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Risk Assessment of Metabolic Associated Steatotic Liver Disease – A Comprehensive Screening Among Community Health Workers of a Rural Field Practice Area in Belagavi

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ABSTRACT

Introduction: Non-alcoholic fatty liver disease (NAFLD) is now the largest cause of chronic liver disease globally, putting a significant strain on the healthcare system. Metabolic (dysfunction) associated steatotic liver disease (MASLD), often known as NAFLD, is defined as hepatic steatosis combined with overweight or obesity, diabetes mellitus, or indications of metabolic dysfunction. This study/systematic screening programme was done among healthcare workers to determine the prevalence and risk factors for MASLD. Understanding the incidence and risk factors unique to this demographic allows healthcare providers to devise personalised interventions, promote healthy lifestyles, and eventually minimise the burden of MASLD in the community.

Methodology: Between October 2023 and March 2024, a comprehensive cross-sectional survey was carried out among ASHA and Anganwadi staff who were registered with PHC Kinaye. Using the universal sampling technique, a sample size of 130 workers—56 ASHA employees and 74 Anganwadi employees—was obtained. A predesigned and pretested questionnaire was used to gather sociodemographic data, and estimations of random blood sugar, HbA1c, lipid profile and fibroscan were performed.

Results: The participants' average age was 38.10 ± 8.42 years. Sixty-two percent of research participants did not have any comorbidities. According to the fibro scan data, 73.8% of the subjects showed no liver fibrosis and 45.2% had Grade 0 fatty liver. Waist-Hip ratio and liver fibrosis were found to be significantly correlated. Physical activity was significantly associated with liver fibrosis and BMI was significantly associated with fatty liver.

Conclusion: Health care workers who are physically inactive are more likely to have fatty liver alterations and liver fibrosis, as well as an elevated waist-hip ratio. Future initiatives should concentrate on helping people who are at-risk change their lifestyles by implementing a nutritious diet and regular exercise, as well as informing the public about fatty liver disease and its preventative measures.

Keywords: Fatty liver, Female Health workers, Screening

INTRODUCTION

Nonalcoholic fatty liver disease (NAFLD) has become the leading cause of chronic liver disease worldwide, with an estimated global prevalence of 25%, placing a significant burden on the healthcare system.[1] NAFLD is defined as the presence of hepatic steatosis, detected either by imaging or histology when secondary causes for hepatic fat accumulation are excluded.[2] Given the close association of NAFLD with its causative drivers, such as obesity, metabolic syndrome (MS), and type 2 diabetes mellitus (T2DM), the increasing trend of these metabolic diseases is also expected to cause an increasing tendency in NAFLD incidence.[3,4] As such, an international panel of experts from 22 countries proposed a change in terminology and definition that more accurately reflects the pathogenesis of the disease.[5,6] The suggested terminology of metabolic (dysfunction)-associated Steatotic liver disease (MASLD) is defined as hepatic steatosis entity in addition to the presence of overweight or obesity, diabetes mellitus, or evidence of metabolic dysfunction.[6] The semantic modification of "NAFLD" as "MASLD" highlights the role of metabolic factors in the disease etiology, which would hopefully facilitate understanding of the disease and patient-physician communication.[7]

To address this growing concern, comprehensive screening initiatives have been implemented in various healthcare settings worldwide. These initiatives not only aim to identify individuals at risk but also provide valuable data for preventive strategies and early interventions. One such initiative was undertaken at Kinaye Primary Health Center, where a systematic screening program was conducted among healthcare workers to evaluate the prevalence and risk factors associated with MASLD.

By focusing on healthcare workers, this study acknowledges the unique challenges faced by this group and aims to contribute valuable insights into the prevalence and determinants of MASLD within this specific demographic. Furthermore, the findings of this study are anticipated to inform evidence-based strategies for preventive healthcare interventions, not only for healthcare workers but also for the broader community. Also, by understanding the prevalence and risk factors specific to this population, healthcare providers can design tailored interventions, promote healthier lifestyles, and ultimately reduce the burden of MASLD in the community.

Objective

The present study was conducted to evaluate the prevalence of MASLD among healthcare workers at Kinaye Primary Health Center using comprehensive screening methods and to identify the risk factors associated with MASLD among healthcare workers and assess the awareness and knowledge of MASLD among healthcare workers.

METHODOLOGY

This comprehensive cross-sectional study was conducted among ASHA and Anganwadi workers registered with PHC Kinaye. After obtaining ethical clearance from the JNMC Institutional Ethics Committee, Jawaharlal Nehru Medical College, Belagavi. (MDC/JNMCIE/155). The study was carried out between October 2023 and March 2024. Universal sampling technique was applied and all the ASHA and Anganwadi workers who are registered with PHC Kinaye were included in the study and the sample size was 130, comprising of 56 ASHA workers and 74 Anganwadi workers.

Inclusion Criteria: ASHA and Anganwadi Workers between age 30 to 60 years.
Exclusion Criteria: Persons diagnosed with Liver Disease.

Data collection procedure:

1. Socio-demographic characteristics of the participants such as age, sex, marital status, literacy level, socio-economic status, anthropometric measurements, blood pressure, comorbid conditions were obtained by an interview with the

participants using a predesigned and pre-tested questionnaire.

2. After obtaining informed consent from the participants and explaining the procedure of venous blood sample collection, 5 ml of venous blood sample were drawn from the antecubital vein and sent in plain vial tubes to the diagnostic laboratory for estimation of the random blood sugar, HbA1c, lipid profile (total cholesterol, triglyceride, LDL, HDL, VLDL)
3. Fibroscan was done on an empty stomach and after evacuating urine, in lying down position with the help of trained person accompanying.

STATISTICAL ANALYSIS:

The collected data were coded in Microsoft Excel and analysed using SPSS version 20. Categorical data were represented as frequency and percentages. Chi-square test and Pearson Correlation were applied.

RESULTS

As per universal sampling all 130 participants were included in the study. None of them were known case of liver diseases.

The mean age of the participants was 38.10 ± 8.42 years. Majority of them belonged to Hindu religion 116 (92.1%) and married 122 (96.8%) and 96 participants (76.2%) belonged to socio-economic status class III according to Modified B.G Prasad's socioeconomic status classification. The mean years of working was 8.17 ± 5.59 years.

Most of the study participants (76.2%) did not have any comorbidities. Out of 130 participants, 9.5% were diabetic, 5.6% had thyroid disorder, and 2.4 % were hypertensive; all were under regular medications. Around 109 participants (86.5%) performed physical activity less than that recommended by the WHO, that is, for <150 minutes a week.

Among the study participants, 50.8% were obese. We found that 10.3% had random blood sugar levels >200 mg/dl. Among the 130 participants, 94.5% had desirable total cholesterol, and 93.7% had optimal LDL. The HDL levels were found to be <40 in 73.%.

According to the fibro scan report, 45.2% of the participants had Grade 0 fatty liver and 73.8% did not have liver fibrosis.

A significant correlation was found between Waist-Hip ratio and Liver Fibrosis with Pearson Correlation value: 0.217 and p-value 0.007. Physical activity was significantly associated with liver fibrosis with Chi-square value: 13.746, p-value: 0.003, and BMI was significantly associated with fatty liver with Chi-square value: 44.838, p-value: <0.001.

Table 1: Socio-demographic details of the participants (n=130)

S. No.	Variable	Frequency	Percentage
1	Religion		
	Hindu	116	92.1
	Muslim	5	4
	Christian	5	4
2	Marital Status		
	Single	1	8
	Married	122	96.8
	Widow	3	2.4
3	Type of Family		
	Joint	47	37.3
	Nuclear	43	34.1
	Three-generation	36	28.6
4	Socio-economic Status		
	SES II	30	23.8
	SES III	96	76.2

Table 2: Health related information (n=130)

S. No.	Variable	Frequency	Percentage
1	Comorbidities		
	None	96	76.2
	Diabetes	12	9.5
	Hypertension	3	2.4
	Thyroid	7	5.6
	Others	8	6.3
2	Physical Activity		
	<150 minutes/ week	109	86.5
	>150 minutes/ week	17	13.5
3	BMI		
	Underweight	11	8.7
	Normal	30	23.8
	Overweight	21	16.7
	Obese	64	50.8
4	RBS		
	<200	113	89.7
	>200	13	10.3
5	BP		
	Normal	80	63.5
	Elevated	20	15.9
	Grade I hypertension	14	11.1
	Grade II hypertension	12	9.5
6	Total cholesterol		
	Desirable	119	94.4
	Borderline High	5	4
	High	2	1.6
7	HDL		
	<40	92	73
	40-60	28	22.2
	>60	6	4.8
8	LDL		
	Optimal	118	93.7
	Near Optimal	6	4.8
	Borderline High	1	8
	High	1	8
	Very High	0	0

Table 3: Fibro scan finding

S. No.	Variable	Frequency	Percentage
1	Fatty Liver		
	Grade 0	57	45.2
	Grade 1	32	25.4
	Grade 2	16	12.7
	Grade 3	13	10.3
2	Liver Fibrosis		
	No fibrosis	93	73.8
	Mild	16	12.7
	Moderate	5	4
	Severe	4	3.2
	Cirrhosis	0	0

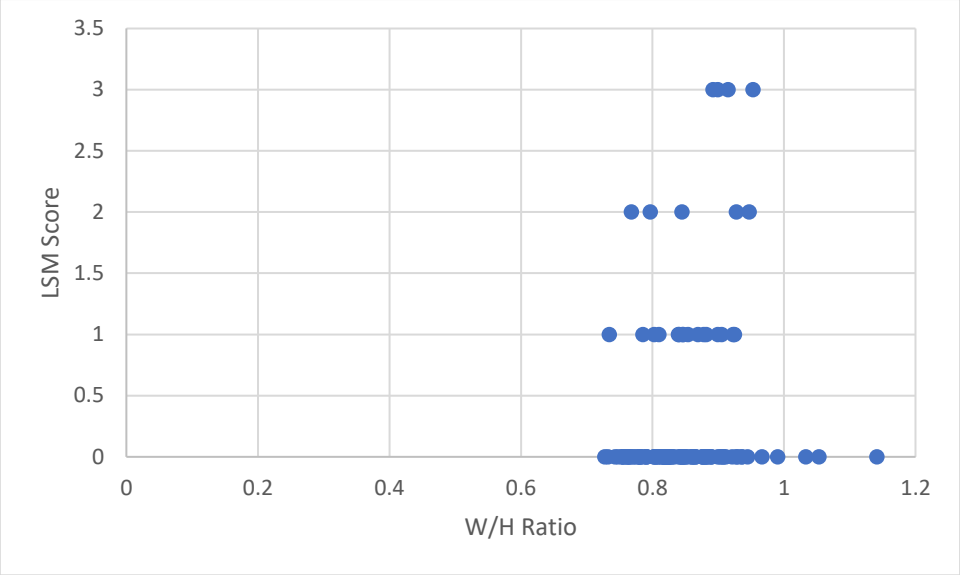

Figure 1: Correlation between Waist-hip ratio and LSM Score

DISCUSSION

The hepatic manifestation of a multi-system metabolic dysfunction-driven condition is known as metabolic-associated Steatotic liver disease (MASLD), previously known as non-alcoholic fatty liver disease (NAFLD)[1]. Given its strong association with obesity, and in the absence of pharmacological agents approved for the long-term management of MASLD, lifestyle modification with dietary changes and increased physical activity/exercise remain the cornerstone of MASLD management.

In the present study, it was found that lack of physical activity was strongly associated with MASLD. A study done by Hyo-in-Chou et al[8] also shows that physical activity prevented incidence of NAFLD regardless of BMI changes. For NAFLD resolution, sufficient physical activity was essential along with BMI decrease. Maintaining sufficient physical activity or increasing its level is crucial for NAFLD prevention or resolution.

A study done by Elissa Fabbrini et al[9] reports that obesity is associated with an increased risk of NAFLD. Our study also proves that increased waist hip ratio has strong association with liver fibrosis.

The study adds to the information regarding associated risk factors of MASLD as very few literature is available regarding this topic. And probably this is the first comprehensive screening study in India regarding fatty liver disease and associated risk factors.

As not many studies were not conducted on the fatty liver disease and risk factors suggested additional studies similar to the present one will help to get an overview on this burning topic of fatty liver diseases.

Limitations:

In our study we have included ASHA and Anganwadi workers under one PHC. It would have been better if we had included more PHCs and a greater number of health staffs or community population. We were unable to account for other concurrent variables such as dietary changes, dietary content, and medications used.

Despite the limitations, the novelty of the study design and the screening interventions and multiple investigations are the strengths of our study.

CONCLUSION

Lack of physical activity and increased waist hip ratio are associated with fatty liver changes and liver fibrosis among health care workers.

Further efforts should focus on life style modification of at-risk population, incorporating healthy diet and exercise in daily lives and educating the society

regarding fatty liver disease and how to prevent ill effect of fatty liver disease.

Declaration Of Patient Consent:

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patients have given their consent for their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity.

Ethical Approval: Approved

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Conflicts of interest: No conflicts of interest declared

REFERENCES

1. Younossi Z, Tacke F, Arrese M, Chander Sharma B, Mostafa I, Bugianesi E, et al. Global Perspectives on Nonalcoholic Fatty Liver Disease and Nonalcoholic Steatohepatitis. Hepatology. 2019;69(6): 2672–2682. doi: 10.1002/hep.30251.
2. Chalasani N, Younossi Z, Lavine JE, Charlton M, Cusi K, Rinella M, et al. The diagnosis and management of nonalcoholic fatty liver disease: Practice guidance from the American Association for the Study of Liver Diseases. Hepatology. 2018;67(1): 328–357. doi: 10.1002/hep.29367.
3. Loomba R, Sanyal AJ. The global NAFLD epidemic. Nat Rev Gastroenterol Hepatol. 2013;10(11):686–690. doi: 10.1038/nrgastro.2013.171.
4. Kaya E, Yilmaz Y. Non-alcoholic Fatty Liver Disease: A Global Public Health Issue. In: Faintuch J, Faintuch S, editors. Obesity and Diabetes. Cham: Springer; 2020. pp. 321–333.
5. Eslam M, Sanyal AJ, George J, International Consensus Panel MAFLD: A Consensus-Driven Proposed Nomenclature for Metabolic Associated Fatty Liver Disease. Gastroenterology. 2020;158(7):1999–2014.e1. doi: 10.1053/j.gastro.2019.11.312.
6. Eslam M, Newsome PN, Sarin SK, Anstee QM, Targher G, Romero-Gomez M, et al. A new definition for metabolic dysfunction-associated fatty liver disease: An international expert consensus statement. J Hepatol. 2020;73(1):202–209. doi: 10.1016/j.jhep.2020.03.039.
7. Yilmaz Y, Byrne CD, Musso G. A single-letter change in an acronym: signals, reasons, promises, challenges, and steps ahead for moving from NAFLD to MAFLD. Expert Rev Gastroenterol Hepatol. 2021;15(4):345–352. doi: 10.1080/17474124.2021.1860019
8. Choi HI, Lee MY, Kim H, Oh BK, Lee SJ, Kang JG, Lee SH, Kim BJ, Kim BS, Kang JH, Lee JY, Sung KC. Effect of physical activity on the development and the resolution of nonalcoholic fatty liver in relation to body mass index. BMC Public Health. 2022 Apr 5;22(1):655. doi: 10.1186/s12889-022-13128-6.
9. Fabbrini E, Sullivan S, Klein S. Obesity and nonalcoholic fatty liver disease: biochemical, metabolic, and clinical implications. Hepatology. 2010 Feb;51(2):679-89. doi: 10.1002/hep.23280.

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