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Original Article

Assessment of Dietary Patterns Among Patients Suffering from Fatty Liver Disease Attending Tertiary Care Hospitals, Lahore

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ABSTRACT

Non-alcoholic fatty liver disease (NAFLD) is one of the most prevailing liver diseases worldwide. NAFLD is a defect at metabolic level that includes steatosis or hepatic fatty infiltration. Besides liver related mortality and morbidity, non-alcoholic fatty disease is also associated with serious complications of other organs, such as heart diseases **Objective:** To assess the dietary patterns among patients suffering from fatty liver disease **Method:** It was a cross sectional study conducted at Sir Ganga Ram Hospital and Shaikh Zayed Hospital, both are Tertiary care hospital of Lahore. Data was collected by self-made questionnaire 270 patients were selected between the age of 19-65 years. A non-probability convenient sampling technique was used and data was further analyzed by mean of SPSS v.25.0 **Results:** It was observed that 65.2% patients were consumers of cold drink, 56.4% patients were consumer of fatty food , 64.8% patients were skipping their meal.74.6% patients have no physical activity, 69.7%patients were overweight ,61% fatty liver patients were diabetic and 71.2% patients were not taking any type of supplements **Conclusions:** Current study concluded that less physical activity, consumption of fatty food, cold drinks and less intake of nutritional supplements were responsible for this disease.

INTRODUCTION

NAFLD or non-alcoholic fatty liver disease is terms as buildup of TG (triglyceride) in hepatic cells. This accumulation results from elevated fatty acids with de novo hepatic lipogenesis [1].

Our liver is an organ which performs several functions that including metabolic detoxification, synthesis of protein and it also involves in the production of vital chemicals and enzymes for digestion [2]. Although exact prevalence of non-alcoholic fatty liver disease is unknown but approximately 6.3-33% of the world might suffering from NAFLD [3]. According to the surveys 47% population of Pakistan affected from NAFLD. Pashtun ethnicity have highest prevalence (58.5%) of non-alcoholic fatty liver disease, People of Punjab comes on second with 44.5% prevalence and it is less prevailing in Sindhies with 35% [4]. A wide range of interlinked multiple pathological conditions are associated with non-alcoholic fatty liver disease, these includes inactive storage of fat by liver, progressive heart issues, metabolic disturbance, kidney and various liver diseases with high risk of cancers [5]. Fat buildup in liver is associated with non-alcoholic fatty liver disease with the increased prevalence of obesity [6]. NAFLD or non-alcoholic fatty liver disease enlisted under the title of global health burden as it plays major role as risk factor of type-II diabetes, CVD, cirrhosis and liver cancer [7]. Higher prevalence of non-alcoholic fatty liver disease along with Gallbladder stones disease shows that they have combined risk factors. Gallbladder and non-alcoholic fatty liver disease both have elevated triglyceride level, type-II diabetes, insulin resistance and obesity [8]. Fatigue with abdominal discomfort (upper right part), restlessness and in few cases mild jaundice are some common symptoms in non-alcoholic fatty liver disease [9]. Reducing body weight can be more effective way for treating

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non-alcoholic fatty liver disease. Weight management with physical activity reduces insulin resistance thus ease to diminish non-alcoholic fatty liver's symptoms [10].

A Cross-sectional study was conducted by Abbasi S *et al.*, subjects were selected between the age of 40-50. Information gathered and examination was done through SPSS. 20 (40%) individuals created NAFLD when contrasted with 30(60%) individuals with ordinary serum urate. Chi-square test was connected and qualities observed to be huge (p=0.013). The examination demonstrated relationship of NAFLD with serum uric acid level [11]. A cross sectional study was proposed by Younossi ZM *et al.*, to decide factors autonomously connected with lean non-alcoholic fatty liver disease in the population of US. Subsequently, of the 11,613 members incorporated into the investigation, 2185 had NAFLD and 307 had NASH. Multivariate examination demonstrated that lean NAFLD was freely connected with younger ages, female gender, and a diminished probability of having IR and hypercholesterolemia (p = value < 0.05). Along these lines, we conclude that lean people with NAFLD have an unexpected clinical profile in comparison to overweight-large people with NAFLD [12].

Study was conducted by Goodarzi R *et al.*,that inspected the role of turmeric on Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) in patient suffering from non-alcoholic fatty liver disease. The mean difference and standard deviation (SD) of changes in ALT and AST among mediation and control gatherings were utilized as impact size for the meta-analysis. A sum of 6 randomized controlled preliminaries (RCTs) was qualified for meta-analysis. Turmeric/curcumin supplementation decreased ALT (p = 0.014) and AST (p = 0.026). At the point when RCTs stratified based on their treatment term, the huge decrease in serum centralizations of ALT and AST was watched uniquely in concentrates enduring under 12 weeks. Turmeric/curcumin may favorably affect serum groupings of Aspartate aminotransferase (AST) and alanine aminotransferase (ALT) in patients suffering from non-alcoholic fatty liver disease [13].

It was accordingly basic to assess the connection between CVD and NAFLD. It was Observational study to examine in grown-up populations and obviously characterized non-alcoholic fatty liver disease and markers of cardiovascular disease. Total number of 27 investigations were incorporated 16 (59%) introduced the relationship of non-alcoholic fatty liver disease and carotid intima-media thickness (CIMT), 7 (26%) the relationship with coronary calcification and 7 (26%) the impact on endothelial brokenness and 6 (22%) effect on blood vessel firmness. Proofs are present to help the relationship of non-alcoholic fatty liver disease with early indicators of CVD free of conventional hazard factors and problems at metabolic level [14].

Study was conducted by Wijarnpreecha K *et al.*, Coffee may have a defensive impact against NAFLD. Observational examination through meta-analysis for the first time shows probability of non-alcoholic fatty liver disease occurrence in people who consumed or might not consumed coffee on daily basis. Patient which consumed coffee were less likely to suffer from non-alcoholic fatty liver disease as compare to patients who did not pooled risk Proportion 0.71 (CI, 0.60–0.85, 95%). They additionally found an altogether diminished chances of liver fibrosis in non-alcoholic fatty liver's patients who drank coffee contrasted and the individuals who did not, with a collective Risk Ratio of 0.70 (CI, 0.60–0.82, 95%). Their investigation found an essentially diminished the chances of liver fibrosis as well as non-alcoholic fatty liver among coffee consumers who drank coffee regularly [15]. This study was aimed to evaluate the eating patterns of patients suffering from fatty liver, as false dietary practices among society may leads to the disease, so that after highlighting the false dietary practices and behaviors towards food group, awareness could be created through extensive health education to minimize the disease's burden in the society.

METHODS

It was a cross sectional study conducted at Sir Ganga Ram Hospital and Shaikh Zayed Hospital both falls in the category of Tertiary care hospital, Lahore. The duration of the study was 4 months after approval of synopsis. Sample of 270 patients was calculated with 95% confidence interval, 0.08 margin of error and expected percentage of fatty liver patients in the Tertiary Care Hospitals was 47% [4]. A non-probability convenient sampling technique was used and data were further analyzed by mean of SPSS version 25.0. The inclusion criteria were all male and female patients NAFLD were selected. The exclusion criteria were non cooperative individuals.

RESULTS

The result included 156(59.1%) of male patients and 108(40.9%) of female patients.

Result showed the 233(88.3%) patients were married and 31(11.7%) patients were unmarried.

The result showed the 180(74%) patients were belonging to the low class and 84(23.36%) patients were belonging to the middle class. The result showed the 175(66.6%) patients were living in urban and 90(33.34%) patients were living in rural areas (Table 1).

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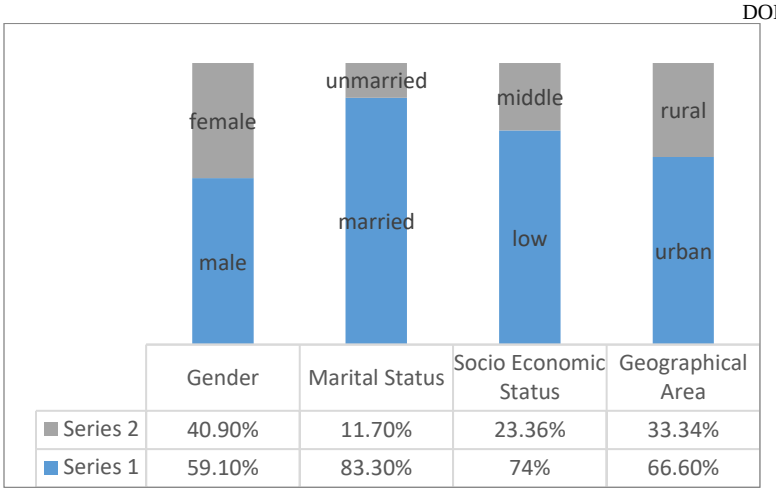

Table 1: Demographics of studies patients

Food Items	1-3/Days	4 or more/Days	1-3/Week	4 or more/Week	Never less than 1/Week	Monthly
Chapatti	245	9	5	4	1	-
Rice	72	16	110	60	14	2
Cereals	64	15	122	26	29	8
Meat	9	14	101	33	80	27
Poultry	47	14	128	32	39	4
Green Leafy-Vegetable	60	15	114	68	5	2
Starchy Potato	49	13	116	38	46	2
Fruit Chat	8	3	116	21	88	28
Milk	144	9	55	43	12	1
Cheese	12	5	44	8	133	62
Butter	59	7	69	11	102	16
Sugar	68	3	61	14	91	27

Table 2: Food Frequency Table

The result showed that 245 patients were consuming chapatti 1-3/days. 110 patients were consuming rice 1-3/week. 122 patients were consuming cereals 1-3/week. 101 patients were consuming meat 1-3/week. 128 patients were consuming poultry 1-3/week. 114 patients were consuming green leafy vegetables 1-3/week. 116 patients were consuming starchy potato 1-3/week. 116 patients were consuming fruit chart 1-3/week. 144 patients were consuming milk 1-3/days. 133 patients were consuming cheese never less than 1/week. 102 patients were consuming butter never less than 1/week. 91 patients were consuming sugar never less than 1/week (Table 2).

Nutrients	Mean ±S.D	Maximum	Minimum	(RDA)
Food Intake (g)	1163.4±409.4	2080.00	100.00	500 g
Food Energy Kcal	2386.6±1017.3	5267.05	148.00	2200 kcl
Protein g	97.6 ± 49.7	249.76	0.80	71 g
Lipid (Fat) g	59.9 ± 40.08	196.75	0.00	65 g
Carbohydrate g	383.4 ± 175.5	901.82	10.56	175 g
Fiber g	14.1 ± 10.54	45.62	0.00	28 g
Calcium mg	1015.6 ± 511.5	2438.50	24.00	1000 mg
Phosphorus mg	1617.8 ± 820.4	3947.70	32.00	700 mg
Iron mg	49.8 ± 32.5	150.14	0.40	17-20 mg
Vit.C mg	61.9 ± 51.9	329.80	0.00	80-85 mg
Vitamin. A. R.E	4122.3±2372.03	134797.50	1.60	750-770 mg
Cholesterol mg	187.3 ± 161.9	827.50	15.60	200 mg

Table 3 shows the nutrients intake (mean ± SD) of patients with NAFLD and their comparison to RDA.

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The food intake of the patients was 1163.4 ± 409.4 according to mean ±standard deviation and RDA is 500g and the food energy was 2386.6±1017.3 and the RDA is 2200 kcal and protein consumption of the patients were 97.6±49.7 and RDA is 71g and the lipid value was 59.9 ± 40.08 and RDA is 65g.Carbohydrates consumption was 383.4±175.5 and RDA was 175g and fiber consumption was 14.1± 10.54 and RDA is 28g. Calcium consumption was 1015.6 ± 511.5and RDA is 1000mg. Phosphorus consumption was 1617.8 ± 820.4 and RDA is 700mg.Iron consumption was 49.8 ± 32.5 and RDA is 17-20mg. Vitamin C was 61.9 ± 51.9 and RDA is 80-85mg.Vitamin A consumption was 4122.3 ± 2372.03 and RDA is 750-770 mg and the consumption was 187.3 ± 161.9 and RDA is 200mg.

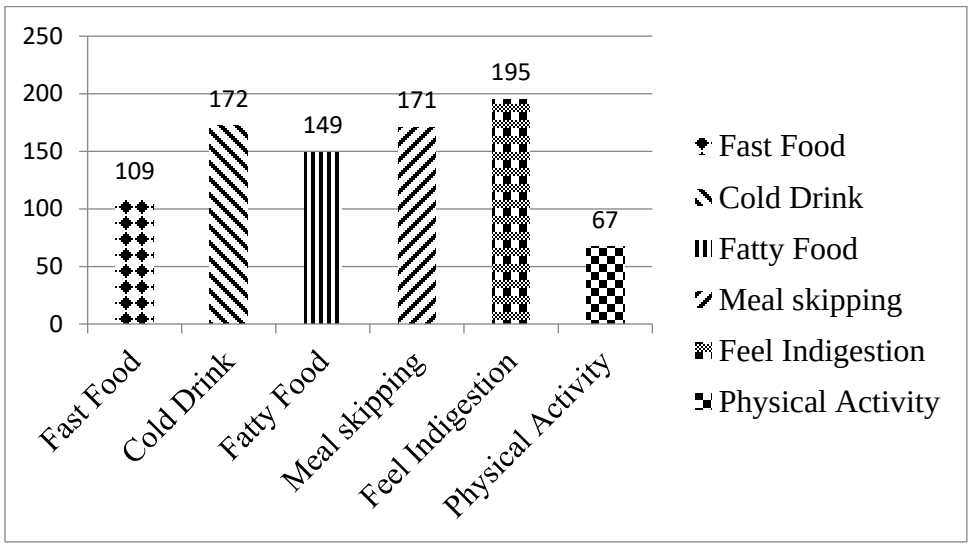

Figure 1: Distribution of patients regarding to Life style associated with NAFLD

The result showed that 109 patients were having habit of consuming fast food and 172 patients were having habits of consuming cold drink 149 patients were taking fatty food 171 were skipping meal 195 patients were feeling indigestion and 67 patients used to do physical activity as shown in figure 1.

DISCUSSION

In current study total 264 patients were selected and majority of the patients were aged between 30-40 years (33.7%), and least were of age 70-80 years (0.8%). Similarly, Naveed S *et al.*, examined the patients suffering from cholelithiasis between the age range of 18-70 [16]. In current study total 264 patients were selected and majority of the patients were aged between 20-60 years 49 (18.6%) patients suffering from NAFLD, Similarly, Liu J *et al.*, examined to elucidate the association between NAFLD and gallstones, 498 patients were selected between age of 30-60 and showed the result that (P = 0.047) [17]. In current study total 264 patients were selected and majority of the patients were aged between 20-60 years, 61% of subjects had been found to suffer from NAFLD. In the previous research Naveed S *et al.*, look at relation between diabetes type-II and the predominance and hazard components of nonalcoholic fatty liver disease. Randomly 262 peoples were selected between the age of 18-70 and 41 % peoples are suffering from NAFLD [16].

In current study total 264 patients were selected and majority of the patients were aged between 20-60 years old and result showed that 29.9% less physical activity caused suffering from disease. Similarly In previous study Gerber L *et al.*, to rule out the level of exercise in patients suffering from NAFLD. 3056 subjected were selected between the age of 20-70 and result showed that 28.7% participants with no or less exercise routine had strong association with the occurrence of NAFLD [18]. In current study total 264 patients were selected and majority of the patients were aged between 20-60 years old and result showed that 42.4% patients were hypertension. In the previous study López-Suárez A *et al.*, to found the relation between NAFLD with prevalent hypertension. 454 participants were sleeted between the age of 50-75 years old. 21.1% peoples were suffering from NAFLD [19]. In current study total 264 patients were selected and majority of the patients were aged between 20-60 years old and result showed that 4.2% cancer patients suffering from NAFLD. Similarly previous study White DL *et al.*, showed that epidemiological proof to support the relation of non-alcoholic fatty liver disease with elevated chances of hepatocellular carcinoma (HCC) [20].

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CONCLUSION

Based on this study the intake of NAFLD patients were higher than the RDA. They were consuming higher amount of carbohydrates with excess amount of fatty food and cold drinks, they were also consuming higher amount of phosphorus, iron, and vitamin A and less intake of fiber and mostly patients of NAFLD not taking any nutritional supplements. NAFLD patients were having history of Diabetes Mellitus. They were overweight and less physically active.

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