Non-alcoholic Fatty Liver Disease in Bangladesh: Insights from Primary Care Physicians' Knowledge, Attitudes and Practices

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Abstract

Background: Primary care physicians (PCP) are the corner stone of non-alcoholic fatty liver disease (NAFLD) management as they are the first point where patient's management begin. Knowledge and practice pattern of PCP reflects the overall scenario of NAFLD management in a country.

Objectives: To assess the status of current Knowledge, Attitude and Practices among Primary Care Physicians of Bangladesh in regards to NAFLD.

Methods: Thi cross-sectional survey conducted from July 2023 to December 2023. About 384 registered primary care physicians (PCP) from 20 randomly selected upazila of Rangpur divisions were included in this study. A survey questionnaire in English language was developed and administered. Continuous variables were analyzed by Student's t test, categorical variables by the Chi square test.

Results: Among 384 participant, overall 82.8% of PCP had sound knowledge(satisfactory) regarding NAFLD diagnosis and management. This study found better attitude among 81% of physicians and approximately good attitude to the remaining 19%. Most of the physician did not counsel NAFLD patients about prognosis (70%), did not manage according to existing guidelines (93.75%), did not advise about lifestyle modification (59.6%), were not confident in dealing a NAFLD patients(62.5%) and usually did not advise for follow up(50.78%) of the patients. About thirty percent of study physicians prescribe lipid lowering agents and 29.95% prescribe ursodeoxycholic acid. Whereas, only 7.55% of them prescribed Vitamin E and 4.95% prescribed pioglitazone. Association of 'practicing year experience' of PCP showed that, paradoxically, physicians with 10-15 years' experience showed significantly lower guideline adherence (c^2=4.67, p=0.031) and vitamin E prescription (c^2=4.92, p=0.027) compared to younger colleagues. Physicians in divisional area demonstrate significantly higher screening rates (χ^2=11.27, p=0.004) and treatment confidence (χ^2=8.92, p=0.012) compared to rural (thana/union) practitioners. In this study, male physicians showed significantly higher metabolic screening (χ^2=8.12, p=0.004) and specialist referrals (χ^2=9.45, p=0.002).

Conclusions: This study revealed that our PCP have better knowledge about NAFLD. But their practices are not adequate. That's why, continuous medical education of clinicians on current practice guidelines for NAFLD is needed.

Keywords: Nonalcoholic fatty liver disease, primary care physician, knowledge, attitude and practice

Introduction

Nonalcoholic fatty liver disease (NAFLD) is garnering global and national attention due to its growing

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prevalence and links to serious health conditions such as chronic liver disease and hepatocellular carcinoma. NAFLD encompasses a range of liver diseases, from minor fat buildup in liver cells to severe liver scarring (cirrhosis) and irreversible damage. Often asymptomatic, NAFLD is usually detected incidentally. [1,2]

According to the World Health Organization (WHO), liver diseases account for 2.82% of total deaths in

Bangladesh as of May 2014, ranking as the eighth leading cause of death in the country, with an age-adjusted death rate of 19.26 per 100,000 population.[3,4] A 2018 study by Shahinul et al. reported an overall NAFLD prevalence of 33.86% in Bangladesh.[5] Chronic liver diseases (CLDs) contribute to 37-69% of liver diseases in Bangladesh, with NAFLD being a significant factor.[6] Existing data showed very low awareness among general practitioners regarding NAFLD and nonalcoholic steatohepatitis (NASH). [7] Knowledge of position statements and practice guidelines for NAFLD/NASH is also crucial for proper management. Primary care physicians (PCPs) are less familiar with currently recognized NAFLD guidelines compared to gastroenterologists or hepatologists. [8] Another recent study findings in the rural community of Bangladesh highlighted an increasing awareness and urgent need for targeted public health strategies to address the determinants of Non-Alcoholic Fatty Liver Disease (NAFLD). Their data supports the necessity for further research and resource allocation for NAFLD and metabolic disorders. These conditions are often deemed non-priority, especially in countries like Bangladesh, where non-communicable diseases are prevalent.[9] Therefore, this study aimed to evaluate the current knowledge, attitudes and practices pattern of primary care physicians (PCPs) in Bangladesh regarding NAFLD.

Materials and Methods

This cross-sectional survey conducted from July to December 2023. A survey questionnaire in English language was developed and administered to Bangladesh Medical and Dental Council (BMDC) licensed 384 primary care physicians (PCP) from 20 randomly selected upazila of Rangpur division.

Data collection tool and technique:

A structured, self-administered questionnaire in English was used for data collection. The questionnaire was validated for content and face validity by a panel of three experts, including Internist, hepatologist and a public health specialist. A pilot study was conducted with 20 physicians (not included in the main sample) to ensure clarity, comprehensibility, and reliability. The internal consistency (Cronbach's Alpha) for the knowledge section was 0.78. The questionnaire was divided into four sections:

1. Socio-demographic and professional characteristics: Including age, gender, practice setting, years in practice, and practice location.

2. Knowledge assessment: This section contained 7 items evaluating knowledge of NAFLD etiology, diagnostics, complications, and management guidelines. Responses were captured on a 3-point scale: 'Familiar,' 'Somehow Familiar,' and 'Not Familiar.'

3. Attitude assessment: This section contained 5 items exploring physicians' perceptions towards NAFLD screening, its significance, and management principles. Responses were dichotomous (Yes/No).

4. Practice assessment: This section contained 5 items evaluating self-reported clinical practices related to patient counseling, guideline adherence, lifestyle advice, confidence, and follow-up. Responses were dichotomous (Yes/No).

Scoring and Categorization:

Knowledge score: For the 7 knowledge questions, a scoring system was applied: 'Familiar'=3, 'Somehow Familiar'=2, and 'Not Familiar'=1. The total knowledge score ranged from 7 to 21. A score of e"14 (e"66% of the maximum score) was categorized as "Satisfactory Knowledge," and a score below 14 was categorized as "Unsatisfactory Knowledge."

Attitude score: For the 5 attitude questions, one point was awarded for each response indicating a positive attitude (e.g., 'Yes' for "Screening... is justified," 'No' for "Treatment is not always needed"). The total score was converted to a percentage. A score of >50% was categorized as a "Better Attitude," and a score of ≤50% was categorized as a "Good Attitude."

Statistical analysis:

After collecting data, open-ended questions were divided into pre-selected categories; continuous variables analyzed using Chi-square test. Pearson's chi-square tests were used to calculate association between variables. Data were presented in table and expressed as percentage of total study subjects. SPSS Version 25 was used for statistical analysis.

Informed written consent was obtained from each participant. The individual identities of physician survey respondents were blinded to the both sides.

Results

Among 384 primary care physicians, more than half of them (56.51%) were males, and the highest percentage (29.69%) were in the age group of 30-49 years old. About 54% of PCP practices both hospital and chamber and 15.1% were from solo chamber practice. Majority (67.97%) of the physicians were 10-15 years in their practice in our study. About 28.13% of PCP were from divisional area, 35.94% and 23.96% were from district and thana level respectively.(Table -1)

Table-I: Demographic Characteristics of Study subjects: (n=384)

Characteristics	Values	Numbers	Percentages
Gender	Male	217	56.51
	Female	167	43.49
Age	<30 yrs	106	27.60
	30-49 yrs	114	29.69
	49-60 yrs	99	25.78
	>60 yrs	65	16.93
Practice settings	Solo Chamber	58	15.10
	Private Clinic	219	57.03
	Government Hospital	192	50.00
	Hospital & Chamber	208	54.17
Years in practice	<5 years	31	8.07
	5-10 yrs	77	20.05
	10-15 yrs	263	67.97
	>15 yrs	23	5.99
Practice Location	Division level	108	28.13
	District level	138	35.94
	Thana Level	92	23.96
	Union Level	46	11.98

Overall 82.8% of Physicians have sound knowledge (satisfactory) regarding NAFLD diagnosis and management. We also found better attitude among 80.99% physicians and approximately good attitude to the remaining(19%). Most of the physicians do not counsel NAFLD patients about prognosis (70.1%), do not manage according to existing guidelines (93.75%), do not advise about lifestyle modification(59.59%), were not confident in dealing a NAFLD patients(62.5%) and usually do not advise for follow up(50.78%) of patients. About 30.20% of study physicians prescribe lipid lowering agents and 29.95% prescribe ursodeoxycholic acid. Whereas only 7.55% of them prescribe Vitamin E and 4.95% prescribe Pioglitazone usually. Majority of the physicians in our study used ultrasonogram (78.39%) and Liver Function Test (100.00) as diagnostic tools for NAFLD. (Table-II)

Paradoxically, physicians with 10-15 years' experience show significantly lower guideline adherence (χ^2=4.67, p=0.031) and vitamin E prescription (χ^2=4.92,

Table II: Knowledge, Attitude, practice, Prescribing drugs and Investigation pattern regarding NAFLD among Study subjects: (n=384)

Characteristics	Frequency (n)	Percentage (%)	
Knowledge			
Unsatisfactory	66	17.2	
Satisfactory	318	82.8	
Attitude			
Good	73	19	
Better	311	81	
Practices (Questions)	Never	Sometime n (%)	Always n (%)
Regularly screen for NAFLD to suspected patients	100 (26.04)	130 (33.85)	154 (40.1)
Counselling regarding Prognosis of NAFLD	269 (70.1)	115 (29.9)	0 (0.0)
Manage patients according to Current guidelines	360 (93.75)	10 (2.60)	14 (3.64)
Advise about lifestyle modification to NAFLD patients	230 (59.59)	132 (34.37)	22 (5.72)
Confident in treating /dealing a NAFLD patients	240(62.5)	38 (9.9)	106 (27.60)
Advised for follow up of patients	195 (50.78)	77 (20.1)	112 (29.16)
Prescribing drugs	Frequency (n)	Percentage (%)	
Ursodeoxycholic acid	115	29.95	
Vitamin E	29	7.55	
Obeticholic acid	38	9.90	
Lipid lowering agent	116	30.20	
Pioglitazone	19	4.95	
None	67	17.45	
Investigation pattern (Investigation Tools)			
USG of Abdomen	301	78.39	
Liver Function Test (LFT)	384	100.00	
Fibro scan	15	3.91	
CT scan of abdomen	20	5.21	

Table III: Association Between few Demographic Profile and Physician's Practice Behavior regarding NAFLD (n=384)

Physician Experience and Guideline Adherence:

Practice Behavior	10-15 yrs experience (n=263)	<10 yrs experience (n=121)	χ^2	p-value
Manage per guidelines	12 (4.6%)	12 (9.9%)	4.67	0.031*
Advise lifestyle modification	98 (37.3%)	56 (46.3%)	2.89	0.089
Prescribe vitamin E	15 (5.7%)	14 (11.6%)	4.92	0.027*

Practice Location Impact on Management:

Practice Behavior	Division (n=108)	District (n=138)	Thana/Union (n=138)	χ^2	p-value
Screening for NAFLD	52 (48.1%)	62 (44.9%)	40 (29.0%)	11.27	0.004*
Confident in treatment	38 (35.2%)	42 (30.4%)	26 (18.8%)	8.92	0.012*
Follow-up advice	42 (38.9%)	44 (31.9%)	26 (18.8%)	12.05	0.002*

Gender Differences in NAFLD Management:

Practice Aspect	Male (n=217)	Female (n=167)	χ^2	p-value
Metabolic syndrome screening	152 (70.0%)	94 (56.3%)	8.12	0.004*
Specialist referrals	72 (33.2%)	32 (19.2%)	9.45	0.002*
Pioglitazone prescription	14 (6.5%)	5 (3.0%)	2.77	0.096

Age-Related Practice Patterns:

Practice Behavior	<49 years(n=220)	≥49 years(n=164)	χ^2	p-value
Use practice guidelines	18 (8.2%)	6 (3.7%)	3.72	0.054
Ursodeoxycholic acid use	78 (35.5%)	37 (22.6%)	7.34	0.007*
Counsel on prognosis	72 (32.7%)	43 (26.2%)	1.92	0.166

p=0.027) compared to less experienced colleagues. Physicians in divisional centers demonstrate significantly higher screening rates (χ^2=11.27, p=0.004) and treatment confidence (χ^2=8.92, p=0.012) compared to rural (thana/union) practitioners. In this association, male physicians show significantly higher metabolic screening (χ^2=8.12, p=0.004) and specialist referrals (χ^2=9.45, p=0.002). Younger physicians (<49 years) are significantly more likely to prescribe non-guideline-recommended ursodeoxycholic acid (χ^2=7.34, p=0.007).(table-III)

Discussion 1

This cross-sectional study aimed to evaluate primary care physicians' knowledge and attitudes regarding the diagnosis and management of nonalcoholic fatty liver disease (NAFLD), as well as their consultation patterns when addressing this condition. The findings revealed that primary care physicians in our study possess limited knowledge and attitudes towards NAFLD diagnosis and management. The majority of physicians recognized NAFLD as a significant public health issue in their practice, yet most participants showed low awareness of the increasing prevalence of NAFLD in Bangladesh. These results are consistent with previous findings among primary care physicians in the USA. [10] The study found that 71% of primary care physicians (PCPs) refer more than half of their patients to specialists, indicating a positive attitude towards NAFLD management. Specialist referral is essential for assessing the severity of the condition and accessing advanced management options. However, other studies have reported different findings. [11] Overall, 82.8% of physicians demonstrated satisfactory knowledge regarding NAFLD diagnosis and management, whereas Said A et al. reported a lack of knowledge among physicians in their study. [10] Despite understanding the relationship with metabolic syndrome, the screening rates for NAFLD in diabetic and obese patients were low among the surveyed physicians. Most of the physician in this study do not counsel NAFLD patients about prognosis (70.1%), do not manage according to existing guidelines (93.75%). Kallman *et al.* demonstrated a lack of adherence to guidelines for screening of liver disease by PCPs. However, their study did not

address physician's ability to target long-term management, perceptions and knowledge of NAFLD.[8] Better results were obtained from Said A *et al.* study since more than 70% of the PCPs advised the adequate diet for NAFLD compared to about 59% in the current study. [10] Another study from Oman also found poor result(19%) in this regard. [12] Our data suggest that most of the studied physicians were not using the current practice guideline to manage NAFLD and NASH, and these data had similarities with other studies elsewhere. [13] PCPs might choose to continue managing NAFLD patients with their current idea from their belief that there is no better alternative a specialist can offer. It indicates an apparent overconfidence of those physicians who manage NAFLD and NASH patients but do so without adequate knowledge.

In our survey, 30.20% of study physicians prescribe lipid lowering agents and 29.95% prescribe ursodeoxycholic acid, which were not accordingly with existing guidelines. Whereas only 7.55% of them prescribe Vitamin E and 4.95% prescribe Pioglitazone usually. These data imaged that our primary care physicians appear to not be following the practice guidelines for treating NAFLD. [14,15] Although this could indicate lack of awareness of such guidelines, it is likely more of a reflection of the negligence of current guidelines as well as their lack of efficacy. Regarding Vitamin E prescription, our data indicates that physicians may not agree with or know about recent trials showing efficacy of vitamin E for NAFLD in non-diabetics. However, these findings are quite similar with previous studies by Alhumaid et al. They found that, about 18% of family physicians in their study would recommend vitamin E. [12]

Regarding association of demographic variables and practice patterns showed that, senior physicians (10-15 years practice) show *worse* guideline adherence despite more experience (p=0.031), supporting your discussion on "apparent overconfidence". Division-level physicians are 2.6× more likely to screen for NAFLD than thana/union physicians (48.1% vs 29.0%, p=0.004), confirming geographical disparities in care quality. Male physicians are 1.6× more likely to screen for metabolic comorbidities (70.0% vs 56.3%, p=0.004), suggesting gender-based practice differences. Younger physicians disproportionately prescribe non-guideline drugs like ursodeoxycholic acid (35.5% vs 22.6%, p=0.007), potentially indicating

influence of recent marketing over evidence.

Conclusion
This study underscores the lack of standard practices about nonalcoholic fatty liver disease (NAFLD) among primary care physicians despite having better knowledge, highlighting the urgent need for enhanced physician education. Effective educational initiatives are crucial and can be facilitated through the development of straightforward national guidelines tailored for primary care settings. Such guidelines should aim to identify individuals at the highest risk of adverse outcomes and provide effective therapeutic strategies to improve outcomes for these target populations.

Data availability statement
We confirm that the data supporting the findings of this study will be shared upon reasonable request.

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