

ROLE OF NUTRITION AND DIETARY PRACTICES IN MANAGEMENT OF ACIDITY IN ADULT INDIVIDUALS(20-55 YEARS)

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ABSTRACT: Acidity is one of the most common condition found in adults which is a symptom of Gastro esophageal Reflux Disease(GERD).It is triggered by faulty dietary habits along with lifestyle patterns. To study the severity and frequency of symptoms. To study the eating and lifestyle patterns associated with the condition and to study the management techniques used by the patients. A total of 150 patients in outpatient section of the clinic were taken. A self administered questionnaire with questions on basic personal details, anthropometric data, eating habits, lifestyle patterns were included. Food frequency questionnaire was also included. About 39.3% of the respondents experience acidity on once a week basis while 7.3% experience it daily. 48% respondents describes the situation as it appears anytime and not made better by taking food. 52% and 44% usually experienced acid reflux after eating spicy foods and heavy meals. 71.3% does not take their meals on time. Lifestyle patterns

such as smoking and lying down immediately after meals gives 17.3% and 44%. Physical activity was often done on weekends with 34% of the respondents and rarely with 28%. On the question of how respondents manage acidity, 62% manage by avoiding certain food/foods. 49.3% alter their diet by eating specific food/foods and 12.7% does not alter their diet at all. Analysis of the dietary patterns and food frequency questionnaire showed that diet plays a major role in causing and also preventing acid reflux. Stress and anxiety has shown to play a significant role in causing and worsening the condition. Analysis has revealed that there is very little activity that majority people have engaged in.

KEYWORDS : Eating and lifestyle patterns, physical activity, food frequency questionnaire

INTRODUCTION: Acidity is a common symptom of Gastro esophageal Reflux Disease.. (GERD) may be a common condition that's characterized by reflux of gastric content into the esophagus and is a

symptom-related quality of life which decrease and causes various complications(1-4).Gastro esophageal reflux disease (GERD) is symptomatically mentioned as heartburn or reflux disease, where the stomach content can travel backwards towards the esophagus resulting in gastric content attack on the tissue lining The primary symptoms of GERD are heartburn and regurgitation, but individuals can also suffer pain, nausea bloating, belching, and water brash (1) Acidity symptoms include the following Frequent burping or hiccups for no apparent reason Burning sensation and pain within the chest. Regurgitation ,Prolonged sour taste within the mouth or bitter-tasting acid that backs up into your throat and mouth Post-meal heaviness ,Nausea, Constipation ,Indigestion ,Bad breath ,restlessness .

In one meta-analysis of epidemiological studies, an association was found between GERD symptoms and being overweight (BMI 25-29.9kg/m²) (OR= 1.43, 95% CI 1.158-1.774) or obese (BMI 30-34.9 kg/m²) (OR 1.94, 95% CI 1.468-2.566)²⁶. A large case-control study reported the risk of reflux to be three times higher among severely obese (BMI>35 kg/m²) men (OR 3.3, 95 % CI 2.4-4.7) and six times higher among severely obese women (OR 6.3, 95% CI 4.9-8.0) when compared with normal weight participants (BMI 18.5 -24.9 kg/m²)(6)

Lifestyle interventions commonly recommended include modifications in diet,

weight management, smoking cessation, and head of bed elevation while recumbent. Lifestyle changes that may help include: Losing weight if you are overweight or obese, consumption of healthy food, maintaining proper eating time with dinner ending at least two to three hours before bed. Following a low-carb diet,avoiding food that triggers acidity such as raw onion and citrus juice ,avoiding caffeine and carbonated drinks. Avoid sleeping on your right side, cut down on smoking and alcohol, keeping your mind and body active(5)

TREATMENT OPTIONS: Increasing interest in using diet to treat GERD has emerged in parallel with patient and provider concerns regarding long term acid suppressive therapies and invasive procedural treatment choices. Although individualized dietary treatment plans are paramount to success, diet is a viable option for symptom reduction in many patients. Therapy centers around several overlying principles including specific dietary eliminations, modifications in meal caloric density and macronutrient composition, and corrections in eating patterns and behaviors

However, lifestyle modifications may be effective as well. Simply changing your dietary habits or the way you sleep may substantially reduce your symptoms of heartburn and acid reflux, improving your quality of life. While most people tolerate pain, they do not realize that poor lifestyle

choices are the main reason behind acidity. The root cause of acidity is your lifestyle, and hence, the most vital remedy is lifestyle changes.

METHODOLOGY: It is a quantitative form of research. It was conducted as survey in Gastro Health clinic. Sampling: Quota sampling has been used.

Sample size: A total sample of minimum 150 in the obese category is collected for the research.

Inclusion criteria: Any person who has/is experiencing symptoms of acidity with BMI >26kg/m² has been selected.

Exclusion criteria: Pregnant women, person with BMI <26kg/m² were excluded.

Questionnaire: This study aimed to study the severity and frequency of symptoms of acidity, analyse changes in eating and lifestyle patterns. This was an interview based questionnaire. Patients in the clinic with complaints of acidity were interviewed personally one on one. Written informed consent was obtained from the respondents in the form of signatures. The names of the respondents were anonymized to protect the confidentiality. This method is helpful as illiterate people can also be a part of the study.

Anthropometry: The first segment of the questionnaire asked the anthropometric data and categorized the respondent based depending upon the height and weight and their BMI was

calculated. Body mass Index is a measure of nutritional status in adults. It is calculated by taking the weight in kilograms and dividing it by the square of height in meters. The classification of BMI was carried out as per WHO guidelines.

A history of any underlying disorder such as diabetes, hypertension and other diseases was asked.

Dietary Assessment: The second section assessed the dietary changes and lifestyle patterns were taken into consideration. A Food frequency questionnaire was given to assess the diversity in the diet and to determine how often each food was consumed. Broad categories of foods were used, Rice/wheat, meat, fish, egg, pulses, milk, fruits, vegetables, green leafy vegetables, sweets, fried foods, chips, bakery items, carbonated beverages.

These foods were categorised on the basis of frequency of consumption in every day, thrice a week, weekly, twice a week, monthly, never.

Percentage of consumption and frequency of each of these food groups was taken into consideration.

RESULTS AND DISCUSSION:

Demographic profile

TABLE –1 : FREQUENCY AND PERCENTAGE OF AGE GROUP

Parameters	N(%)
Age Group(years)	
21-30	28(18.7)
31-40	43(28.7)
41-50	62(41.3)
51-60	17(11.3)

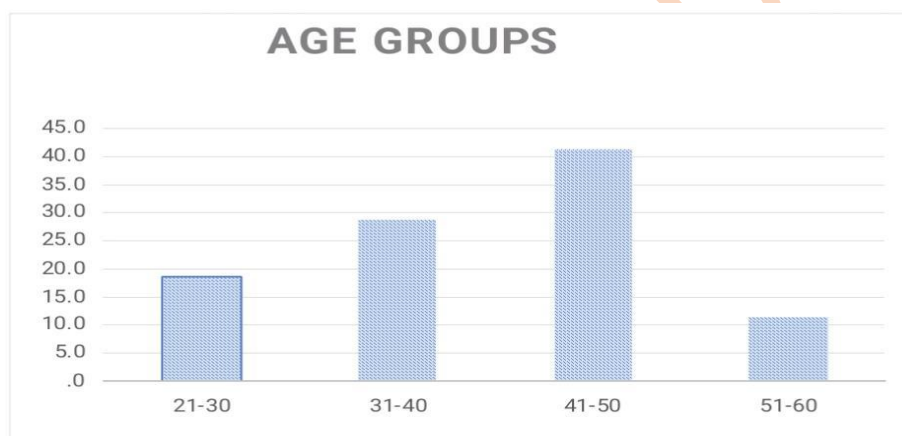


FIGURE 1 SHOWING THEPERCENTAGE OF AGE GROUPS

OBSERVATION:In Table1 and figure 1 representing frequency and percentage of the age of the respondents.41%of the respondents are in 41-50yrs age group and 29% are in 31-40 yrs age group and 19% in 21-30 yrs of age group.

TABLE 2: FREQUENCY AND PERCENTAGE OF GENDER

Gender	N(%)
Male	54(36)
Female	96(64)

OBSERVATION:In Table 2 depicting the frequency and percentage of gender of the respondents.64%are females and 36% are males.

TABLE 3 FREQUENCY AND PERCENTAGE OF OCCUPATION OF THE RESPONDENTS

Occupation	N(%)
Homemaker	47(31.3)
Private employee	77(51.3)
Student	14(9.3)
Others	12(8.0)

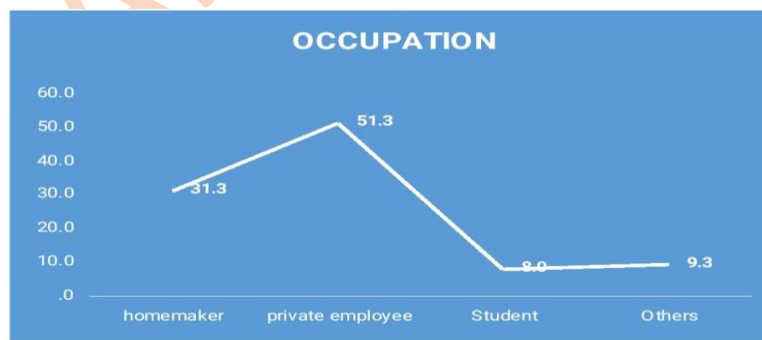


FIGURE 2 LINE GRAPH SHOWING PERCENTAGES OF THE RESPONDENTS OCCUPATION

OBSERVATION:In Table 3 and figure 2 showing the frequency and percentage of the occupation of the respondents.31.3% of the respondents are homemakers and 51% are private employees and 8%,9% are students and other respectively.

TABLE 4 FREQUENCY AND PERCENTAGE OF ANNUAL INCOME OF RESPONDENTS

Annual Income	N(%)
1-5lakhs	78(52.0)
5-10lakhs	59(39.3)
More than 10 lakhs	13(8.7)

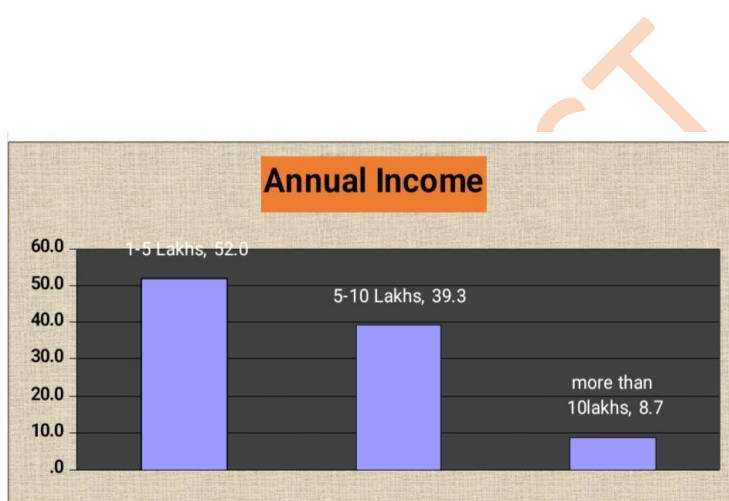


FIGURE 3 BAR GRAH SHOWING THE PERCENTAGES OF ANNUAL INCOME OF THE RESPONDENTS

OBSERVATION:Table 4 and figure 3 showing the frequency and percentage of annual income of the respondents.52%of the respondents fall in the 1-5lakhs category and 39.3&into 5-10 lakhs and 8.7%in more than 10lakhs category.

TABLE 5 FREQUENCY AND PERCENTAGE OF HEIGHT,WEIGHT,BMI

Height(cms)	N(%)
151-160	31(20.7)
161-170	71(47.3)
171-180	29(19.3)
181-190	19(12.7)
Weight (kgs)	
101-110	6(4.0)
61-70	15(10.0)
71-80	57(38.0)
81-90	53(35.3)
91-100	19(12.7)
BMI	
25-30	109(72.7)
30-35	36(24)
35-40	5(3.3)

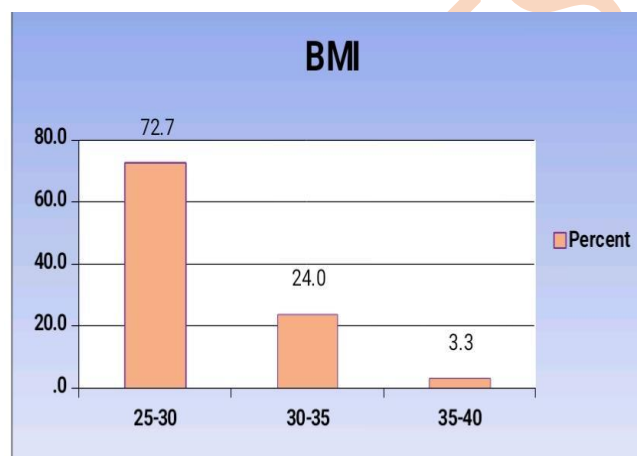


FIGURE 4 SHOWING THE PERCENTAGE OF BMI OF RESPONDENTS

The above Table 5 shows the frequency and percentage of height,weight and bmi .47%of the respondents fall in 161-170cms category while 21% in 151-160 cms.Weight of 35%of the respondents fall in 81-90kg category and for 38% it falls in 71-80kgs category.BMI for 72.7% respondents is in the range of 25-30 and for 24%it is 30-35.

Do you have any history of the following conditions

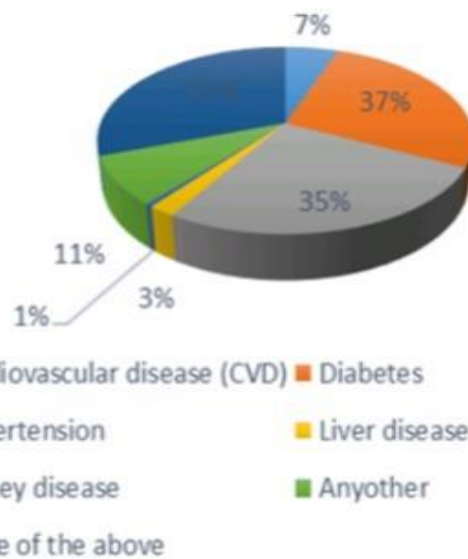


FIGURE 5 SHOWING THE PERCENTAGE OF VARIOUS DISEASE CONDITIONS IN RESPONDENTS

OBSERVATION: Figure 5 shows the frequency and percentage of medical history of the respondents of which 8% are CVD patients, 36% are diabetic, 35% are hypertensive, 17% some other conditions, 41.3% have no medical conditions, rest kidney and liver diseases count to 3.4%.

Questions	N(%)
How often do you experience heart burn?	
once a week	59(39.3)
more than 3 times a week	42(28)
rarely	38(25.3)
daily	11(7.3)
Which of the following statements best describes the timing of the situation	
Any time, not made better or worse by taking food	20(13.3)
within 2hrs of taking food	73(48.7)
Always at a particular time of the day or night with relation to food	57(38)

When do you usually experience acid reflux?	
After eating spicy food items	
No	72(48)
yes	78(52)
After drinking tea/coffee	
No	103(68.7)
Yes	47(31.3)
After consuming heavy meals	
No	84(56)
Yes	66(44)
During night time	
No	141(94)
Yes	9(6)

TABLE 6 Frequency and percentage of symptoms and frequency of the condition

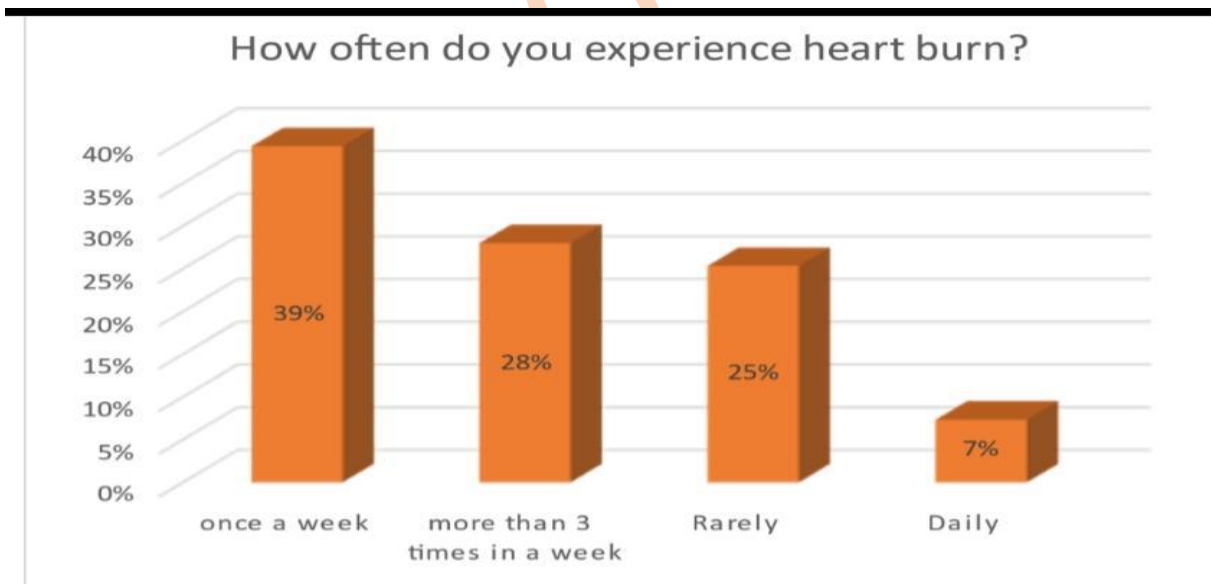


FIGURE 7 SHOWING THE PERCENTAGE OF THE TIMING OF ACID REFLUX EPISODE

OBSERVATION: Table 6 shows the frequency and percentage of symptoms of the condition.

39.3% experience acid reflux once a week, for 28% more than 3 times a week, 25.3% rarely and 7.3% daily. For 48% of the respondents the timing of the situation or acid reflux which is within 2hrs of taking food, In 38% always at a particular time of the day or night with relation to food, anytime not made better or worse by taking food accounts to 13%. For 6% of the respondents acid reflux occurs at

night time, for 44% it is after consuming heavy meals, 31% after drinking tea/coffee and 52% after eating spicy food.

TABLE 7 Frequency and percentage of eating and sleeping patterns

Questions	N(%)
Do you take your meals on time? Yes No sometimes	39(26) 107(71.3) 4(2.7)
How often do you skip meals? Once in a week more than 3 times in a week Rarely	69(46) 26(17.3) 55(36.7)
How many meals do you take? 3 large meals in a day small and frequent meals large meals with a snack	35(23.3) 56(37.3) 59(39.3)
How often do you get 8hrs of sleep? Once in a week on weekends more than three times in a week rarely	5(3.3) 69(46) 41(27.3) 35(23.3)



FIGURE 8 SHOWING THE PERCENTAGE OF RESPONDENTS SKIPPING THEIR MEALS

OBSERVATION: Table 7 shows frequency and percentage of eating and sleeping patterns. 71.3% of the respondents does not take their meals on time while 26% takes their meals on time. Skipping meals, 46% respondents skip their meals once a week while 17.3% skip it more than 3 times a week and 36.7% rarely skips their meals. On number of meals taken 39.3% accounts for large meals with a snack, 23.3% for 3 large meals in a day and 37.3% for small and frequent meals.

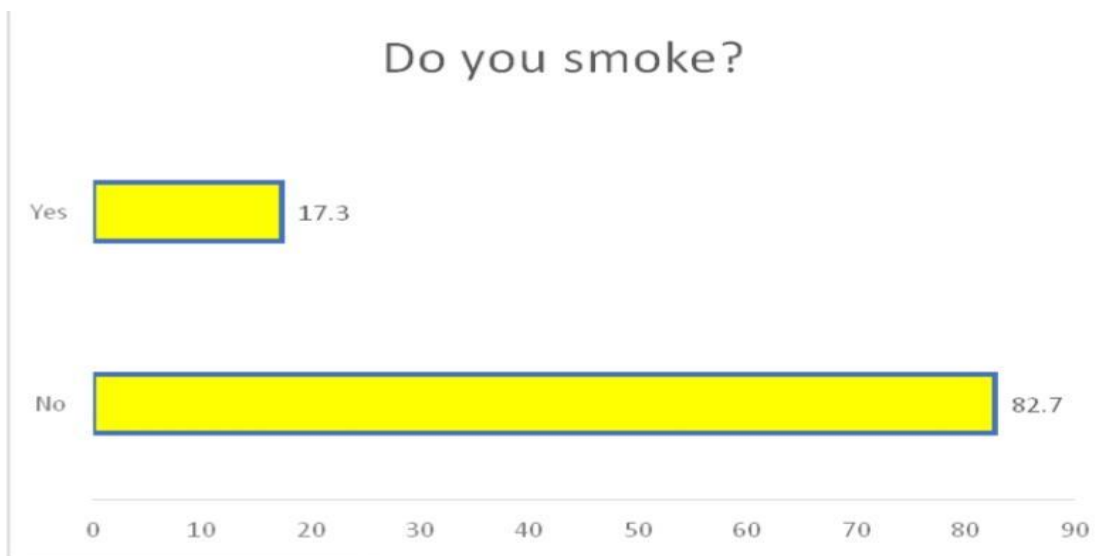
Sleeping for 8hrs in 23.3% respondents happens rarely, 46% respondents sleeps for 8hrs on weekends, 27.3% for more than 3 times a week, for 3.3% once in a week.

TABLE 8 Frequency and percentage of lifestyle patterns

Questions	N(%)
How do you manage heart burn/acidity?	
antacids	98(65.3)
No	52(34.7)
Yes	
physical activity	112(74.7)
No	38(25.3)
Yes	
use of any home remedy	118(78.7)
No	32(21.3)
Yes	
by avoiding certain foods	57(38)
No	93(62)
Yes	
any other	121(80.7)
No	29(19.3)
Yes	
Do you smoke?	
No	124(82.7)
Yes	26(17.3)
How often do you engage yourself in physical activity?	
Daily	39(26)
Weekly thrice	18(12)
weekends	51(34)
Rarely	42(28)
Do you lie down immediately after consuming your meal?	
Yes	66(44)
No	62(41.3)
sometimes	22(14.7)

Table 8 shows frequency and percentage of lifestyle patterns. Management of acidity 34% of respondents take antacids,25.3% do physical activity,21.3%uses home remedy,62% respondents avoid certain foods and 19.3% manage by other methods.82.7%of the respondents are non smoker.Frequency of physical activity shows that 26% respondents are physically active daily,12%

weekly thrice,34% on weekends,28% rarely.Out of 150 respondents 44% lie down immediately after



meals,14.75 sometimes and 41.3% does not.

FIGURE 9 SHOWING THE PERCENTAGE OF SMOKERS

FIGURE 10 SHOWING THE PERCENTAGE OF PHYSICALLY ACTIVE RESPONDENTS

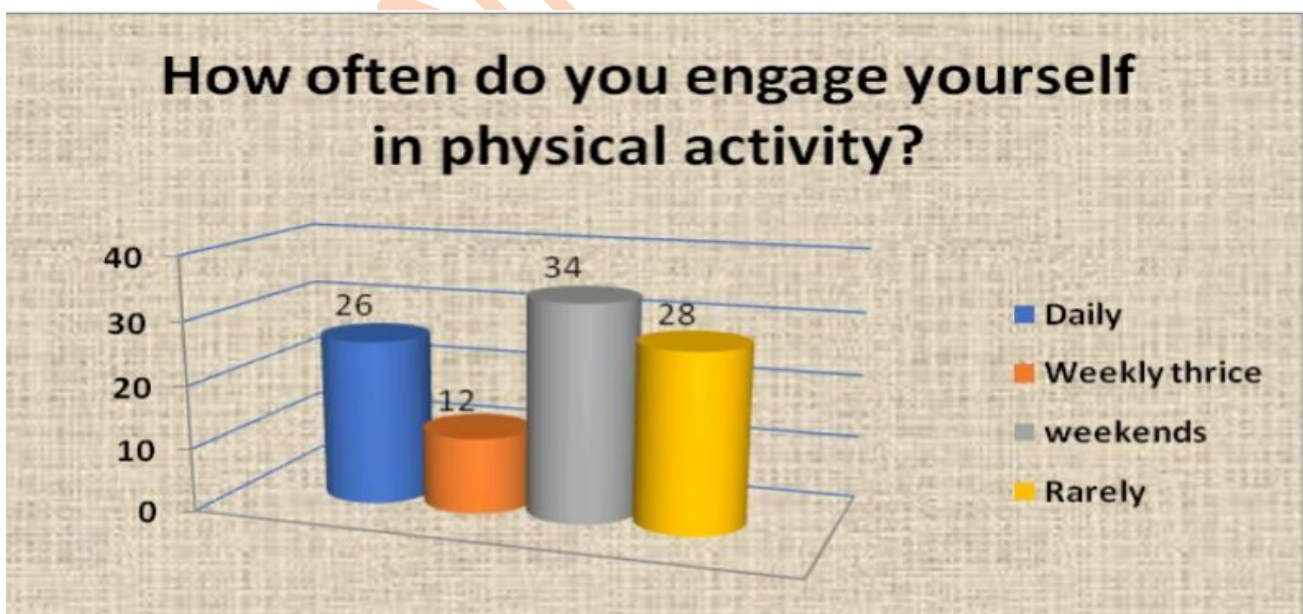


TABLE 9 Frequency and percentage of eating patterns

Questions	N(%)
Do you have a habit of bedtime snacking? Yes No	98(65.3) 52(34.7)
How often do you eat outside? rarely once a week twice a week once a month none of the above	12(8) 79(52.7) 42(28) 15(10) 2(1.3)
How do you alter your diet when you experience heartburn/acidity?*	
eat less No Yes	92(61.3) 58(38.7)
eat bland meals No Yes	103(68.7) 47(31.3)
eat any specific food/foods No Yes	76(50.7) 74(49.3)
drink decoction of herbs No Yes	100(66.7) 50(33.3)
none of the above No Yes	131(87.3) 19(12.7)

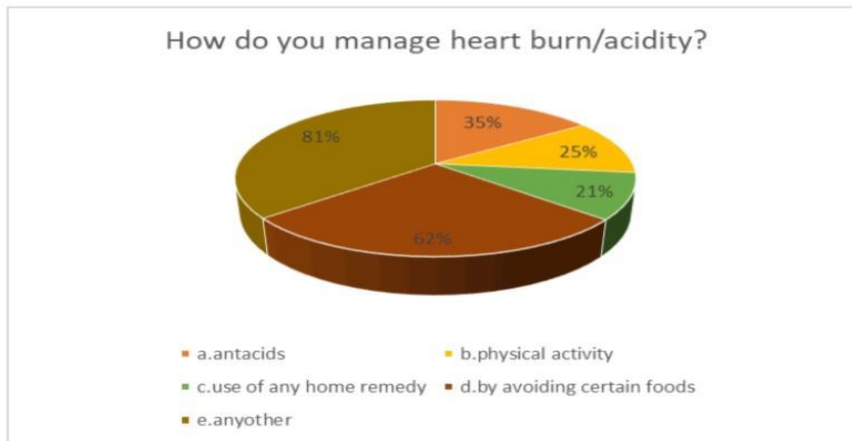


FIGURE 11 SHOWING THE PERCENTAGE OF VARIOUS MANAGEMENT TECHNIQUES

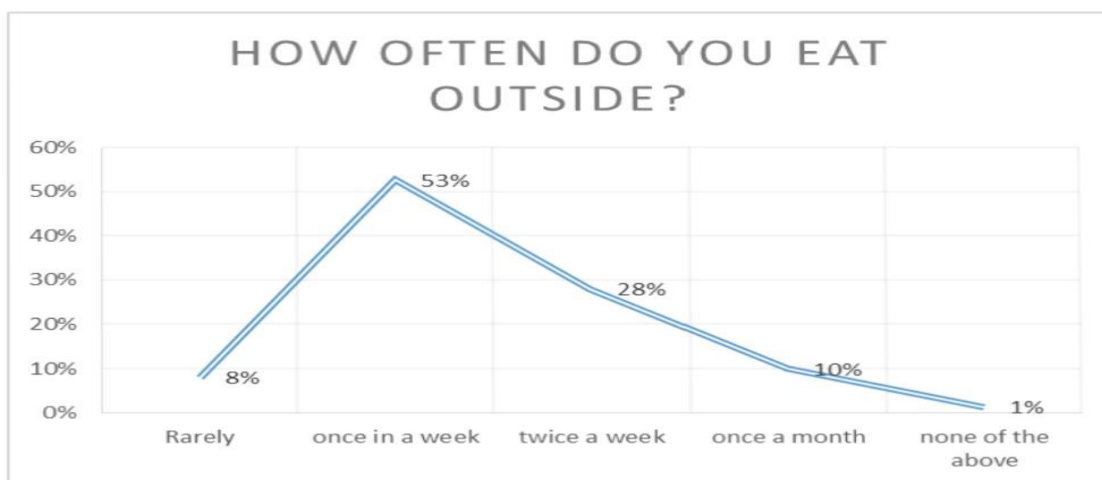


FIGURE 12 SHOWING THE PERCENTAGE OF RESPONDENTS EATING OUTSIDE FOOD

OBSERVATION: Table 9 shows frequency and percentage of eating patterns. Question on bed time snacking shows that 65.3% of the respondents have a habit of bed time snacking while 34.7% does not. 52.7% of the respondents eat outside once a week, 28% twice a week, 10% once a month and 12% rarely eats outside. On altering the diet during acidity 38.7% respondents eat less, 31.3% eat bland meals, 49.3% eat any specific food/foods, 33.3% drink a decoction of herbs and 12.7% does not alter their diet.

TABLE 10 Frequency and percentage of eating and sleeping patterns

Questions	N(%)
What are the food items you avoid during the acid reflux episode?*	
Spicy foods	106(70.7)
No	44(29.3)
Yes	
HeavyMeals	93(62)
No	57(38)
Yes	
Tea/coffee	80(53.3)
No	70(46.7)
Yes	
Any other	107(71.3)
No	43(28.7)
Yes	
Is your sleep disturbed because of acid reflux?	
Yes	117(78)
No	28(18.7)
sometimes	5(3.3)
How often has your sleep been disturbed at night because of acid reflux?	
Once a week	23(15.3)
Three times a week	5(3.3)
Rarely	117(78)
Never	5(3.3)

OBSERVATION: Table 10 shows frequency and percentage of eating and sleeping patterns. Sleep disturbance because of acid reflux occurs in 78% of the respondents, for 3.3% it happens sometimes. 15.3% respondents sleep is disturbed once a week, 78% sleep is rarely disturbed, 3.3% more than 3 times a week and 3.3% never. For food items avoided during acidity, 38% avoid heavy meals, 29.3% avoid spicy foods, 46.7% avoid tea/coffee.

TABLE 11 Frequency and percentage of use of home remedy

Question	N(%)
What among the following home remedies you usually follow?	
lemon water with honey	119(79.3)
no	31(20.7)
yes	
cold milk	101(67.3)
no	49(32.7)
yes	
buttermilk	108(72.0)
no	42(28.0)
yes	
Mint decoction	139(92.7)
No	11(7.3)
Yes	
chewing few almonds	128(85.3)
no	22(14.7)
yes	
Apple cidar vinegar	109(72.7)
No	41(27.3)
yes	
Ginger tea	127(84.7)
No	23(15.3)
yes	
Any other	139(92.7)
No	11(7.3)
yes	
None of the above	130(86.7)
No	20(13.3)
yes	

OBSERVATION: Table 11 shows the frequency and percentage of the use of home remedies during acid reflux. Around 32% of the respondents use cold milk, 28% buttermilk, 7.3% use mint decoction, 14.7% use almonds, 27.3% use apple cider vinegar, 15.3% use ginger tea, 13.3% use no home remedies.

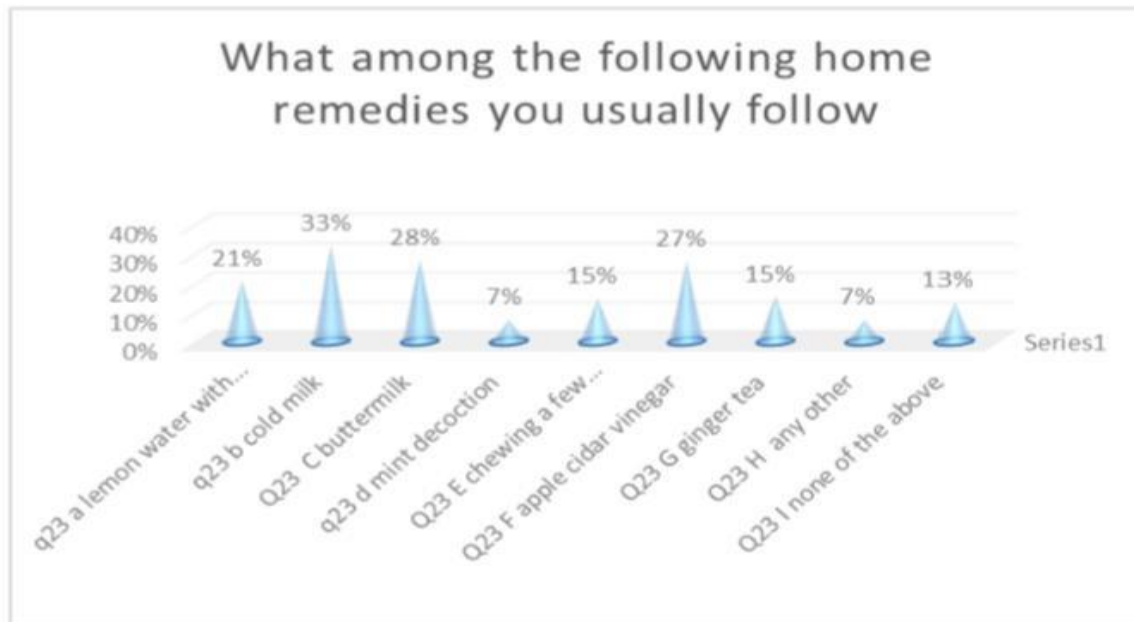


FIGURE 13 SHOWING THE PERCENTAGE OF USE OF HOME REMEDIES

RESULTS OF FOOD FREQUENCY QUESTIONNAIRE: Cereals were consumed daily by 98.7% while 1.3% respondents consumed it more than 3 times a week. Pulses were consumed twice a week by 79%, more than 3 times a week by 14% and daily by 6%. Green leafy vegetables were consumed by 36% respondents twice a week, daily by 32%. Vegetables, 53.3% consumed it more than 3 times a week while 35.3% consumed it daily. Fruits were consumed more than 3 times a week by 49.3%, twice a week by 42%. Non veg was consumed more than 3 times a week by 39.3% and twice a week by 49.3% and 3.3% have never consumed it. 59.3% consume tea/coffee on a daily basis while 2% has never consumed it, 24% consumes it more than 3 times a week. 46% consume fried food at least twice a week while 32% do it once a week. For fast food, 50% consume it at least once a month, while 32.7% take it once a week. 62% of the respondents eat sweets/ice-cream twice a week while 37.3% consume it once a week. For bakery and roadside food items 49.3% consume it once a month while 37.3% consume it rarely respectively. 18.7%

respondents never consume roadside food. Soft drinks were consumed by 41.3% respondents once a month and by 18.7% twice a week, 1.3% more than 3 times a week and 38% twice a week. For junk food 49.3% consume it twice a week, 24.7% once a week, 19.3% once a month. Fats such as ghee, butter, cheese were consumed more than 3 times a week by 25.3%, 59.3% twice a week, 0.7% does not consume it while 12.7% consume it once a week.

CHI SQUARE TEST RESULTS:

Since $p(0.000) < 0.05$ we conclude that there is an association between How often do you engage yourself in physical activity? and Do you lie down immediately after consuming your meal? at 5% Level of Significance

Since $p(0.001) < 0.05$ we conclude that there is no association between After consuming heavy meals and taking home remedies by chewing few almonds at 5% Level of Significance

Since $p(0.001) < 0.05$ we conclude that there is an association between managing acidity by antacids and altering a diet by eating bland meals at 5% Level of Significance

Since $p(0.005) < 0.05$ we conclude that there is an association between managing acidity by antacids and altering a diet by eating less at 5% Level of Significance

Since $p(0.369) > 0.05$ we conclude that there is no association between BMI and how many meals do you take? at 5% Level of Significance

Since $p(0.002) < 0.05$ we conclude that there is an association between How often do you experience heart burn? and How often do you skip meals? at 5% Level of Significance

Since $p(0.001) < 0.05$ we conclude that there is an association between managing acidity by doing physical activity and altering a diet by eating bland meals at 5% Level of Significance.

CONCLUSION:

The major objective of the study was to study the eating and lifestyle patterns of the acidity afflicted individuals and also its association with BMI. With this study, it can be concluded that corrected eating and lifestyle patterns can help relieve the severity and frequency of symptoms. Changes such as frequent physical activity with proper and healthy diet are of utmost importance to avoid episodes of

reflux. As studies indicate certain drugs used for medical conditions such as hypertension can cause acidity, being physically active not only helps with acidity but also maintains blood pressure, diabetes and other disorders.

Chi square tests revealed association between frequency of symptoms and skipping of meals also between physical activity and bed time snacking as the p value in these is less than .005 all values are significant. It was also revealed that management of acidity by use of home remedies, altering of diet by eating less, eating bland meals, avoiding tea/coffee beverages has shown to be useful in management of acidity. It was revealed that 56.7% of the respondents feel that stress/anxiety worsens their symptoms. Around 26% respondents deal with stress by meditation which in turn reduces the severity of their symptoms. In management of acidity usage of common drugs such as pantocid, razo was found and home remedies such as cold milk, buttermilk, apple cider vinegar were found to be of significant aid. As the study is also based on role of nutrition which is determined by the food frequency questionnaire gives the input on how consumption of various foods such as vegetables, bakery items, junk food, soft drinks in certain frequencies can have an adverse effect on acidity afflicted individuals.

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