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Point of View

Healthy Liver for Healthier Future: Addressing Liver Disease through Prevention and Innovative Care Models

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ABSTRACT

Liver diseases are a major global health concern, largely driven by lifestyle factors, with non-alcoholic fatty liver disease, viral hepatitis and alcohol-related liver damage being significant contributors. The rise in liver diseases underscores the need for early detection, prevention and comprehensive management strategies. Prevention efforts should focus on promoting healthy lifestyles, including a balanced diet, physical activity and avoiding alcohol. Public health initiatives such as the Swachh Bharat Mission, safe drinking water programmes and vaccination drives play a crucial role in reducing the burden of liver disease. Technological advancements, such as artificial intelligence-driven screening tools, stem cell therapy and gut microbiota research, offer promising avenues for future treatment. In addition, health education, behaviour change communication and community participation are vital for raising awareness and preventing the spread of infectious hepatitis. A multilevel approach combining prevention, early diagnosis and innovative treatments is essential for safeguarding liver health and ensuring a healthier future for all.

Keywords: Comprehensive approach, Early diagnosis, Liver health, Prevention of liver disease

INTRODUCTION

'Be Vigilant, Do Regular Liver Check-Ups, Fatty Liver Can Affect Anyone' is the message for the mankind on the World Liver Day 2023. Liver diseases remain one of the most common causes of mortality and morbidity. Ninety percent of the liver disease is lifestyle related and nearly 50% patients are only diagnosed with liver disease following an emergency admission to hospital.

PROBLEM STATEMENT

A vast spectrum of infectious and non-infectious diseases contributes to the growing burden of threatened liver health. Their root cause analysis points to unhealthy lifestyle and unsafe living conditions. Adding to these main factors are inadequate immunisation, occupational hazards in healthcare, unhealthy sexual practices and ultimately lack of awareness.

Viral hepatitis is an important cause of acute and chronic liver diseases; it poses a severe threat to individual health and national healthcare system. There are wide variations in the prevalence of hepatitis. Hepatitis A was found to range from 2.1% to 52.5%. Hepatitis B was found in a wide range of individuals, ranging from 0.87% to 21.4% of the population. Hepatitis C was found to range from 0.57% to 53.7%. Many of the children were affected by hepatitis A.[1]

Non-alcoholic fatty liver disease (NAFLD) is a growing menace, whose enormity has not been adequately fathomed. Driven by the modern pandemic of obesity and diabetes, the global prevalence of NAFLD has increased from 25% to 30% between 2015 and 2023.[2] The burden of spectrum of liver disease due to chronic alcohol consumption is alarming. Alcohol kills 2.6 lakh Indians annually. The problem has roots in the human psychology and economy.

Solutions for this epidemic must be focused on both population and patient-level interventions.

Deviations in lifestyle are at the core of all these conditions, although genetic and environmental factors also contribute. We therefore need to have an all-inclusive 'Integral' approach to make our liver healthy. For that, we need to improve the understanding of the diseases, human behaviours, facilitate patient–physician communication and strengthen public health interventions in prevention and management of disease.

THE ROADMAP

Solution to the problem of such diversity and magnitude requires multilevel and multidimensional approach. We need

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to incorporate knowledge, resources, appropriate technology, inclusive national programmes for liver disease, educational models like behaviour change communication (BCC), Information Education communication (IEC), research, innovations and community participation. And finally, the use of care models using artificial intelligence (AI) can be developed for screening of large population and timely treatment of individuals.

PREVENTIVE APPROACHES

Whatever be the aetiology, investing in primordial prevention pays the most. Encouraging everyone to eat healthy foods, vegetables and fibre is very important. Avoidance of alcohol consumption and unhygienic food is crucial. Incorporation of physical activities, pranayama, yogasana and socio-religio-spiritual activities helps in increasing inner resilience and safeguard against some of the common ailments which cause lifestyle-related liver diseases. Here, the BCC model comes into play. Hence, for providing healthy insights about lifestyle parents need to follow a healthy lifestyle. Thus, indirectly, it also becomes a primary prevention approach for the population at risk. This helps to stop the onset of progression of metabolic syndrome, hypertension and other non-communicable diseases. Health education to the community is important for the prevention of infectious hepatitis. For that, IEC and BCC models are helpful. The awareness regarding the diseases spreading from unhygienic food and water and ways to make the water pathogen free on a homely basis can be given through grassroots workers. There is also a need of providing safe water and managing sewage lines properly. Strong leadership and governance are quintessential for same and can play a defining role in preventing water-borne hepatitis. As a vaccine for hepatitis B is a birth dose, the social workers should look for any non-institutional birth and must bring that child to the vaccination centre.

Hepatitis B and C are blood–borne diseases. Stringent measures to stop the blood–borne transmission remain one of the most standard operating procedures for blood bank. Physical exercise intervenes at multiple levels in the pathogenic pathways of NAFLD and brings about 30.2% reduction in liver fat.[3] Needle stick injury is an important cause for parenterally transmitting hepatitis B and C. All health care professionals must be immunised against hepatitis B. Although utmost care should be taken to avoid needle stick injury, in any unfortunate case, the person must adhere to the post-exposure prophylaxis protocol.

The WHO has emphasised the following agendas for hepatitis elimination: (i) Raising awareness, promote partnerships and mobilise resources, (ii) evidence-based policy, (iii) equitable distribution of health care, (iv) prevent transmission and (v) scale-up screening, care and treatment services.

Government initiatives for prevention and control of viral hepatitis include[4] (i) Swachh Bharat Mission, (ii) safe drinking water and sanitation programme, (iii) provision of sanitary toilet to every household, (iv) biomedical waste management and (v) hygiene and sanitation control, immunisation, injection safety and infection control, safety of blood and blood products.

Alcohol consumption is a major cause of liver disease, often stemming from various factors that disrupt an individual's harmony. Addressing this issue requires a comprehensive approach. The first step is cultivating self-will to abstain from alcohol, supported by family, society and, if necessary, access to alcoholics anonymous groups. Psychologists can serve as friends, philosophers and guides in this journey. Strict regulations on the sale of alcohol and its products are essential. However, addressing alcoholic liver disease requires a holistic perspective – forcefully stopping consumption is only one aspect of prevention. Efforts must also focus on creating employment opportunities, improving living standards, raising awareness about nutrition and health and providing robust family support.

CURATIVE APPROACHES

Early diagnosis and treatment are the pillars of primary prevention. Utilising appropriate technology can aid in preventing further progression of the disease. As doctors, we must stay informed about the best possible treatments available across various healthcare systems. A systematic review concludes that compounds from herbal medicines and plants could benefit alcoholic liver disease.[5]

RECENT ADVANCES AND FUTURE DIRECTIONS

The technological advances offer new avenues for safeguarding health of liver. While cloning of hepatitis C virus, Nobel laureate Michael Houghton said that 'it was a testament to the power of the biotechnology industry'.

The understanding of the gut microbiota-liver axis can provide a complete picture of such relationships and novel therapies. Further studies are needed, particularly metagenomic and metabolomic research, to provide detailed descriptive data on the alterations in gut microbes and their metabolites across different clinical scenarios of liver disease. Clinical studies will be required in various clinical scenarios to modulate the microbiota using different strategies, such as prebiotics, novel probiotics or antibiotics.[6] The role of antioxidants such as curcumin, coffee, green tea and silymarin in liver diseases has shown some positive outcomes; however, it continues to be an area of research.[7] A systematic review on stem cell therapy suggests that single injection administration and mesenchymal stem cells (MSC) are optimal for improving liver health. The development of guidelines and protocols for MSC-based therapy in future clinical trials will promote the safe and effective use of MSCs as a treatment for patients with liver disease.[8] Recent

studies emphasise nutrition therapy in various stages of liver diseases, with several randomised control trials currently in progress.[9-11] A recent article established qualitative associations between ocular features and major hepatobiliary diseases, providing a convenient method for hepatobiliary disease screening and identification.[12] Identifying 'at-risk' patients using digital search tools and developing care paradigms for high-risk individuals are amongst the most encouraging developments.

The integration of telemedicine and remote monitoring is revolutionising the management of chronic liver diseases by improving accessibility and continuity of care through remote patient visits, automated messages and monitoring tools.[13,14] Decision support tools, such as alerts, reminders and dashboards, are enhancing clinician decision-making by ensuring evidence-based, timely interventions. Self-management education, using tailored educational materials, motivational interviewing and self-monitoring tools, empowers patients and caregivers to improve compliance and health outcomes. The redesign of healthcare delivery systems, including day hospitals and rapid outpatient clinics, streamlines care for complex liver conditions like cirrhosis. In addition, AI and digital tools are being harnessed to identify at-risk patients, optimise screening and develop personalised care strategies for high-risk populations.[15,16]

CONCLUSION

Liver diseases pose a significant global health challenge, requiring a multidimensional approach. Prevention through lifestyle changes, immunisation and health education is vital. Technological advances such as AI and stem cell therapy offer promising solutions. Collaborative efforts involving governments, healthcare providers and communities are essential for early diagnosis, effective management and improved public health outcomes.

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