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INVESTIGATIONAL STUDY ON AWARENESS OF NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD) AMONG PEOPLE OF ZIRAKPUR (PUNJAB) REGION

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Abstract

To assess the knowledge, state of awareness and approach towards the NAFLD among the people of Zirakpur region with the help of a survey questionnaire, in order to assess the awareness about various diagnostic parameters and effect of exercise and dietary habits on the progression of NAFLD. A quantitative approach was used to collect and convert the data into the numerical form and represented in statistical view. A survey was conducted among the general people of Zirakpur. The participants were randomly selected regardless of their age, gender and level of education. A self-structured Questionnaire was designed to collect the simple background data and the required information. We provided the questionnaires to the interested participants and for those who are not able to understand the English language, were interviewed by communicating in local language. After collecting the data, an analysis was performed with the help of Microsoft Excel and Graphpad prism. The result was shown in pie and column chart and calculated the percentage of the results. In the current survey total 90 people were participated out of which 51% were females and 48% were male respondents, among them 3.3% overweight and 6.6% obese are at the risk of metabolic diseases which are associated with obesity. Some of the participants have certain other diseases like diabetes, hypercholesteraemia which are associated with NAFLD and may lead to its progression. In our study 7.77% were diabetics, 8.88% were hypercholesteraemic, 5.55% were suffering from thyroid disorder and 5.55% were suffering from hypertension. Majority of participants (65%) were never undergone for any diagnostic test, only 25.5% were aware of SGOT and SGPT parameters. Majority of people have never come across the term NAFLD, 56.6% of total participants have never heard about NAFLD, 5.5% are those who have heard about it and suffering from it where as 3.3% are those who have never heard about NAFLD but suffering from this devastating disorder. Majority of the population is unaware of NAFLD regardless of their age, gender and education. Hence there is a need to spread awareness about NAFLD through Mass media, workshops, one day programmes, by posters, by patient counselling, in order to get control on prevention, early detection, and treatment.

Keywords: NAFLD, Cirrhosis, SGOT, SGPT, Probiotics

Introduction

Non-alcoholic fatty liver disease (NAFLD) is a multi-etiological disease, consisting a range of hepatic conditions from fatty liver to cirrhosis. NAFLD is associated with dyslipidemia, cardiovascular diseases (CVD), type 2 diabetes mellitus (T2D), obesity, and metabolic syndrome (Farrell and Larter, 2006). The epidemiological study documented that there was 24% prevalence of NAFLD globally in 2017. (Younossi *et al*., 2017).

Despite the numerous researches and studies on NAFLD, still there are limited treatment options for NAFLD. The non-pharmacological therapies such as Life style modification including exercise (Kargulewicz *et al*., 2012) and diet rich in probiotics have shown their beneficial effect in reducing liver fibrosis. Recent reports indicate that lifestyle modifications based on decreased energy intake/increased physical activity during 6-12 months causes improvement in biochemical and metabolic parameters and reduced steatosis and inflammation. Conversely, increased consumption of sugar containing food and beverages has been associated with NAFLD development and progression (Marchesini *et al*., 1999). Healthy diet and regular physical activity may play a key role for the prevention and treatment of NAFLD (Taddeo *et al*., 2008). The aim of proposed study is to know the current state of awareness and attitude towards NAFLD, including lifestyle and dietary habits leading to risk of progression of NAFLD among the general people of Zirakpur. As the prevalence of NAFLD is increasing worldwide, necessary steps should be taken to get control over it. Developed countries have a high percentage of well-educated people, who are aware of NAFLD and its related clinical conditions, but in case of developing countries such as India, most of the people are still unaware. Due to lack of knowledge and awareness they are unable to figure out the symptoms and possible clinical conditions related with NAFLD which is the main cause associated with its progression. However the concerned objectives of current study mentioned as follow

- To create awareness about various diagnostic parameters and concerned symptoms of NAFLD in subjects of local area.
- To study the current dietary habits and physical activities of subjects with the help of questionnaire, this is directly or indirectly concerned with progression of NAFLD.
- To investigate and create awareness health risk factors in normal subjects by routine laboratory check-ups in concern to liver profile and lipid profile test.
- To create awareness about dietary habits concerned with probiotics and prebiotics consumption to improve the quality of life in NAFLD.

Material and Methods

Purpose of Study

A Quantitative study was conducted among the residents of Zirakpur, to find out the current status and attitude of people toward NAFLD, to know about the effect of lifestyle and food habit on the progression of Non-Alcoholic Fatty Liver Disease (NAFLD) and how lifestyle related diseases are also a risk factor for the progression of NAFLD.

Research Approach

A quantitative approach was used to collect and convert the data into the numerical form and represented in statistical view.

Locality of Study

The survey study was performed in the region of Zirakpur, District- SAS Nagar, and Mohali. Punjab and duration of the survey study was 6 month (January 2019-June 2019).

Sample Size

In this study, a total number 90 people were surveyed with a questionnaire to assess the knowledge, perception about the effect of lifestyle and food habit on the progression of NAFLD in Zirakpur. The number participants were selected randomly. Only the participants who agreed to join the study were interviewed and provided the required information for the studies.

Questionnaire Development

The questionnaire was designed to collect the simple background data and the required information. The questionnaire was written in simple English to avoid any confusion and unnecessary misunderstanding.

BMI (Body Mass Index) Calculation

The BMI was calculated with the help of following formula as per international system of units (SI). SI, Metric Units BMI=mass (kg)/ height (c.m)

Data Analysis

The collected data was analysed with the help of Microsoft Excel and expressed in pie, percentage and column chart.

Results

Basic Information

It was found that among the 90 participants, 44(48.8%) participants were male and 46(51.1%) were female [Table 1.1 and Figure 1.1]. The age range of participants was 16-30,31-45,46-60,61-75 and 76-90 years and their percentage was 38.8%, 22.2%, 22.2%, 8.8%, 7.7% respectively [Table 1.2 and Figure1.2]. According to the BMI of participants, 6.6% were underweight, 53.3%were normal, 33.3% were overweight and 6.6% were obese [Table1.3 and Figure 1.3]. As per the education qualification analysis among the 90 participants 6.6% were under matric qualified, 12.2% were matric qualified, 17.7% were high school qualified, 52.2%were graduates and 11.1% were postgraduates [Table 1.4 and Figure 1.4].

Clinical Information

In the present study among the total participants 34.4% participants had heard about the term NAFLD, 56.6% had never heard about it, 8.8% were suffering from NAFLD, However, among the 5.5 % sufferers of NAFLD had heard about NAFLD, whereas 3.3% never heard about NAFLD [Table 2.1 and Figure 2.1]. The present data revealed that among the total participants 7.77% were diabetics, 8.88% were hypercholesteraemic, 5.55% were suffering from thyroid disorder and 5.55% were suffering from hypertension [Table 2.1and Figure 2.2]. Regarding the clinical information among all the participants it was revealed that 63.3% of participants had heard about liver function tests, 36.6% of participants had never heard about liver function tests, 34.4% had undergone liver function tests, 65.5% never undergone liver function tests [Table 2.2 and Figure 2.3]. Similarly, among the total number of participants 61.1% never heard about SGOT and SGPT, only 25.5% were aware of SGOT and SGPT parameters and 13% have only heard about these parameters but they were not aware of it [Table 2.3 and Figure 2.4]

Physical Activity

It was found that among the 90 participants, 45.5% were following regular exercise, 18.8% once a week, while 35.5% had never performed exercise [Table 3.3 and Figure 3.1]. Similarly, among those 64.3% exercise performers 22.45% preferred yoga, 6.8% preferred heavy exercise, 36.2% preferred light exercise and 34.4% preferred morning walk [Table 3.2 and Figure 3.2]. One of the other finding revealed that among the total participants 48.8% preferred Elevator and 51.2% preferred Stairs [Table 3.3 and Figure 3.3].

Dietary Habits

Regarding the dietary habits of all the participants it was found that among the total participants, 76.6% had breakfast every day, 18.8% Sometimes, 4.4% never respectively [Table 4.1 and Figure 4.1]. Average time for consumption of a meal of 53.3% participants was Less than 15 min, 45.5% of participants was 15-30 min, 1.1% of participant was more than 30 min respectively [Table 4.2 and Figure 4.2]. 24.4% of the total participants never ate fast food, 48.8% occasionally ate fast foods and 26.6% participants often ate fast foods and whereas pattern of sweet eating habit was 8.8% who never consume sweets, 74.4% consume occasionally, 16.6% consume on daily basis respectively. [Table 4.3 and Figure 4.3] It was also found that average water intake per day of 26.6% of participants was 1.0 -1.5 litres, 51.1% of participants lie in between 1.5-2.5 litres, 22.2% of participants -2.5-3.5 litres respectively [Table4.4 and Figure 4.4]. Among the total participants 48.8% had never heard about probiotics, 38.8% were aware of health benefits of probiotics and 43.3% consume probiotics [Table 4.5 and Figure 4.6]. 60% of total participants were including curd as a source of probiotic in their regular diet where as 8.9% were including probiotic drinks and supplements. [Table 4.6 and Figure 4.6].

Discussion

In present study, survey was conducted for awareness of NAFLD in Zirakpur randomly selected 90 participants. We selected the participants randomly regardless of their age, gender and level of education. We provided questionnaires to the participants and for those who are not able to understand the English language, were interviewed by communicating in local language. Among them, 51% were females and 48% were males. We categorised the participants in five groups on the basis of age group [16-30, 31-45, 46-60, 61-75 and 76-90] and their percentage was 38.8%, 22.2%, 22.2%, 8.8%, 7.7% respectively. After collecting the data, the results were interpreted with the help of Microsoft excel. BMI of all the participants on the basis of their weight, height and gender, and it was found that 6.6% were underweight, 53.3% were normal, 33.3% were overweight and 6.6% were obese. The prevalence rate of NAFLD runs parallel with BMI, an

increase in BMI leads to increase in the prevalence and risk of progression of NAFLD (Ruhl *et al*; 2003). In our study it was observed that 33.3% overweight and 6.6% obese are at the risk of metabolic diseases like NAFLD. It was also found that some of participants were suffering from other diseases like diabetes, hypercholesteraemia which may lead to the progression of NAFLD. In our study 7.77% were diabetics, 8.88% were hypercholesteraemic, 5.55% were suffering from thyroid disorder and 5.55% were suffering from hypertension. In our study we found that 63.3% of participants have heard about liver function tests, 36.6% of participants have never heard about liver function tests, 34.4% have undergone liver function tests, 65.5% never undergone liver function tests. Among the total number of participants 61.1% never heard about SGOT and SGPT, only 25.5% were award of SGOT and SGPT parameters and 13% have only heard about these parameters but they were not aware of it. Regarding the exercise habit, out of 90 participants, 64.4 % perform exercise among those 22.45% prefer yoga, 6.8% prefer heavy exercise, 36.2% prefer light exercise and 34.4% prefer morning walk as a part of their exercise schedule. Our study revealed that majority of people have never come across the term NAFLD, 56.6% of total participants have never heard about NAFLD, 5.5% are those who have heard about it and suffering from it where as 3.3% are those who have never heard about NAFLD, but suffering from it.

Carvalhana *et al.* recommended that patients suffering from NAFLD should have an individualized balanced diet, in order to reduce at least 7% of their weight if overweight by reduction in calorie intake, mainly saturated fatty acids and Simple sugars should be avoided (Carvalhana *et al*., 2012). Therefore we assessed the dietary habits of participants and the study revealed that majority of participants were following good dietary habits, 76.6% participants had breakfast every day. Now a days Fast foods are becoming a part of daily dietary routine. As fast foods are rich in fats, lipids and triglycerides, it may lead to obesity and ultimately other associated metabolic diseases. It was observed that 24.4% of the total participants never ate fast food, 48.8% occasionally ate fast foods and 26.6% participants often ate fast foods. In an experimental study on rats it was evident that Dietary sugars such as fructose and sucrose have tendency to induce fatty liver in rats. (Al-Nagdy *et al*., 1970) Therefore we assessed the pattern of sweets eating habit which revealed that 8.8% participants never consumed sweets, 74.4% consumed occasionally, and 16.6% consumed several times. Most of the participants were not following ideal time to consume a meal which is 20-30 minutes, more than 50 % of participants were consuming their meal in less than 15 minutes. Brain *et al.,* demonstrated that fast eating habit leads to more weight gain over than slow eating habits. In present study it was found that average water intake per day of most participants was not adequate. Only 22.2% of participants had adequate water intake per day that is about 2.5-3.5 litres. Probiotics plays a vital role in maintaining gut health which directly or indirectly affects the liver. (Iacono *et al*., 2011) Therefore, in present study we have also assessed the knowledge and awareness about probiotics and their consumption. Among the total participants 38.8% were aware of health benefits of probiotics and 43.3% consume probiotics. Most of the people are not aware of health benefits of probiotics, beyond that 60% of participants include curd as a source of probiotic in their regular diet where as 8.9% include probiotic drinks and supplements. The current study revealed that most of the people are unaware of NAFLD, impact of exercise and dietary habits on the progression of metabolic diseases. There is a lack of knowledge and awareness regarding the diagnosis and treatment options of NAFLD.

Conclusion

There are numerous scientific studies on NAFLD, despite of that there is a lack of significant data regarding the awareness of NAFLD in general People. There is insufficient knowledge and very less awareness on NAFLD among the people. Lack of awareness is the leading cause of progression of NAFLD and its associated problems. Majority of the population is unaware of NAFLD regardless of their age, gender and education. Even most of the Post graduated people are not aware of health risk of NAFLD, so we can conclude that educational status doesn't confirm any person is aware or not regarding a particular disease. Most of the people agree with the statement that "Exercise can reduce the risk of metabolic disorders" but still they don't give priority to exercise. On the basis of responses by the participants we can conclude that there is a need to spread awareness of NAFLD via Mass media, workshops, one day programmes, posters, patient counselling, in order to get control on prevention, early detection, and treatment of metabolic diseases.

Limitations

There is a lack of number of participants, which could have been more in order to obtain a more representative and accurate view. There is a lack of some clinical information like liver function tests such as SGOT (AST), SGPT (ALT) which are required for the confirmation of their health condition. The locality of study area was urban sector, most of the people were educated and aware of health risks, and in case of rural sector the results may vary.

Table 1.1 : Percentage of participants with gender specification.

Gender	No. of participant	Percentage
Male	44	48.9%
Female	46	51.1%

Table 1.2 : Percentage of participants of different age group.

Age range	No. of participants	Percentage
16-30	35	38.8%
31-45	20	22.2%
46-60	20	22.2%
61-75	8	8.8%
76-90	7	7.7%

Table 1.3 : Analysis of BMI of participants.

BMI	No. of participants	Percentage
Underweight	6	6.6%
Normal	48	53.3%
Overweight	30	33.3%
Obese	6	6.6%

Table 1.4 : Educational qualification of participants.

Education	No. of participants	Percentage
Under matric	6	6.6%
Matric	11	12.2%
High School	16	17.7%
Graduate	50	55.5%
Post graduate	10	11.1%

Table 2.1 : Status of NAFLD and other associated diseases.

NAFLD	No. of respondents	Percentage
Heard about it, but not suffering.	31	34.4%
Never heard about it	51	56.6%
Heard, suffering from it	5	5.5%
Never heard about it, but suffering from NAFLD.	3	3.3%
Disease/ condition	**No. of Patients**	**Percentage**
Diabetes	7	7.77%
Hypercholesteraemic	8	8.88%
Thyroid	5	5.55%
Hypertension	5	5.55%

Table 2.2 : Response of participants on awareness of liver function tests.

Liver function tests	No. of respondents	Percentage
Heard about it	57	63.3%
Never heard about it	33	36.6%
Undergone liver function test	31	34.4%
Never undergone liver function test	59	65.5%

Table 2.3 : Response of participants on the awareness of SGOT (ALT) and SGPT (AST) parameters.

SGOT/SGPT	No. of participants	Percentage
Heard about it, but not aware	12	13%
Aware of it.	23	25.5%
Never heard about it	55	61.1%

Table 3.1 : Response of participants on exercise schedule.

Performing Exercise	No. of respondents	Percentage
Regular	41	45.5%
Once a week	17	18.8%
Never	32	35.5%

Table 3.2 : Percentage of participants adapting different type of exercises.

Type of exercise	No. of respondents	Percentage
Yoga	13	22.4%
Heavy exercise	4	6.8%
Light exercise	21	36.2%
Morning walk	20	34.4%

Table 3.3 : Percentage of respondents regarding the preference for stairs or elevator.

Preference	No. of respondents	Percentage
Elevator	44	48.8%
Stairs	46	51.2%

Table 4.1 : Response of participants on breakfast schedule.

Have breakfast	No. of respondents	Percentage
Everyday	69	76.6%
Sometimes	17	18.8%
Never	4	4.4%

Table 4.2 : Percentage of respondents regarding the average time for meal consumption.

Time	No. of respondents	Percentage
Less than 15 min.	48	53.3%
15-30 min.	41	45.5%
More than 30 min.	1	1.1%

Table 4.3 : Food habits associated with the risk of metabolic disorders.

Food habit	Fast food	Sweets
Never	22 (24.4%)	8 (8.8%)
Occasionally	44 (48.8%)	67(74.4%)
Several times/ often	24 (26.6%)	15(16.6%)

Table 4.4 : Percentage of average water intake by the participants.

Water intake/ per day	No. of people	Percentage
1.0 -1.5 litres	24	26.6%
1.5-2.5 litres	46	51.1%
2.5-3.5 litres	20	22.2%

Table 4.5 : Percentage response of participants on awareness about Probiotics

Probiotics	No. of respondents	Percentage
Heard about it	46	51.1%
Never heard about it	44	48.8%
Aware of health benefits of it.	35	38.8%
Consume probiotics	39	43.3%

Table 4.6 : Percentage of Participants consuming probiotic drinks or supplements and curd.

Source	No. of respondents	Percentage
Curd	54	60%
Probiotic drinks/ supplements	8	8.9%

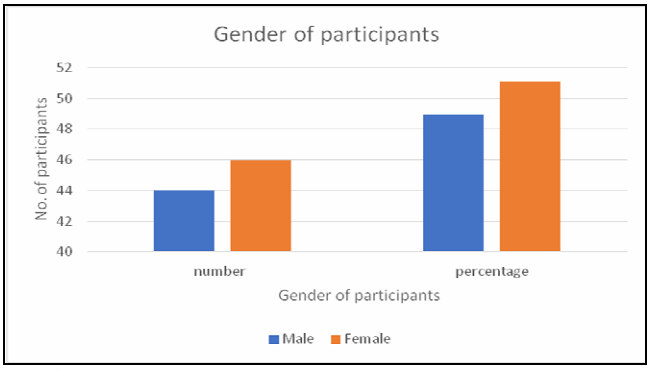

Fig. 1.1 : Illustration of Percentage of participants with gender specification.

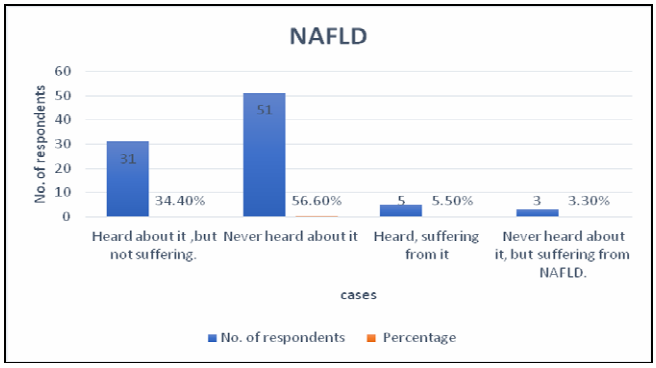

Fig. 2.1 : Illustration of current state of awareness of NAFLD among the participants.

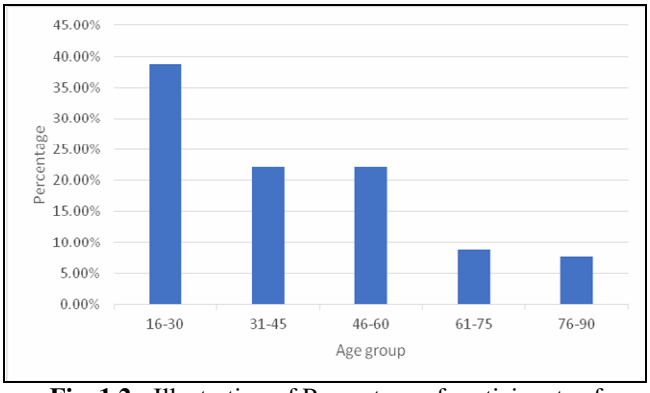

Fig. 1.2 : Illustration of Percentage of participants of different age group.

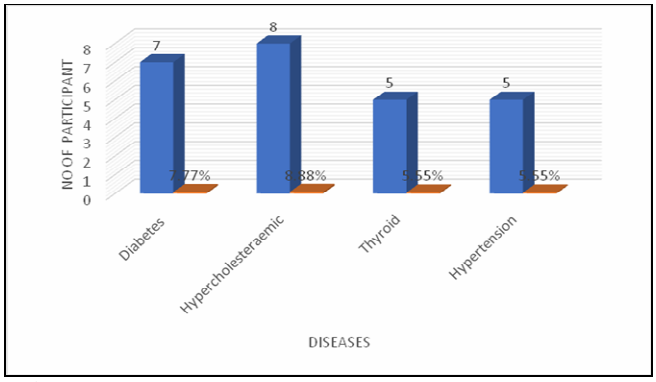

Fig. 2.2 : Illustration of number of participants having other associated diseases.

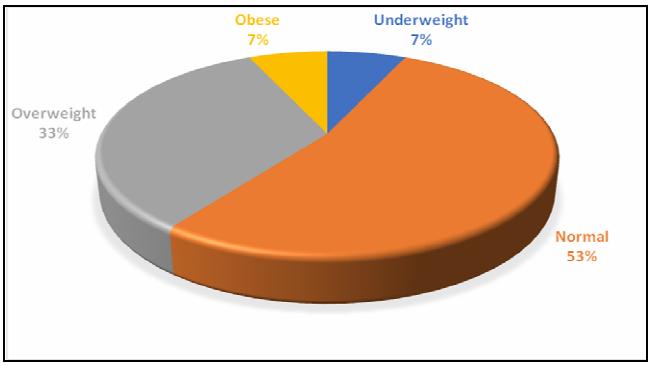

Fig. 1.3 : Illustrative pie chart on Analysis of BMI of participants.

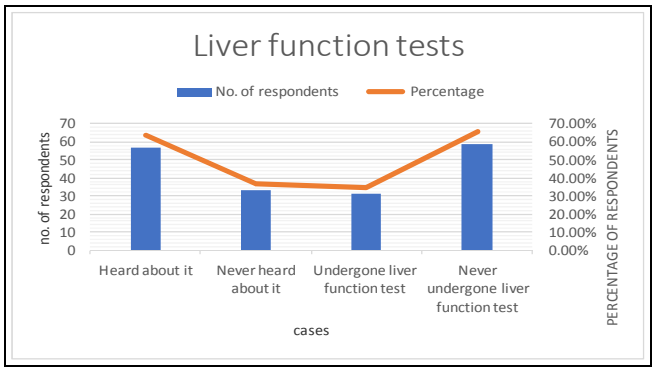

Fig. 2.3 : Illustration of Percentage of particpants on awareness of liver function tests.

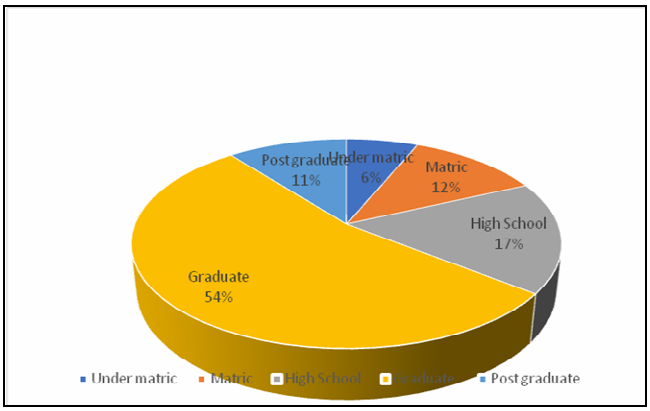

Fig. 1.4 : Pie chart depicting Educational qualification of participants.

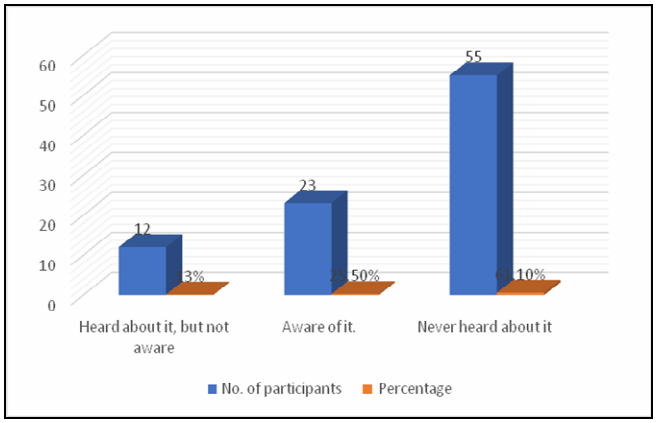

Fig. 2.4: Percentage of participants versus awareness of SGOT(ALT) and SGPT(AST).

3. Exercise

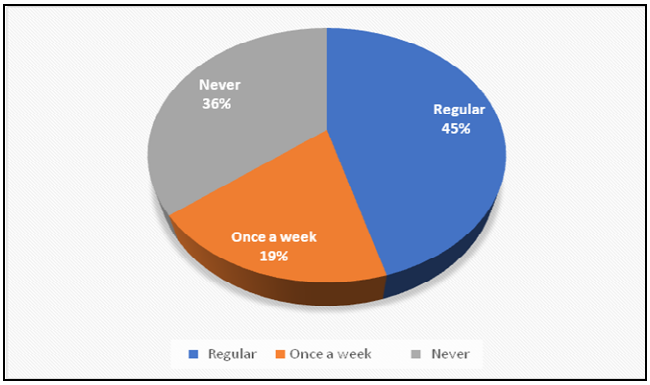

Fig. 3.1 : Illustrative pie chart depicting Percentage Response of participants on exercise schedule.

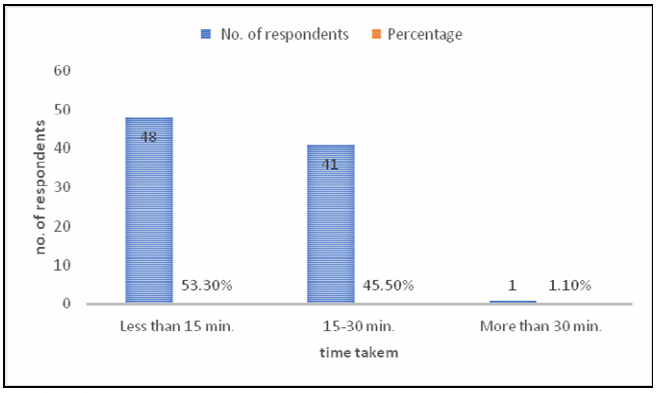

Fig. 4.2 : Percentage of respondents versus average time taken for meal consumption.

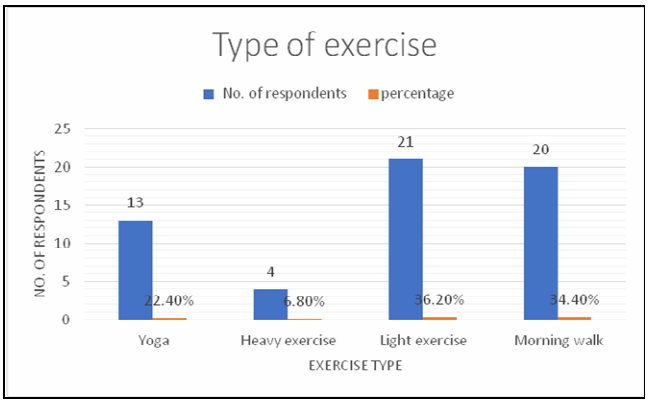

Fig. 3.2 : Illustration of Percentage of participants adapting different type of exercises

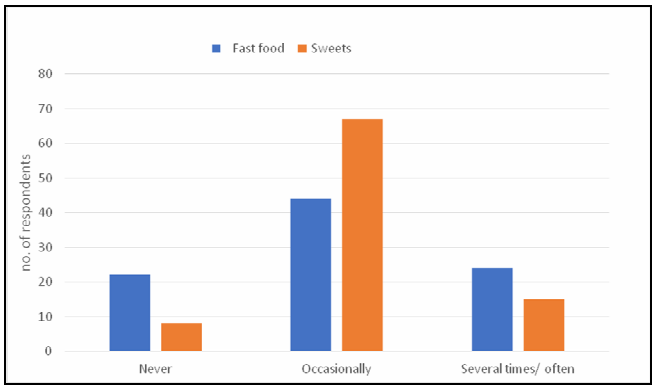

Fig. 4.3 : No. of respondents versus Food habits.

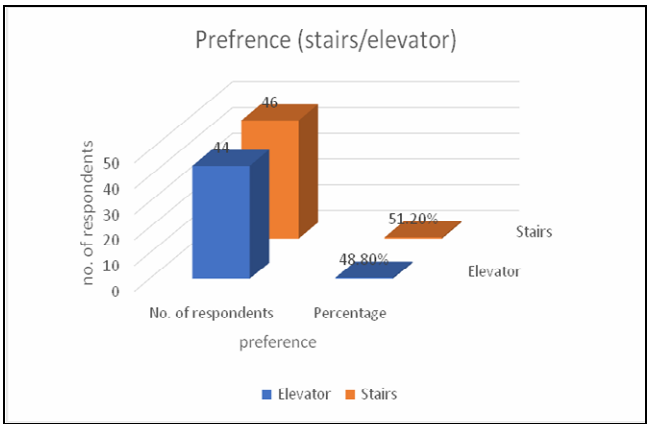

Fig. 3.3 : Illustration of Percentage of respondents regarding the preference for stairs or elevator.

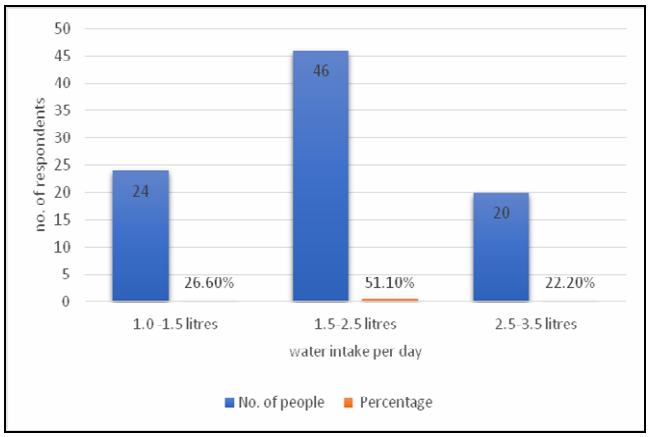

Fig. 4.4 : Number of participants versus average water intake per day.

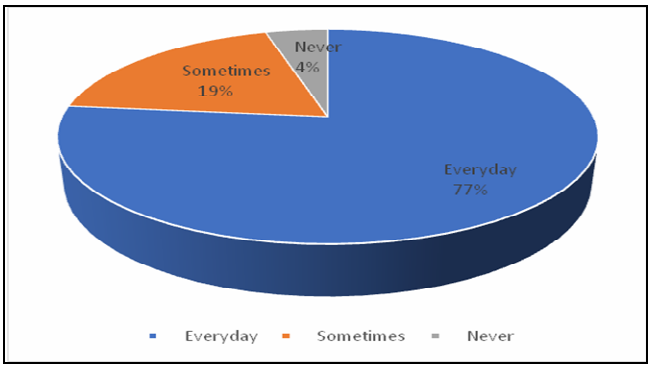

Fig. 4.1 : Illustrative Pie chart on Response of participants on breakfast schedule

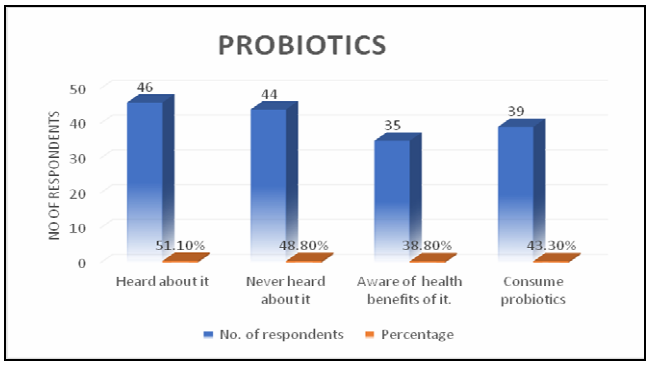

Fig. 4.5 : Percentage response of participants on awareness about Probiotics.

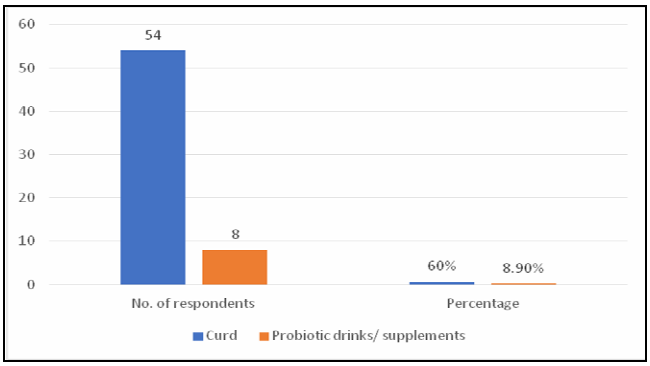

Fig. 4.6 : Illustration of Percentage of Participants consuming probiotic drinks/ supplements and curd.

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