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Role of Physiotherapy in Metabolic Health and Liver Disease - A Public Health Strategy to a Physiotherapy Field

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Abstract: ***Metaolic and Liver diseases are now-a-days common in our country, due to lifestyles changes, dietary habits and metabolic disorders. Among these, metabolic dysfunction associated steatotic liver disease has drawn growing attention, especially in individuals presenting with obesity, diabetes, and sedentary habits. The discussion brings into focus how such conditions often remain unnoticed until patients seek care for unrelated issues such as musculoskeletal discomfort or weight concerns. It reflects on the expanding scope of physiotherapy, which, though traditionally linked with rehabilitation. Exercise based interventions, both aerobic and resistance, appear to offer measurable benefits in reducing liver fat and improving overall fitness, yet their structured use in hepatology still feels underdeveloped in many clinical settings. The role of physiotherapists extends beyond exercise prescription, reaching into patient education, lifestyle guidance, and long-term behavioural change. In India, it has to be looked into a very serious issues to prevent the non-alcholic fatty liver diseases and hepato-carcinoma. When viewed through a broader lens, coordinated efforts involving screening, awareness programmes, and multidisciplinary care seem necessary to manage this growing burden. Strengthening clinical guidelines and integrating physiotherapy within public health strategies may contribute to better outcomes and improved quality of life for affected individuals.***

Keywords: liver disease, fatty liver, physiotherapy, lifestyle changes, metabolic health

1. Introduction

Liver diseases is nothing but a liver's physiological function was compromised due to any viral infections, alcohol and drug abuse, obesity and genetic conditions. In general, it is classified as hepatitis, alcoholic liver diseases and Non Alcoholic Fatty Liver Diseases (NAFLD), Cirrhosis, and Liver carcinoma. Now a days, it is common to observe that apart from general medical camp or health awareness to our public, it is focused on each organs and its disease conditions (eg.) cardiac health, bone and joint health, mental health, etc. Similarly it is also addressed to the pubic, about the hepatic health to keep our liver healthy. The prevalent of liver diseases was increasing worldwide due to many factors like lifestyles, alcohol consumption, obesity.

Physiotherapy services plays a major role in various rehabilitation setups like neuro-musculoskeletal, cardiopulmonary, or renal transplants surgeries etc., but most of them doesn't aware about the role of metabolic health and liver diseases. This article highlights about NAFL and the role physiotherapy the field of hepatology (Liver diseases). This an emerging filed in physiotherapy profession. So, as a physiotherapist we have a know about at this scenario.

2. Metabolic dysfunction-Associated Steatotic Liver Disease:

Definition

It is condition in which fat stores in the liver apart from the normal metabolism. It has two types namely Non- Alcoholic Fatty Liver (NAFL) and Non- Alcoholic Steato Hepatitis (NASH). Let we mention here more about the commonly affected liver disease such NAFLD & NASH who came to physiotherapy department with musculoskeletal problems, or weight reduction and other comorbidities like obesity, type 2 diabetes mellitus etc. NAFLD is now re-named called as metabolic dysfunction associated steatotic disease (MASD).

Prevalence

NAFLD is a leading cause of chronic lever disease worldwide. The global prevalence has increased from 25.3 in1990-2006 to 38% in 2016-2019. According to a study conducted by Swuveeka Mitra et.al., Americans especially, South Americans & Brazil were the highest among all races compared to Europeans, Africans and Asians.[1] This has been emerged as a major public health issue in India a decade ago.

As per estimates, the prevalence in our country is as high as 9 % to 32 %. India is the first country incorporated NAFLD into an National Program for Prevention and Control of Cancer Diabetes and Cardiovascular Diseases and Stroke in 2021 and the framed guidelines were followed by the States and Union Territories with health and wellness centres.[2]

According to Prajakta Ankur Vagumekar et.al 2024, a study conducted at Urban Goa had the prevalence of 34.8% were affected by non alcholoic fatty liver disease with the grading of mild 57.5%, moderate 38.4% and 4.1% server. In this study, male (46.2%) was affected more than females (28%).[3] Another study done with 100 non alcholoic fatty liver disease patients at Puducherry region showed 40.2% in grade I, 20.8% in grade II and 0.5% in grade 3. In which, the 36.4% of people were under normal weight and 63.6% people were overweight, in the age group between 19 to 35 years.[4] A recent cross-sectional study involved 345 IT employees in Hyderabad, shown that 84.06% of employees were had increased liver fat accumulation.[5]

Causes & various risk factors:

- Obesity & Sedentary life style
- Hyperlipidemia, & Metabolic disorders like hypothyroidsm
- Diabetes mellitus and insulin resistance individuals
- Genetic factors
- PCOD
- Sleep Apnea
- Unhealthy dietary habits like refined carbohydrates, processed foods & excess cholesterol diets

Symptoms:

- Abdominal pain
- Nausea
- Appetite loss/ weight loss
- Yellow tinges in eye & skin
- Swollen legs & abdomen
- Excessive night sweats & itch skin
- Muscle atrophy
- Mental confusion & sleep disturbances

Investigations:

- Liver function tests,
- Blood biomarkers likeasparate amiotransferase- platelet ratio index
- Imaging techniques like Ultrasonography, Computed Tomography, MRI and transient elastography methods
- Liver Biopsies

3. Treatment Methods

The first method of treatment of NAFLD is lifestyle modifications including diet and exercises. Many studies indicated that aerobic exercises and resistance training exercises had shown improvement in treating the liver and metabolic diseases.

Aerobic exercises:

- *Jin et.al* - Thrice weekly for at-least 20 minutes per session and diet recommendations of 25 cal/kg X ideal body weight(kg) showed good results in liver donors.
- *Sun et.al* - Walking, jogging, stair climb + 4 METs.h/week
- Sullivan et.al - Aerobic exercises for 30 to 60 minutes sessions for 5 times weekly showed improvement in NAFLD patients
- *Oh et.al* -- Walking, Jogging for 90 minutes thrice weekly at reaching maximum heart rate more than 40% reduces the visceral adiposity and improves cardiovascular fitness.

Resistance training:

- *Halls worth et.al* -- Eight weeks of structured exercise programs for 60 minutes vigorously targeting various muscle groups reduces hepatic steatosis and improves cardiovascular fitness.
- Oh et.al -- Varying degrees of intensity in exercise program reduces anti-oxidative anti-inflammatory benefits of NAFLD patients, when the workout for more than250 minutes/week.

4. Role of Physiotherapy in hepatology

1) Prescribing exercises for weight loss-

Sedhunivas., et.al.2021, conduced a cross-sectional online survey on awareness among the physiotherapist, which indicates that a awareness about NAFLD and also develop a structured exercise protocol for NAFLD Indian population to be implemented to the physiotherapy community. This study also recommends exercise protocols for 3 days/weeks for Indian population in the form of aerobic exercises (60-80% of THR , duration of 30-40 minutes) and resistance exercises(1-RM, 10 reps x 3sets) probably more of track walking and free weights.[6] To engage the client for minimum of 150 to 300 minutes of moderate physical activity per week or 75 to 150 minutes of vigorous physical activity per week, but it is recommended 200 to 300 minutes of moderate to vigorous physical activity per week to achieve sustainable weight loss in the long term.

2) Providing health education-

Physiotherapists as members of the health promoter in the community, have to actively play a role in health promotion, wellness, fitness, and the prevention and management of liver diseases. By educating the clients, about weight loss and assessing and designing exercise programs in preventing metabolic dysfunctions, obesity and other non-communicable diseases like cardiovascular diseases, stroke and cancers.[7] Recently physiotherapy have various level of prevention from primordial to quaternary (disability level) i.e, from emergency to till rehabilitation, so it has to be advocated from community level awareness about exercises and proper food habits.

3) To formulate national guidelines and develop clinical standards for practice-

Our Indian government had implemented various programmes to control the major health related issues faced by India. Recently world liver day was observed on 19th April 2025, by the Institute of Liver and Biliary diseases and inaugurated the India's first Integrated Liver Habilitation (LiHAB) Centre at Delhi, to provide liver health care by early screening, lifestyle modification, counselling, de-addication and creating awareness on organ donation to our public.[8]

4) To improve the quality of life and better prognosis

Physical and psychological problems to be addressed by the multi-disciplinary approach in the hospital to tackle the fatigue, mood disturbances, will improve the the quality of life. Periodical health checkups and counselling to patient and their family members has to be recorded for future directions.

5) Peer group support to do research in hepatology field

Various health care professionals to be involved in the inter-disciplinary research in the field of hepatology and metabolic disorders.

Lifestyle modifications such as motivation, access to gym facilities, healthy food and physical limitation should be considered by the physicians and first contact practitioners. Muti-disciplinary approaches like physical activity, nutrition and behavioral modification to prevent and control this diverse problem in our country.

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