

The Challenges Involved with Nutritional Assessment in Cirrhosis

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Abstract

Malnutrition and nutrition deficiencies can occur within patients due to cirrhosis but these conditions need to be identified and addressed since they can worsen the prognosis of the condition. Hence, the primary goal of this study involves the identification and description of the challenges involved with the nutritional assessment of cirrhosis. This article has also discussed the recent developments or advancements that have been made in the evaluation of patients with the condition. Peer-reviewed journals and articles that were published in the last five years have been used to achieve the stated goal. Nutritional assessment has been found to be challenging since a large number of factors interfere with the same. However, there have been significant developments in assessment methods in recent years which are going to gain relevance in clinical practice.

Keywords: Micronutrients, Macronutrients, Malnutrition

1. Introduction

Cirrhosis is a serious disease of the liver caused by drinking more alcohol on a daily basis among many other things. A variety of causes are available to scarring and liver failure for chronic liver damage. Chronic alcohol and Hepatitis abuse are essential causes of this liver failure (Subramaniyan *et al.* 2021). Macro and micronutrient deficiencies are associated with nutritional status in patients. The cause of malnutrition and nutritional deficiencies is Cirrhosis. Hence these conditions have to be considered and identified properly with help of the prognosis of Cirrhosis. This particular disease affects the liver of a person effectively. Malnutrition, and nutrition deficiencies create a negative impact on the health condition of a person. Recent advancements in laboratory, clinical and instrumental tools in the evaluation of malnutrition patients with different types of liver diseases (Wang *et al.* 2022). Malnutrition and liver dysfunction are commonly observed in patients with chronic liver disease. With the current surge in liver diseases, prompt nutritional planning will ensure the well-being of patients during the waiting period and will improve the clinical outcomes following liver transplantation. The impact of immunonutrition on ESLD patients awaiting LT compared to supervised diet advice did not significantly improve liver function. The liver disease itself profoundly affects the level of nutrition; hence, nutritional assessment and early nutritional interventions can be instituted to improve clinical outcomes (Beevi & Pottakkat, 2023).

The evaluation of body composition is included in the most promising tools for nutritional assessment in Cirrhosis. Bioelectrical impedance analysis is maintained with help of different tools used in the nutritional assessment of Cirrhosis (Player *et al.* 2019). Clinical expertise has a responsibility to maintain the usage of all tools and machines successfully for providing better treatments. Sometimes attitudes and behaviours of addicted people are effectively bad. For this reason, doctors and nurses face several types of issues in controlling all addicted people successfully. In the initial stage, patients face several types of issues such as: fatigue, weight loss and weaknesses in their daily life. For this reason, these individuals are not capable enough to maintain a healthy and safe lifestyle. Computed

tomography transverse images are gained with help of this particular disease for a person (Shen, Zhao & Xing, 2019).

2. Aim of the Article

This study aims to interpret the challenges involved with nutritional assessment in cirrhosis. Malnutrition and nutrition deficiencies are essential factors for this particular disease.

The objectives of this particular study are

- To understand the challenges for nutritional assessment in Cirrhosis.
- To identify the development of nutritional assessment with Cirrhosis.
- To evaluate the best treatment process for this particular disease.
- To impact factors affecting nutritional status with Cirrhosis.

3. Material and Methods

Specific processes and techniques are used to select, identify, and analyse the information related to the proposed subject matter. In a research paper, an individual gets an opportunity to evaluate the validity and reliability of a study successfully. Philosophical discussion of associated background assumptions is managed with the help of materials and methods (Moon *et al.* 2019). Different types of approaches, designs and philosophies are available to finish a research work within a given deadline. Data collection process plays an essential role to collect various kinds of existing data related to this particular topic. In this study, an inductive research approach is used by a researcher here. A researcher can use a set of observations for a particular study with help of an inductive approach. Inductive research approach is effectively useful for each and every research work. This particular approach mainly focuses on three stages such as: observations, patterns, and developing a theory (Varpio *et al.* 2020). This approach is applicable to this study as the necessity of theory tends to be zero for this particular paper.

Research design helps a researcher to maintain a smooth process of research work. Different types of research designs are available such as: qualitative and quantitative research designs. A researcher uses qualitative research design to gather deeper insights into real-world problems. Qualitative research design follows a linear way of research work by which everyone can easily understand the right process of work (de Villiers, Farooq & Molinari, 2022). The basic concepts, terminology, applications, and definitions of research work are maintained properly in this qualitative research design. Qualitative research design is helpful for every researcher to maintain the authenticity of this particular work. Research philosophy is beneficial for a researcher to achieve research objectives properly for this particular study (Abu-Alhaija, 2019). Interpretivism research philosophy is maintained by a researcher to gain the purpose and importance of this study. Subjective, multiple and socially constructed assumptions are gained by a researcher with help of interpretivism research philosophy.

Secondary sources has been used for this article here to collect existing data related to this paper. Every work needs more money and time for finishing work within a given deadline. Hence secondary data collection process helps a researcher to save money and time. Online articles, peer-reviewed journals, books and websites are available to collect various kinds of existing data (Govaerts *et al.* 2021). For this reason, authenticity of this research work maintains properly by collecting secondary data from various types of sources. Secondary data make a research work more accessible for future research work about this same topic.

4. Results

4.1 Factors Affecting Nutritional assessment of patients in Cirrhosis

As malnutrition is a challenging task in the management of chronic liver disease patients awaiting liver transplant and sarcopenia can occur due to severe malnutrition. One study in India reported the incidence of sarcopenia among these patients as less (Beevi *et al.* 2022). Factors play an essential role to affect the nutritional status of an individual. Several types of factors are available to perform a comprehensive nutritional assessment. These factors are categorized into three segments such as: psychological factors, physiological factors, and pathological factors. These factors are critically discussed below:



Figure 1: Different Factors Affecting Nutritional assessment
(Source: Self-developed)

Psychological factors

Nutritional intake can be affected by cultural norms, religious beliefs, socio-economic conditions, natural and man-made calamities. Different people suffer from undernutrition in daily life. For this reason, these individuals always suffer from different types of liver problems. Undernutrition plays an essential role in war zones, refugee camps, impoverished areas, and famine-stricken (Livi-Bacci, 2021). Overnutrition is mainly observed in high earners groups in the global market due to access to resources. The relationship between socio-economic data and obesity is effectively complex to maintain nutritional assessment of patients with Cirrhosis (Hsu & Kao, 2022). One of the most important outcomes of lower socioeconomic status is undernutrition. For this reason, these individuals are susceptible to developing obesity in their daily life. This obesity mainly happens due to a lack of fresh foods, and a lack of nutrition-based foods.

Malnutrition is a big issue for these particular psychological factors. In case an individual may not be able to get pepper foods and nutrition on daily basis, this person suffers from malnutrition and nutrition deficiencies respectively. Mental illness, unhealthy diet, and eating disorders create a negative impact on malnutrition (Darukhanavala *et al.* 2021). Nutrition deficiencies and nutritional status are also hampered due to these particular factors. Substance use and alcohol are major factors for malnutrition. In case a person takes alcohol on a daily basis, macronutrient and micronutrient metabolism are affected due to this. Multi-organ tissue injury is happened due to excessive alcohol consumption (Rapkiewicz *et al.* 2020). Food habits, the mental and health status of a person are affected due to substance use disorders.

Physiological factors

Growth, age, sex, lactation and pregnancy are essential factors for these physiological factors. These factors mainly affect nutritional needs while performing a nutritional assessment. For this reason, a person can easily get relief from nutrition deficiencies and malnutrition successfully. For a child nutritional requirement is effectively high to maintain a healthy lifestyle on a daily basis. A male and a female child need the same amount of nutrition in early lifestyle. In adolescence, a male person needs more nutrition to intake for maintaining a healthy lifestyle. For female personals, nutrition, and caloric needs are effectively high at the time of pregnancy and lactation (Sharma *et al.* 2020). A healthy and balanced diet is maintained by each and every person to maintain a healthy lifestyle. A pregnant mother needs additional supplementation of micro nutrition. Different types of micronutrition are available such as: folic acid, iron, vitamin D and calcium.

Pregnancy at the time of maternal age is also affected by this particular factor in the global market. In recent days, pregnant women die of a lack of nutrition. More nutrition and carbohydrates are needed for a maternal age pregnant woman. Physical exercise plays an essential role to fulfil macronutrient nutrition requirements (Steffl *et*

al. 2019). Carbohydrates, protein and fats are included in this macronutrient nutrition. Active lifestyle personals need higher nutritional needs than other individuals. Sometimes an individual is not capable enough to intake the necessary nutrition due to lack of money. For this reason, these individuals suffer from malnutrition and nutrition deficiencies on a daily basis. These people are not capable enough to maintain a healthy and nutritious lifestyle on a daily basis.

Pathological factors

Pathological factors play an essential role while performing a nutritional assessment. Nutritional status is also affected with help of these pathological factors. Different types of factors are available in this pathological factor such as: medications, trauma, surgery, Malignancies, Infections, and Genetics (Gushiken *et al.* 2021). These factors are also essential for an individual to maintain a nutritional assessment successfully on a daily basis. Various effects of drugs can contribute to taking proper food and nutrition. Iron tablets cause gastrointestinal irritation and constipation, these side effects create a negative impact to maintain proper nutrition levels (Man *et al.* 2022). Some isoniazid drugs can lead to Vitamin B6 deficiency. For this reason, proper drugs must be taken by an individual after consulting with a nutritionist. As a result, people do not face malnutrition and nutrition-related efficiencies in daily life.

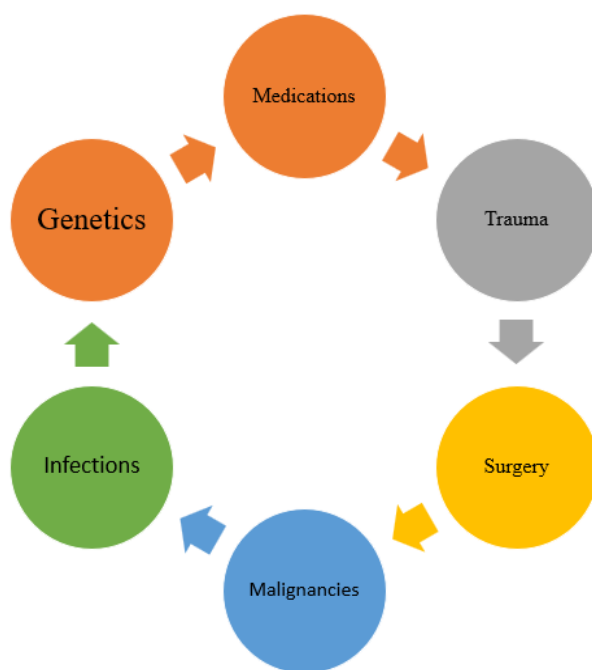


Figure 2: Types of pathological factor
(Source: Self-developed)

Malnutrition is multi-factorial in malignancies, by which anxiety, depression, and mental stress of a person are managed properly with help of this factor. The effectiveness of therapy is inhibited with help of this malnutrition (Muzi-Filho *et al.* 2020). This malnutrition also maintains the prognosis of a disease. Surgery always creates a negative impact on each and every person's life. Risk of complications is enhanced after surgery. A high nutrition level is required after surgery. Hence most of people are not capable enough to maintain proper nutrition levels. These individuals mainly suffer from malnutrition and nutrition deficiencies on a daily basis. High protein and carbohydrates are needed for each and every person before and after the surgery (Frikke-Schmidt *et al.* 2019). In case a person follows this process significantly, this individual does not suffer from malnutrition. Sometimes a person suffers from nutritional deficiencies genetically. Genetic predisposition is maintained properly with help of a proper diet chart and physical activity.

4.2 Challenges for nutritional assessment in Cirrhosis

Anthropometry is an immensely challenging component of identifying nutrition deficiencies within a person's body. Traditional measures of nutritional status are hampered due to lack of a proper treatment process for liver disease (Puri *et al.* 2021). A Hepatologist is not capable enough to identify malnutrition and nutrition efficiencies within a liver patient. A nutrition-focused physical examination (NFPE) is needed for a person to maintain nutritional deficiencies. Hence this test needs more money, for this reason, everyone is not capable enough to provide this particular report. A sensitive process for assessing nutritional assessments is NEPE (Zheng *et al.* 2021). Subjective global assessment is needed for a person to understand malnutrition and nutrition deficiencies. This process is quite tough for an individual to complete. For this reason, a Hepatologist may not be able to identify nutritional assessment in Cirrhosis. Clinical history is needed for a Hepatologist to identify specific symptoms related to Cirrhosis. Further, Nutritional level monitoring is challenging in patients with ESLD due to fluid retention, and SGA will be a better nutritional screening tool for nutritional assessment (Beevi & Pottakkat, 2022).

For this reason, physical examination and body mass index (BMI) is needed for an individual to provide better treatments for their patients. A healthy and proper diet chart is maintained by liver disease patients (Younossi, Corey & Lim, 2021). Hence an individual does not follow this process successfully. For this reason, a Hepatologist face difficulties to find nutritional deficiencies. Sometimes a Hepatologist is not capable enough to use global assessment tools for clinical purposes. An individual is not capable enough to maintain a proper nutrition plan on a daily basis. This creates a negative impact on the health and mental conditions of a person. Subjective global assessment and Royal Free Hospital Subjective global assessment are included in global assessment tools in the market. A significant indicator of malnutrition is overall body muscle mass and subcutaneous fat (Prado *et al.* 2023). Identification of those factors is quite tough for a Hepatologist to provide better treatments. In case a Hepatologist may not be able to maintain a proper treatment process, people always suffer from this particular disease on a daily basis.

4.3 Recent Development in nutritional assessment of patients with Cirrhosis

Food and nutrition are basic essential needs for humans on a daily basis. Nutrition plays an indispensable role in the healthcare delivery system. Clinical outcomes are affected with help of the nutritional status of individuals. Essential nutrition is divided into six categories such as: water, vitamins, proteins, lipids, minerals, and carbohydrates (De & De, 2019). Age, sex, and activity depend upon nutritional requirements of healthy individuals. Different types of modern treatment processes and strategies are implemented by the Institutes of Medicine (IMO) under the national academy of science. The Royal Free Hospital-Nutrition Prioritizing Tool (RFH-NPT) is used by a Hepatologist in recent days to provide better treatments and services for patients effectively. Different types of risk screening tools help to measure metabolism and nutritional parameters effectively (Chawla *et al.* 2020). The traditional methods of nutritional assessment and sarcopenia have been widely subjective, while the objective measurement techniques, especially using computed tomography (CT scan) has been in vogue lately. Imaging of lean body mass (LBM), skeletal muscle index, anthropometric measurements such as mid upper arm circumference (MUAC) and muscle strength measurements together mark the gold standard for assessing sarcopenia (Safeena Beevi, 2023). This development creates a positive impact on the health sector and clinical practices. The most recent development tool for maintaining malnutrition is MNA. This MNA is known as an assessment tool and a nutrition screening tool. Further, Immunonutrient therapy was found to be beneficial in augmenting the nutritional status of liver disease patients during the liver transplant waiting period (Beevi *et al.* 2023). However, Finding of an ideal technique of nutritional evaluation in cirrhotics is challenging due to several conventionally used parameters, Still SGA and RFH-NPT are easy to use in outpatient liver clinic setting for nutritional assessment (Beevi Hasan, 2023).

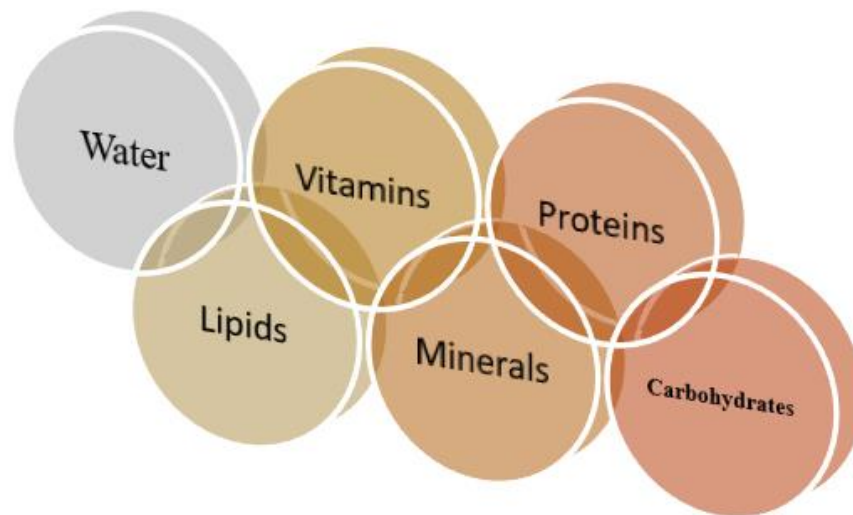


Figure 3: Types of Nutrition
(Source: Self-developed)

This particular tool is helpful to identify patients aged 65 and above who suffer from malnutrition and nutrition deficiencies. The most validated nutrition screening tool is MNA in recent days. Different types of nutrition assessments are available such as: “Anthropometric”, “biochemical”, “clinical”, and “dietary” (Cadena-López *et al.* 2022). These factors are helpful for each and every patient to maintain a healthy and safe lifestyle. An essential nutrition assessment tool is Subjective Global Assessment (SGA). This particular tool is helpful to evaluate overall patient history and physical examination. A structured clinical parameter is SGA to diagnose malnutrition among all patients. The nutritional and functional status of patients is defined with help of SGA (Neoh *et al.* 2020). This particular tool is helpful to evaluate the nutritional risk of infections among surgical patients. SGA plays an essential role to provide a proper diagnosis of malnutrition and nutrition deficiencies in the health sector.

5. Discussion

Different types of factors are available in clinical practices to identify malnutrition and nutrition assessment of a person. Psychological factors, physiological factors, and pathological factors are available to maintain proper nutrition assessment in the health sector. Physiological factors play an essential role to understand the inside process of the body. A proper and healthy diet is maintained by liver patients to enhance nutritional requirements. The nutritional requirement is needed for each and every person in clinical requirements. Male and female children need the same amount of nutrition. Hence an adult male person requires more nutrition to intake for maintaining a healthy lifestyle. A pregnant woman always needs more nutrition and additional supplements of macro and micronutrients. Iron, calcium, folic acid, protein, carbohydrates and fats are a necessary element for an individual to maintain a healthy diet. A healthy and proper diet chart must be maintained by a pregnant and lactating woman. Physical activity and daily exercise are needed for each and every one to maintain a safe lifestyle.

Genetics, infections, medications, surgery and genetics are included in pathological factors within a health sector. For this reason, these factors play an essential role to provide better treatments. Sometimes a person suffers from malnutrition and nutrition deficiency with help of genetic problems. A high-energy diet and physical activity help a person to maintain pathological factors in a significant way. Psychological factors mainly include religious beliefs, cultural norms, and socioeconomic conditions. Sometimes a person suffers from nutrition deficiency for a lack of food, and a lack of a healthy diet. Mental and health factors of a person are hampered due to this particular factor in the clinical sector. An unhealthy diet and eating disorder create a negative impact on the healthy practices of a person.

The main challenge for a Hepatologist is a lack of skills and experience in the market. Different types of modern machines and technologies are used by this Hepatologist in the health sector to provide better treatments. Patients get an opportunity to get relief from malnutrition and nutrition deficiency in clinical practices. Attitudes and

behaviours of patients are changed with help of NEPE in the market. Patients feel vomiting, and nausea due to Cirrhosis. This particular disease happens due to consuming a lot amount of alcohol on a daily basis. Malnutrition is a big challenge in recovering malnutrition effectively. Body mass index (BMI) is maintained by this particular factor in the health sector.

The most important tool for Cirrhosis is MNA, by which malnutrition and nutrition deficiencies are measured successfully. Subjective global assessment tool plays an essential role to provide better treatments significantly. IMO always tries to maintain a modern process of treatments, by which an individual can get relief from malnutrition and nutrition deficiencies. The Royal Free Hospital-Nutrition Prioritizing Tool (RFH-NPT) helps to monitor risk factors of this particular disease in the clinical practices. Every person always tries to maintain a healthy and safe lifestyle by maintaining physical activity and exercise.

6. Conclusion

Cirrhosis is a liver-based disease that happens to consume more amount of alcohol on a daily basis. Malnutrition is a big challenge for this particular disease. In recent days, every person suffers from nutrition deficiency for a lack of proper diet and lack of physical activity on a daily basis. Physiological, pathological, and psychosocial factors are available for maintaining nutritional status effectively in the health sector. Every person has a responsibility to maintain a healthy and safe lifestyle to get relief from malnutrition. This malnutrition creates a negative impact on the health and mental conditions of a person.

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