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Knowledge and Attitude Regarding Non-Alcoholic Fatty Liver Disease (NAFLD) among Medical Students and Hospital Staff in Tertiary Care Hospitals of India

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ABSTRACT

Background: Non-Alcoholic Fatty Liver Disease (NAFLD) is emerging as a major public health concern in India, driven by lifestyle changes, obesity, and metabolic syndrome. Awareness among healthcare providers is crucial for early detection and prevention.

Objective: To assess the knowledge and attitude regarding NAFLD among medical students, dental students, and hospital staff in tertiary care hospitals of India.

Methods: A cross-sectional survey was conducted among 200 participants: 100 MBBS students/interns, 50 BDS students, and 50 hospital staff (nurses and technicians) across four tertiary care hospitals. A structured, validated questionnaire was used to collect data on knowledge and attitudes toward NAFLD.

Results: MBBS students demonstrated higher knowledge scores compared to BDS students and hospital staff. However, gaps in understanding risk factors, diagnostic modalities, and long-term complications were evident across all groups. Attitudes toward lifestyle modification and preventive strategies were positive, though practical application remained limited.

Conclusion: While awareness of NAFLD exists among healthcare trainees and staff, significant knowledge gaps persist. Targeted educational interventions are needed to strengthen early detection and prevention strategies.

Keywords: Non-Alcoholic Fatty Liver Disease (NAFLD) , medical students, nurses, technicians, medical students, dentistry students

1. INTRODUCTION

NAFLD is defined as hepatic steatosis in individuals without significant alcohol consumption. It is strongly associated with obesity, diabetes, dyslipidemia, and sedentary lifestyle. Globally, NAFLD prevalence is estimated at 25–30%, with India showing rising trends due to urbanization and dietary changes. Healthcare providers—including medical and dental students, nurses, and technicians—play a pivotal role in patient education and early detection. Assessing their knowledge and attitudes provides insights into preparedness for tackling NAFLD in clinical practice.

2. SPECIFIC OBJECTIVES

1. **To assess the level of knowledge** regarding NAFLD among MBBS students, BDS students, and hospital staff (nurses and technicians) in tertiary care hospitals.
2. **To evaluate attitudes** toward lifestyle modification, patient counseling, and preventive strategies related to NAFLD across the three participant groups.
3. **To compare knowledge scores** between MBBS students, BDS students, and hospital staff to identify gaps in understanding of NAFLD.
4. **To analyze the correlation** between knowledge and attitude scores to determine if higher awareness influences positive behavioral intent.
5. **To identify misconceptions** and knowledge deficits regarding NAFLD risk factors, diagnosis, and complications among healthcare trainees and staff.
6. **To explore perceptions** about the role of healthcare professionals in NAFLD prevention and management.
7. **To recommend educational interventions** for improving NAFLD awareness and attitude among medical and paramedical personnel.

3. METHODOLOGY

- **Study Design:** Cross-sectional descriptive study.
- **Setting:** Four tertiary care hospitals in India. Four tertiary-level hospitals in India ((National Institute of Medical Sciences Jaipur 303121, Jaipur, Rajasthan, India; Government Institute of Medical Sciences, Gautam Buddha Nagar 201310, Uttar Pradesh, India; Fortis Hospital, Malviya Nagar, Jaipur 302017, Rajasthan, India; Dental College and Hospital, Bagru, Jaipur, Rajasthan; Rajasthan College of Nursing, Bagru, Jaipur, Rajasthan).
- **Participants:**
  - 100 MBBS students and interns

- 50 BDS (dentistry) students
- 50 hospital staff (nurses and technicians)

Inclusion & Exclusion Criteria

Inclusion:

- MBBS students and interns (final year)
- BDS students (final year)
- Hospital staff (nurses, technicians) with ≥1 year of service
- Participants from 4 tertiary care hospitals in India

Exclusion:

- Students below final year
- Administrative staff not involved in patient care
- Participants unwilling to provide consent
- Individuals with prior diagnosis of NAFLD (to avoid bias in attitude responses)
- **Instrument:** A structured questionnaire with two sections:
  - **Knowledge:** Risk factors, clinical features, diagnostic tools, complications, and management.
  - **Attitude:** Perceptions toward lifestyle modification, patient counseling, and preventive strategies.
- **Validation:** Questionnaire validated by subject experts; pilot tested on 20 participants.
- **Data Analysis:** Responses scored and analyzed using descriptive statistics, chi-square tests, and ANOVA to compare groups.

Questionnaire (15 Likert-Scale Items)

Section A: Knowledge (7 items)

1. NAFLD is primarily associated with obesity and metabolic syndrome.
2. NAFLD can progress to cirrhosis and hepatocellular carcinoma.
3. Ultrasound is a reliable first-line diagnostic tool for NAFLD.
4. NAFLD is reversible with lifestyle modification.
5. NAFLD is distinct from alcoholic liver disease.
6. Insulin resistance is a major risk factor for NAFLD.
7. Pharmacological treatment alone is sufficient for NAFLD management.

Section B: Attitude (8 items)

8. Counseling patients on lifestyle modification is part of my professional responsibility.
9. NAFLD should be considered a public health priority in India.

10. Preventive strategies for NAFLD should be integrated into medical/dental curricula.
11. Hospital staff should receive regular training on NAFLD.
12. Patients with NAFLD should be routinely screened for cardiovascular risk.
13. I feel confident in educating patients about NAFLD.
14. Lifestyle modification is more effective than pharmacological therapy in NAFLD.
15. NAFLD awareness campaigns should be conducted regularly in hospitals.

Scale:

- Strongly Agree (5)
- Agree (4)
- Neutral (3)
- Disagree (2)
- Strongly Disagree (1)

4. RESULTS

Demographics

- Mean age: 23.4 years (students), 29.7 years (staff).
- Gender distribution: 55% female, 45% male.

Knowledge Scores

Group	Mean Knowledge Score (out of 20)	Key Gaps Identified
MBBS students	14.8	Limited awareness of advanced diagnostics (FibroScan, biopsy)
BDS students	11.2	Poor understanding of systemic complications (CVD, CKD)
Hospital staff	9.6	Misconceptions about alcohol as primary cause

Attitude Findings

- **Positive attitudes:**
  - 80% agreed lifestyle modification is essential.
  - 72% supported patient counseling as part of routine care.
- **Negative attitudes:**
  - 40% felt NAFLD is not a priority compared to infectious diseases.
  - 35% believed pharmacological treatment alone is sufficient.

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Visualizations

1. Bar Chart – Mean Knowledge Scores by Group

- MBBS: 14.8
- BDS: 11.2
- Staff: 9.6

2. Pie Chart – Attitude Toward Lifestyle Modification

- Strongly Agree: 45%
- Agree: 35%
- Neutral: 10%
- Disagree: 7%
- Strongly Disagree: 3%

3. Box Plot – Knowledge Score Distribution

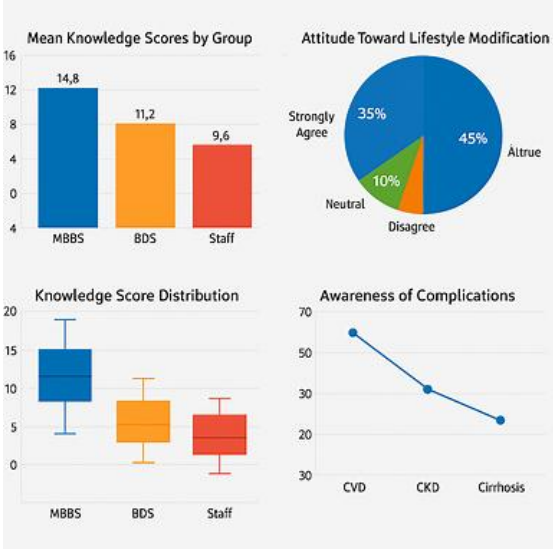
- MBBS: Higher median, narrower IQR
- BDS: Moderate median, wider spread
- Staff: Lower median, wide variability

4. Line Graph – Awareness of Complications (CVD, CKD, Cirrhosis)

- MBBS: 70%
- BDS: 50%
- Staff: 35%

5. Scatter Plot – Knowledge vs. Attitude Scores

- Positive correlation ($r \approx 0.62$) between knowledge and positive attitudes.



5. DISCUSSION

The study highlights moderate knowledge but positive attitudes toward NAFLD among healthcare trainees and staff. MBBS students showed relatively better understanding, reflecting curricular exposure. However, misconceptions among BDS students and hospital staff indicate the need for targeted training. The positive attitudes toward lifestyle modification are encouraging, but practical implementation requires structured educational programs, workshops, and integration into hospital protocols.

6. CONCLUSION

Knowledge and attitudes regarding NAFLD among medical students, dental students, and hospital staff in India are suboptimal. Strengthening curricula, conducting awareness campaigns, and integrating NAFLD education into hospital training modules are recommended to improve preparedness for this growing public health challenge.

7. RECOMMENDATIONS

- Incorporate NAFLD modules into MBBS and BDS curricula.
- Conduct regular CME sessions for hospital staff.
- Promote lifestyle counseling as part of routine patient care.

Limitations

- Cross-sectional design limits causal inference.
- Conducted in tertiary care hospitals only—may not represent community-level awareness.
- Self-reported responses subject to social desirability bias.
- Sample size relatively small compared to national prevalence.

Strengths

- First comparative study across MBBS, BDS, and hospital staff in India.
- Validated questionnaire ensures reliability.
- Multi-center design enhances generalizability.
- Provides actionable insights for curriculum and training reforms.

Suggestions

- Integrate NAFLD modules into undergraduate curricula.
- Conduct CME workshops for hospital staff.
- Launch hospital-based lifestyle modification clinics.
- Encourage interdisciplinary collaboration (medicine, dentistry, nursing).

- Promote nationwide awareness campaigns on NAFLD prevention.

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