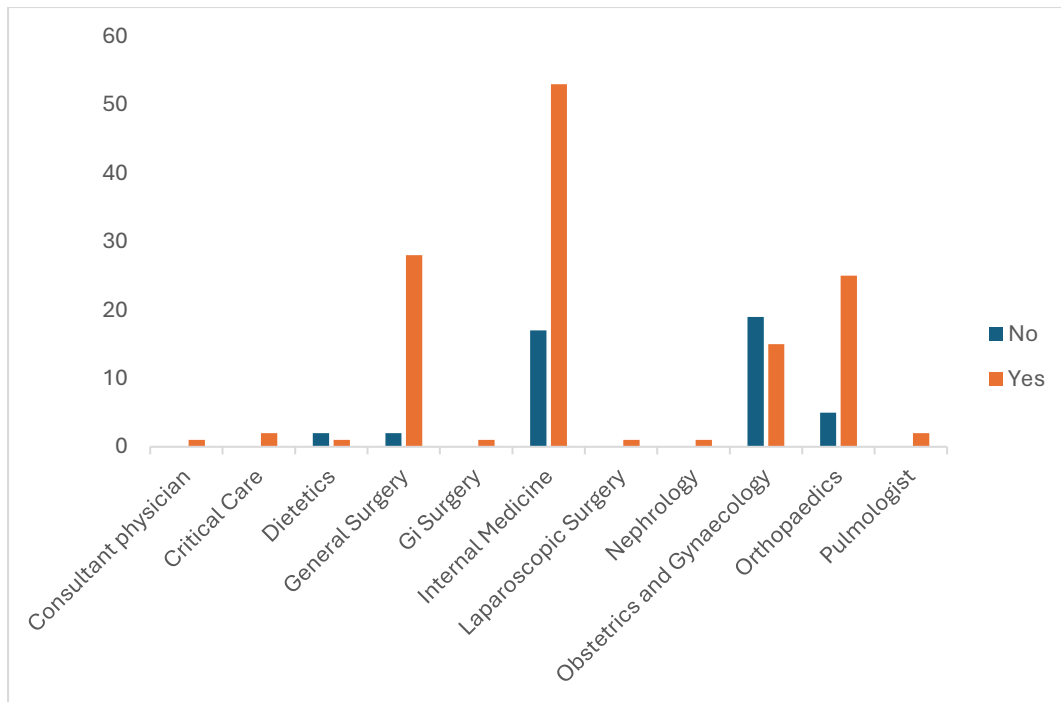


Figure 4.6

Obstetrics and Gynaecology is the only specialty where 55% of doctors didn't observe the effects of arginine and glutamine in patient recovery. This is followed by Internal Medicine, where 33% of doctors hold the same belief.

DATA ANALYSIS-5

Do Doctors look for high protein content or just protein with basic content for the recovery of patients?

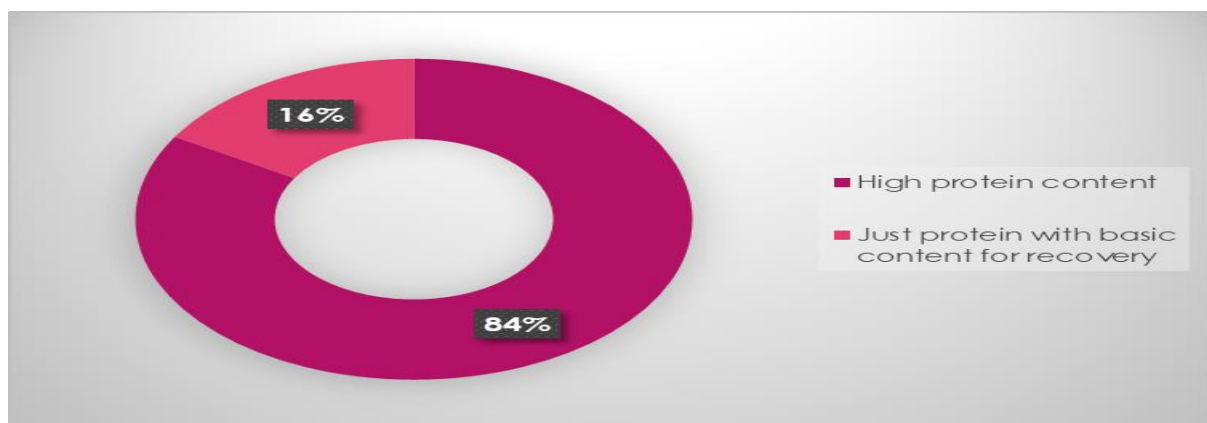


Figure 4.7

84% of doctors prefer high-protein formulations, with the majority being from Internal Medicine and Orthopaedics. In contrast, 16% opt for basic protein content for recovery, mainly from Obstetrics and Gynaecology.

DATA ANALYSIS-6

Which important element you look for while prescribing the protein supplement?

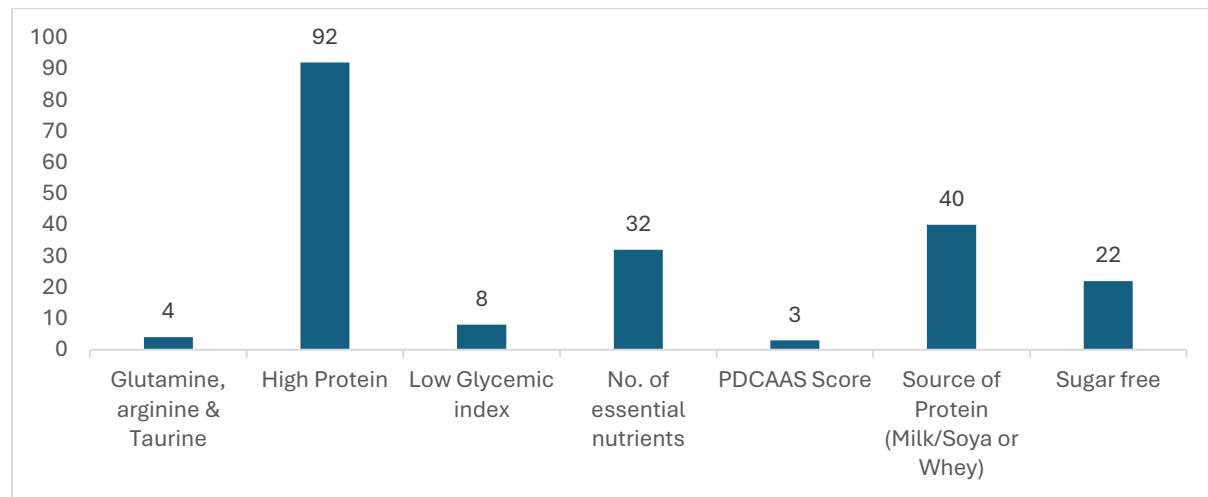


Figure 4.8

When prescribing protein supplements, doctors prioritize high protein content, followed by the source of the protein and the number of essential nutrients.

CHAPTER-5 DISCUSSION

Understanding the results from data analysis 1.

The research shows that doctors often consider PDCAAS an important aspect when they pick out formulas rich in protein. Many doctors, about 61%, think it's important to look at PDCAAS. This means they really focus on how well a protein can be digested and its amino acid makeup when they pick protein formulas.

A sizeable group making up 39 percent deems PDCAAS to hold moderate importance. Though their numbers don't reach the heights of the primary cohort they nonetheless show that several medical professionals take this element into account when making choices. In the world of medicine, it's quite unique to note that among various fields only those working in

General Surgery Dietetics and Nephrology are more likely to give a nod of moderate importance to PDCAAS.

In considering the selection of protein formulas, many doctors view PDCAAS as a vital element. For certain specialties, this emphasis is even more pronounced.

Understanding the results from data analysis 2.

- A study shows that almost 9 out of 10 doctors think a protein powder scoring 0.96 on the PDCAAS scale is beneficial. Here's what that means:
- A strong liking exists for high scores on the PDCAAS scale. Doctors seem to lean heavily toward protein formulas that score high on the PDCAAS like 0.96 according to what the survey shows. When a PDCAAS score is near 1 it shows that the body can better break down and use the protein. This leads to the protein being absorbed more easily and split into amino acids that the body needs for fixing and renewing tissues. Yet one must ponder over certain subtle aspects. A high PDCAAS score matters but doctors probably look at more than just that when they choose protein supplements. Through more questions in the survey the study found different factors too.
- The survey fails to directly link a PDCAAS score of 0.96 with a quicker healing process. Recovering quickly from an ailment isn't solely about how much protein one consumes; it also hinges on the nature of any injuries present, the quality of one's diet overall, and their physical activity habits.
- In general, it seems that for their patient's doctors look first to proteins that the body can easily break down as shown by PDCAAS scores. Yet it's probable that doctors think about more than just PDCAAS scores when they advise on which protein supplements will best help with healing.

Understanding the results from data analysis 3.

- A study shows that an overwhelming 94% of medical professionals think a protein mix with a GI value of 0.33 is beneficial in their work and here's a thought to ponder on that. There's a clear leaning towards protein formulas that have a low GI. A lot of doctors seem to really like protein formulas that don't spike blood sugar levels

especially those with a GI as low as 0.33. The GI value of food tells us about the speed at which it can increase the sugar levels in our blood. Foods that have a GI value lower than 55 tend to make the blood sugar go up slowly and gently.

- On the other hand, foods with a high GI value make it rise quickly. Certain patients might see advantages from this. For those living with diabetes or anyone trying to keep their blood sugar in check this leaning towards protein formulas with a low GI could matter a lot. Eating proteins that have a low glycaemic index leads to a gradual increase in blood sugar. This gentle rise can make managing blood sugar levels easier and might also lower the risk of health problems tied to sugar. Yet it's key to keep in mind that there are more things to think about. It doesn't work for everyone; some patients don't need to keep a tight rein on their blood sugar levels. When picking out protein supplements doctors probably consider what each patient specifically needs.
- Take someone who has normal blood sugar levels for instance; they might not think it's important to choose foods that have a low glycaemic index. The effect that the GI of a protein formula has could be seen as not as important when you look at the whole eating habits of a person. If someone eats foods high in GI most of the time adding a protein formula with a low GI might not balance things out. The findings lean towards doctors leaning more towards protein formulas with a low GI value such as GI 0.33 for their day-to-day medical work especially for those patients who need to keep their blood sugar in check. Yet it seems that the unique needs of each patient and the bigger picture of their diet play a role in the advice doctors give.

Understanding the results from data analysis 4.

My interpretation of the analysis results on the perception of doctors concerning arginine and glutamine in enhancing faster recovery:

Mixed Views on Efficacy:

- The results of the survey show a split opinion among doctors on whether arginine and glutamine help patients to recover.

- There is however, a 65% majority that supports these amino acids being beneficial and this has shown a good trend toward their use.
- On the other hand, 35% do not see any effect which means either no decisive proof or more research should be done.

Specialty Differences:

- People find it interesting that Obstetrics and Gynaecology as well as Internal Medicine have higher percentages of doctors who do not consider arginine and glutamine useful.
- Possible causes for this might include but are not limited to.
- Specific patient populations: In such cases, arginine and glutamine may be less researched or identified for the conditions in question.
- Focus on other interventions: These specialties place emphasis on alternative therapies or interventions for restoration, making amino acid's role minor.

In summary, findings indicate that while most physicians think that arginine and glutamine help in healing, there is no consensus. Further studies may shed light upon their efficacy with respect to recovery process as well as specific patient groups.

Understanding the results from data analysis 5.

Preference for Recovery-Related Protein Content:

Majority Prefer High-Protein Formulas:

- The survey results indicate that during patient recovery, most doctors (84%) Favor formulas with a high protein content, suggesting they strongly believe increased protein intake can benefit the healing process.

Reasons for Preference of High-Protein:

- Protein is essential for the construction and repair of tissues like muscle, skin, and bone. When recovering from injury or illness, the body requires more protein to support these restorative processes. Therefore, high-protein formulas may accelerate healing and improve patient outcomes.

- **Variations by Specialty:**

The finding that orthopaedics and internal medicine physicians prefer higher-protein formulas is consistent with the importance they place on protein for tissue repair and regeneration in their respective fields.

Understanding the results from data analysis 6.

What is the takeaway from your study of the top factors that doctors acknowledge when prescribing protein supplements

-Prioritizing Protein Content

The survey indicates that doctors tend to weigh the protein content of a supplement more than any other criteria. This is well-functioned with all the integral job of proteins in tissue repair as well as recovery.

-Beyond Protein

In addition to claiming, "It is the protein content which is an important factor," doctors seem to take into consideration protein source and whether all essential amino acids are present. This seems to indicate protein supplementing as something more complicated than believed.

Breakdown of Additional Factors:

Type of protein: The source (for example whey, soy) has an impact on factors like digestibility, amino acid profile, and potential adverse reactions. Healthcare providers can consider these factors when providing advice. Protein supplements can be enriched with vitamins, minerals, or other necessary nutrients. Doctors can choose formulas that meet the overall nutritional needs.

In general, the results show that doctors consider protein content to be crucial when choosing protein supplements. However, they also consider where the protein comes from and the presence of other essential nutrients to provide a more thorough response to their patients.

CHAPTER 6 CONCLUSION

Overview

The purpose of the research was to find out the influence on the decisions of the doctor when prescribing therapeutic nutritional powders. The emphasis was on high PDCAAS as an index

of protein quality, as opposed to high content of protein per se, some amino acids, for instance, glutamine, arginine, and taurine, no sugar in its composition, and low glycaemic index. Descriptive and inferential statistical analyses will be used in the present work to elicit the priorities and trends of physicians for prescribing these dietary supplements.

Importance of PDCAAS Score

Soon, the PDCAAS score became an important factor in how clinicians decided. This rating, which calculates the quality and digestibility of proteins for each food item, is very significant for results in the use of clinical nutrition for the patient. High PDCAAS scores are valued by professionals because it simply is a guarantee that the nutritional powder's protein is of a very high standard, offering all essential amino acids in the right proportions for optimum health.

It is a fact that healthcare professional understands bad proteins based on their high PDCAAS rating, which can induce muscle synthesis, enhance and boost the immune system, and provide recovery for those patients with high nutritional needs, such as those who recover from surgery or have been diagnosed with chronic diseases or malnutrition. As several research studies represent, health providers tend to give more preference to a high PDCAAS score when evaluating therapeutic nutritional powders since it has a direct relation with the protein source's effectiveness.

High Protein Content

While the PDCAAS score is important, so is the overall protein content of nutritional powder to doctors. High protein content is important for the maintenance or restoration of muscle mass while offering the metabolic functions needed to accelerate recovery processes. Doctors prefer a high intake of protein, more so in those patients who require higher protein intake due to conditions such as sarcopenia, cachexia, or severe burns. Statistical analyses have shown that high protein content is often directly proportional to the PDCAAS scores. Doctors require a mix of quantity versus quality and find methods to assure patients receive enough amounts of quality protein. Nutritional powder is designed to achieve both short-term protein needs and long-term health perks from high-quality protein intake.

Inclusion of Specific Amino Acids

The presence of specific amino acids—glutamine, arginine, and taurine—will also be concerns for the physician. Each of these amino acids has a special function in facilitating the well-being and healing of patients.

- **Glutamine:** Glutamine is notable for its contribution to intestinal health and immunity, particularly beneficial for individuals experiencing stress, trauma, or sickness. Assisting in preserving the intestinal barrier's integrity, minimizing infection risks, and enhancing the immune system is important.
- **Arginine:** Arginine plays a crucial role in wound healing, immune function, and nitric oxide production that benefits blood vessels. It is particularly advantageous for patients recuperating from surgery or injury, as it enhances the body's capacity for healing and regeneration.
- **Taurine:** Taurine promotes cardiovascular health, neurological function, and overall cellular health. It is crucial for patients with heart disease or requiring neuroprotective aid.

Most physicians prefer recommending nutritional powder with these amino acids for their specific manifold benefits, very salient to the well-being and recovery of the patient. These amino acids added to the diets of gravely ill patients will make a great difference in the results, more so in certain medical situations.

Sugar-Free Formulation and Low Glycaemic Index

The lack of sugar and low glycaemic index in the powders also play a major role in doctors' recommendations. Sugar-free products and low-glycaemic options play a vital role in managing metabolic conditions like diabetes, obesity, and insulin resistance.

- **Sugar-Free Formulation:** Doctors recommend using sugar-free nutritional supplements to prevent negative consequences of excessive sugar intake, including unstable blood sugar levels, weight gain, and higher susceptibility to metabolic disorders. Sugar-free formulas are necessary for patients needing strict glucose regulation, guaranteeing.

- **Low Glycaemic Index:** Nutritional powders with a low glycaemic index are preferred because they can provide sustained energy without causing rapid fluctuations in blood sugar. It is especially useful for diabetic patients or those who need to strictly control their blood sugar. A low glycaemic index ensures a slower release of glucose into the bloodstream, providing a constant source of energy and reducing the risk of hyperglycaemia.

Research findings suggest that physicians consider these formulation factors to ensure that prescription nutritional powders meet patients' specific health needs and dietary restrictions. By choosing sugar-free and low glycaemic index options, doctors can better manage the overall health and well-being of patients, especially those with metabolic problems.

Overall Impact on Prescription Decisions

- General implications for prescribing decisions High PDCAAS score, high protein content, specific amino acids, sugar-free formula and low glycaemic index form a comprehensive framework to guide doctors in their prescribing decisions. Together, these factors ensure that prescription therapeutic nutritional powders provide optimal health benefits, support recovery and meet the specific health needs of patients.
- Physicians are tasked with selecting nutritional supplements that not only meet nutritional requirements, but also improve patient outcomes. Research results underscore the importance of these factors in physician decision-making and highlight the critical role of evidence-based practice in clinical nutrition.

Implications for Clinical Practice and Product Development

Implications for Clinical Practice and Product Development Knowledge from this study has implications for clinical practice and the development of therapeutic nutritional powders in several ways

- **Clinical Practice:** The findings highlight the need for physicians to be aware of the nutritional composition and quality of available therapeutic nutritional powders. Ongoing education about PDCAAS scores, protein concentration, and the significance of specific amino acids can improve the physician's ability to make informed prescribing decisions. In addition, when choosing nutritional powders, the doctor

must consider the metabolic and nutritional needs of the patient and ensure that the prescribed products support overall health and recovery.

- **Product Development:** For manufacturers of therapeutic nutritional powders, research results provide valuable information about factors that are preferred by doctors. By developing products with high PDCAAS scores, high protein content, essential amino acids, sugar-free formulations and low glycaemic index, clinical requirements can be met, and patient outcomes improved. Manufacturers should focus on labelling transparency and providing detailed nutritional information to assist physicians in their prescribing decisions.

Recommendations for Future Research

Although this study provides valuable information about the factors that influence physicians' prescribing decisions, further research is needed to understand this area. Future studies could examine the following:

- **Patient Outcomes:** Explore the direct impact of prescription nutritional powders on patient health, focusing on the specific benefits of high PDCAAS scores, high protein and essential amino acids.
- **Longitudinal Studies:** Conduct longitudinal studies to evaluate the long-term effects of therapeutic nutritional powders on patient health and recovery. This gives a deeper look at their effectiveness
- **Comparative Studies:** Comparing the effectiveness of different therapeutic nutritional powders at different formulations and ingredient profiles to identify the most effective options for specific patient populations.
- **Patient Preferences:** To investigate patients' preferences and perceptions of therapeutic nutritional powders and assess their acceptance and satisfaction with different dosage forms.

The study has highlighted the most important factors preferred by doctors while deciding about prescribing therapeutic nutritional powders to their patients. According to the best of their knowledge and experience a variety of critical factors are used in selecting health and recovery powders that would be effective and fitting for meeting the nutritional and metabolic needs of their patients. High protein content, protein digestibility-adjusted amino acid score, specific amino acids such as glutamine, arginine, and taurine, sugar-free

formulation, and low-glycaemic-index are some of the factors central to the doctors' decision-making process.

- Physicians know that such factors affect the nutritional value and the therapeutic efficacy of the prescribed powders. So, on a protein quality benchmark, it makes use of the PDCAAS score to see how well a protein source can meet nutritional demand in a person. Those with higher PDCAAS scores are favoured because they contain essential amino acids in optimal proportions necessary for protein synthesis, central to tissue repair and maintenance.
- Doctors are also of the view that some amino acids, such as glutamine, arginine, and taurine, should be included since they have several effects on physiological processes. Glutamine is noted particularly for its effect on immune function and gut health and, as such, highly valued for its potential to support patient recovery from treatment or diseases induced by or related to stress. Arginine and taurine are important for cardiovascular health and muscle function, respectively; as such, the need to have these in nutritional powders is of importance to patients needing nutrition that can be targeted at their needs. Sugar-free and low-glycaemic index powder formula answer clinical priority needs for effective control of blood sugar. for patients suffering from diabetes or being at risk of metabolic disorders, where blood sugar control is on the topline scale of integral health.
- Doctors underline evidence-based practice of clinical nutrition. They underline with different nutritional powders supported by research and randomized controlled trials in order to offer this type of nutrition to patients. This approach ensures that the recommended powders achieve more than just the supplementation needs of patients but have a value-added impact on the overall health outcomes. Healthcare providers strive to promote recovery, manage long-term disease states, and optimize quality of life using customized nutrition strategies rooted in the best available evidence-based recommendations. The results of the research are quite informative for manufacturers of therapeutic nutritional powders; this guidance is critical in formulating their products. By meeting doctors' preferences for high PDCAAS scores, sufficient protein levels, specific amino acid profiles, sugar-free formulas, and low glycaemic indices, manufacturers can modify products to meet clinical needs. Emphasis on such properties will ensure that manufacturers meet physicians with nutritional powder product offerings expected to produce the health benefits desired.

- It also gives a better definition of the interplay role between nutritional composition, clinical decision-making, and the final outcome of the patient in clinical nutrition; these are the grounds that could be used for future research in advancing dietary recommendations, further evaluation of the long-term effects of therapeutic nutritional interventions, and access to newer ways of improving patient nutrition.
- Keeping further research and deepening our realization of the factors that are still influencing physicians' decisions when prescribing clinical nutrition—by their serious consideration in practice—is keeping open the possibility of guiding improved care plans by optimizing recovery after illness or injury and maximally promoting health for large numbers. The research identified several important determinants for doctor decisions in prescribing nutritional supplements: This will impact medical practice and the development of new products. According to this insight, positive interaction among health professionals and the company would be tantamount to improved patient care and outcome. This would further promote experimental health and well-being in clinical settings and study projects. From the research, specific insights into drivers that predominantly influenced the decisions of doctors in the prescription of nutritional supplements were made known. This has implications for both the practice of medicine and the development of new products. By using this information, health professionals and businesses can make strides toward bettering care for patients and outcomes, ultimately creating a base for healthier and more fit consumers for everyday life and research programs.

REFERENCES

1. https://etd.ohiolink.edu/acprod/odb_etd/etd/r/1501/10?clear=10&p10_accession_num=kent1532083809853366
2. <https://aacrjournals.org/cebp/article/16/4/829/277105/Clinical-and-Biological-Activity-of-Soy-Protein>
3. <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1745-459X.2008.00158.x>
4. <https://digitalcommons.usf.edu/etd/1705/>
5. <https://www.sciencedirect.com/science/article/pii/S0022030220308225>
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