

# AWARENESS OF GASTROINTESTINAL PROBLEMS ON CONSUMPTION OF SPICY FOOD

<sup>1</sup>Ngoubinah Pretty, <sup>2</sup>Jothi Priya, <sup>3</sup>Hannah R, <sup>4</sup>Lakshminarayanan Arivarasu<sup>4</sup>

<sup>1</sup>Saveetha dental college and hospitals, Saveetha institute of medical and Technical Science, Saveetha University, Chennai-60077

<sup>2</sup>Assistant professor, Department of Physiology, Saveetha dental college and hospitals, Saveetha institute of medical and Technical Sciences, Saveetha University, Chennai-60077

<sup>3</sup>Senior Lecturer, Department of Oral and Maxillofacial pathology, Saveetha dental college and hospitals, Saveetha institute of medical and Technical Sciences, Saveetha University, Chennai-60077

<sup>4</sup>Assistant Professor, Department of Pharmacology, Saveetha Dental College, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai-60077

<sup>1</sup>[binaoharry8@gmail.com](mailto:binaoharry8@gmail.com)

<sup>2</sup>[jothipriya.sdc@saveetha.com](mailto:jothipriya.sdc@saveetha.com)

<sup>3</sup>[hannahr.sdc@saveetha.com](mailto:hannahr.sdc@saveetha.com)

<sup>4</sup>[lakshmin.sdc@saveetha.com](mailto:lakshmin.sdc@saveetha.com)

## ABSTRACT

Spicy things have a sharp, strong and pungent flavour. Hot chilli pepper, gastric occurs when the stomach lining is inflamed and can be caused by eating spicy food. There have been attempts to measure the effect of spicy food stuffs that might provoke or increase gastrointestinal reflux. High prevalence of spicy food in Asia may modify gastrointestinal burning symptoms in patients with Functional Gastrointestinal Disorder. The inflammation of gastric is most often the result of infection with the same bacterium that causes most stomach ulcers. Gastritis may occur suddenly or appear slowly over time. The infection is usually passed from person to person, but can also be transmitted through contaminated food or water. Preparation of self structured questionnaire circulated through online survey link. The results were collected and were represented in pie-chart. According to this result most of the population are aware of gastrointestinal problems. Further studies can be done to prevent gastrointestinal problem, Preventive measure should be taken to avoid gastrointestinal problem.

## KEYWORDS

Heartburn; habits; Irritable bowel syndrome; spicy food.

## INTRODUCTION

The mechanism through which consumption of spicy food might affect irritable bowel syndrome (IBS) are unknown. The effect of red pepper has been related to its pungent ingredients capsaicin, which can modify gastrointestinal sensation. Symptoms are commonly reported postprandially, suggesting that some specific diet components are more likely to include symptoms. (Samuel and Devi, 2015) A stratified analysis by gender was also performed to examine gender specific association. (Choe *et al.*, 2017) . Soldiers eating more breakfast per week had a higher score of a healthy diet and were more likely to pass their specific physical fitness test (Baheerati and Gayatri Devi, 2018). Irritable Bowel syndrome was determined as having abdominal pain concurrently with improvement with defecation or changing in stool consistency or frequency (Fathima and Preetha, 2016; Rj and R, 2016). Eating time is variable which might be influenced by other factors including appetite, type of food culture difference and the size portion of consumed meal. (Khoshdel and Vakhshuury, 2019). Food with high-carbohydrate content may cause symptoms of functional bowel disorder by both allergic and nonallergic mechanisms. (Harsha *et al.*, 2015)

In western countries wheat is the major source of carbohydrate. It may cause gastrointestinal symptoms by allergic reaction to gluten, the major protein component of wheat. (Gonlachanvit, 2010). Spicy food is a mainstay of many culinary foodways around the world (Abigail *et al.*, 2019). In the western industrialized nation, many individuals enjoy and seek out spicy food while others do not. Improving chewing might lead to inadequate food exposure to saliva which consequently would lead to incomplete acid secretion and bolus formation. (Dave and Preetha, 2016). Furthermore, scant chewing could be associated with autonomous nervous system dysfunction leading to impaired gastric motor function. (Byrnes and Hayes, 2013). The effect of capsaicin, a pungent component of red pepper on the sympathetic nervous system active and energy metabolism in 16 age and height matched lean and obese young women. (Matsumoto *et al.*, 2000)

Gastrointestinal Patients may also harbor emotional distress from an illness and may exhibit visceral anxiety marked by hypervigilance, fear, avoidance GI sensations. (Spiegel *et al.*, 2011). The proportion of proteins, carbohydrate and carbohydrate and fats in our diet control the type and amount of gastrointestinal hormones released into the bloodstream. The intensity and frequency of reflux symptoms are poor predictors of presence of severe esophagitis. (David *et al.*, 2019) Food intake also affects the intestinal microbiota, which is believed to play an important role in health and disease (El-Salhy, 2019). The aim of this study is to create awareness on eating spicy food leads to gastrointestinal problems.

## MATERIALS AND METHODS

The study was done in saveetha dental college and hospitals, this is a cross sectional descriptive survey conducted among 101 populations. This survey consists of 16 self-administered questionnaires. This was conducted through an online survey, the results were collected and tabulated. This study was conducted among a random population that consisted of both male and females. The survey was cast to create and gather data among heterogeneous populations. Demographic information, knowledge, attitude, and practice were independent variables as knowledge, attitude and practice were dependent variables. The data was collected and statistically analysed in SPSS. Chi-Square analysis was performed and  $p < 0.05$  was considered as statistically significant.

## RESULTS AND DISCUSSION

64% of the population were Female and 39% were male, (Fig1), 72.3 % of the population were aware of spicy food leading to gastrointestinal problems and 27% of the population were not aware (fig 2). 65.3% said spicy food leads to slow digestion and 34.7% does not agree (Fig3). 63.4% agree spicy food can lead to cramps and 36.6% did not agree (fig 4). 73.3% said yes for enough exercise required to reduce gastrointestinal problem 26.7% did not agree (fig 5). 64.4% said yes for stress leads to gastric problem and 35.6% said they did not agree (fig 6). 36.7% said indigestion for the symptoms of the gastrointestinal problem, 24.8% said heat burn for symptoms of gastrointestinal problem. 7.9% say bloating for symptoms of gastrointestinal problems and 29.7% said all the above (Fig 7). 70.3 % of the population say yes for gastrointestinal problems can lead to dehydration and 29.7 % did not agree (fig 8). 60.40% of the population said yes for consumption of fibers can reduce gastric problems, and 30.60% did not agree (fig 9). 81.2% said that indian are more prone to gastric problem, and 18.8 did not agree (fig 10). 76.2 said yes for drinking warm water can reduce gastric problem and 23.8 did not agree (fig 11). 65.3% agreed spicy food leads to stomach pain, and 34.7% did not agree. (fig 12) 71.3% continue to eat spicy food even though they have gastric problems, 28.7% did not agree (fig 13). 55.4% believed that consumption of spicy food can kill bacteria and 44.6% did not believe (fig 14) 61.2% believed that spicy food can decrease appetite and 38.8% did not agree (fig 15) 50.5% said yes for spicy food clean colon and 49.5 did not agree (fig 16). We have an association between gender and awareness of spicy food leading to gastrointestinal problems (fig 17), spicy food leads to slow digestion (fig 18), eating spicy food can lead to cramps (fig 19), enough exercise required to reduce gastrointestinal problem (fig 20), stress leads to

gastric problem (fig 21), indigestion for the symptoms of the gastrointestinal problem (fig 22).

In the similar research it was found that 126 population participated, according to to my result the total population is 101, and in the recent articles 32% of the population are suffering from diseased consumed foods efficiently according to my result 71.3% have gastric problem, 25-64% have irritability of bowel syndrome, 10% have weekly heartburn, according to my result 24.8% had heartburn. (Shruthi and Preetha, 2018) Irritability bowel syndrome patients are 72% and healthy volunteers are 60%. (Choudhari and Jothipriya, 2016) The reduce sympathetic responsiveness to physiological perturbation such as a capsaicin diet which may cause impaired diet-induced thermogenesis and further weight gain, could be an important etiological factor leading to obesity in young women (Iyer, Gayatri Devi and Jothi Priya, 2019)

In the similar article the author said that they still cannot explain the potential effect of others dietary habits or behaviour or the etiologic relationship between spicy food intake and cancer events. (Timothy, Devi and Priya, 2019) The definition of spicy food and the highest and lowest categories of spicy food intake were inconsistent. (R and Sethu, 2018) Concluded that their meta-analysis suggests a positive association between high levels of spicy food or chili pepper intake and cancer risk. (Chen *et al.*, 2017). In the recent article the the author also concluded that, A growing body of evidence exists to support the use of intervention, well-design, adequate power, randomized controlled trials from around the world are needed to validate the efficacy of this dietary approaches available to date, notable the first line intervention on healthy eating and lifestyle. (Cozma-Petruț *et al.*, 2017)

In the previous review the author suggested that health benefits have been shown in regard to fiber, and reproducible evidence of clinical efficacy had been published, the ingestion of certain carbohydrates cause gastrointestinal symptoms. Food rich in fermentable oligosaccharides, disaccharides, monosaccharides and polyps. (Cozma-Petruț *et al.*, 2017; Okawa, Fukudo and Sanada, 2019) In the recent article the author concluded that hot spicy stews, rice cakes, ramen noodles fried foods, and topokki are the most common foods that induce typical gastroesophageal reflux disease symptoms in korea gastroesophageal reflux disease patients. (Swathy and Gowri Sethu, 2015) The list food item produces typical gastroesophageal reflux disease symptoms patients from Asian countries need to be revised substantially from the western literature based on their own local experiences. (Choe *et al.*, 2017)

In the recent article the author concluded that upper gastrointestinal symptoms are more common in subjects with a higher consumption of spicy food, younger age female gender. Capsaicin-rich foods may induce stomach fullness (Lee *et al.*, 2016). In the recent article the author concluded that the ginger did not pose a risk for side effects or adverse events during pregnancy. (Renuka and Sethu, 2015) Ginger and its polyphenols have been shown to target multiple signaling molecules that provide a basis for its use against multifactorial human disease such as cancer (Nikkhah Bodagh, Maleki and Hekmatdoost, 2019). In the similar article the author said that, Capsaicin transiently reduces resistance and piperine increases resistance, making them candidates for causing the effects seen with crude spice extracts. (Jensen-Jarolim *et al.*, 1998) In this article the author concluded that consumption of chili peppers does not increase or decrease the risk of correlated cancer. High intake of chili peppers is present, and are needed to clarify. (Adlercreutz and Kyrø, 2014; Yang *et al.*, 2019)

## CONCLUSION

Ingestion of spicy food leads to abdominal burning and increases the rectal sensory threshold. Most of the people were aware but preventive measures should be taken. IG patients may also harbor emotional distress from their illness and may exhibit visceral anxiety marked by hypertension, fear and avoidance of IG sensation. The framework implies that treatments depend on the relative weight of each domain on overall IG distress. Further prospective studies need to be done to know more about the relation between gastrointestinal and spicy food. This study was done to create awareness on consumption of spicy food

leads to IG problems.

#### **AUTHOR CONTRIBUTION:**

Structural study design, data collection and statistical analysis was conceptualised by Jothi Priya and Lakshminarayanan Arivarasu. Collection of reviews, drafting manuscript was done by Ngoubinah pretty, Revising manuscript, was done by Dr. Hannah.

**CONFLICT OF INTEREST:** The author declares that there was no conflict of interest in the present study.

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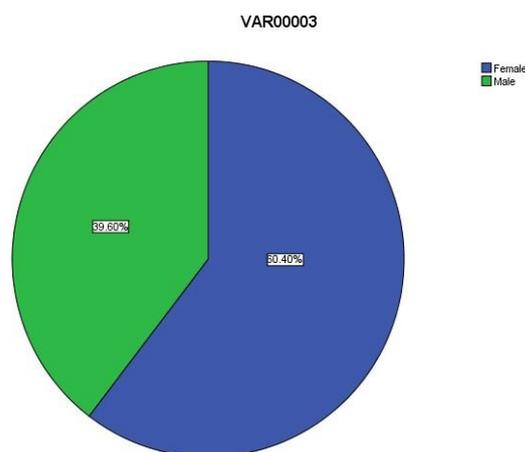


Figure 1: Pie charts showing percentage distribution about the gender. Majority (60 %) were female participants (blue) and the remaining (40%) were male participants (green).

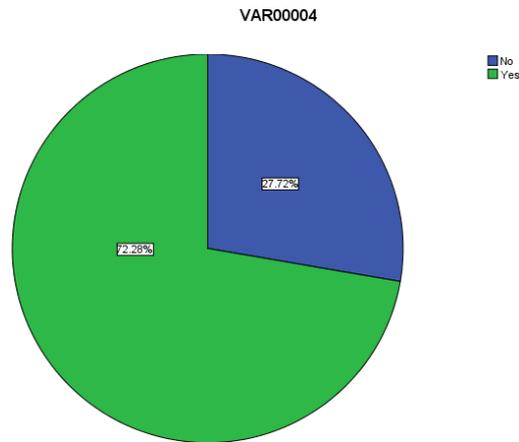


Figure 2: Pie chart showing the percentage distribution on the awareness of gastrointestinal problems. Majority of the population (72.28%) are aware about the gastrointestinal problems (green) and the remaining (27.72%) are not aware about the gastrointestinal problems (blue).

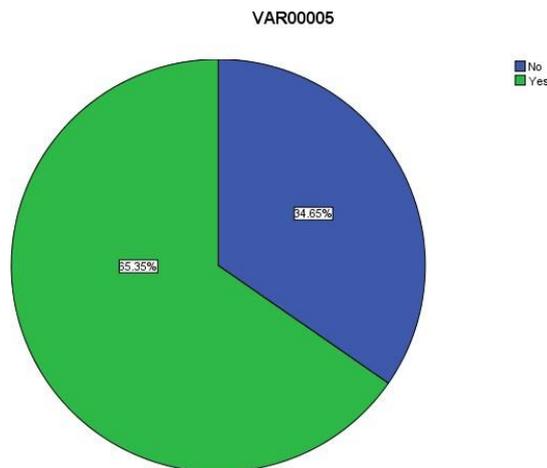


Figure 3: Pie chart showing percentage distribution on the digestive problems on consumption of spicy food. Majority of the population (55.35%) were aware of digestive problems on consumption of spicy food (green) and the remaining ( 34.65%) were not aware about digestive problems on consumption of spicy food. (blue)

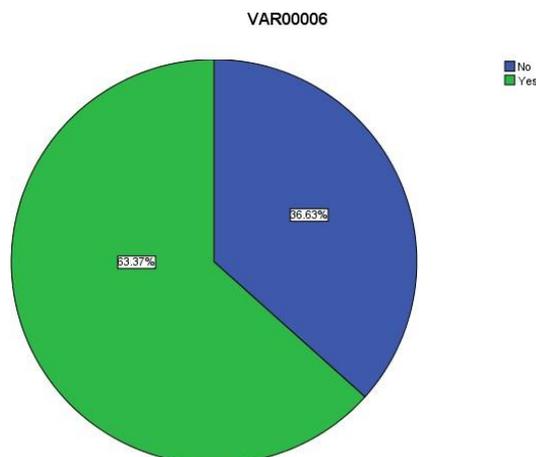


Figure 4: Pie charts showing percentage distribution about the onset of cramps on the consumption of spicy foods. Majority of the population (53.37%) were aware of cramps on the consumption of spicy foods (green) and the remaining (36.63%) were not aware of cramps on the consumption of spicy foods (blue)

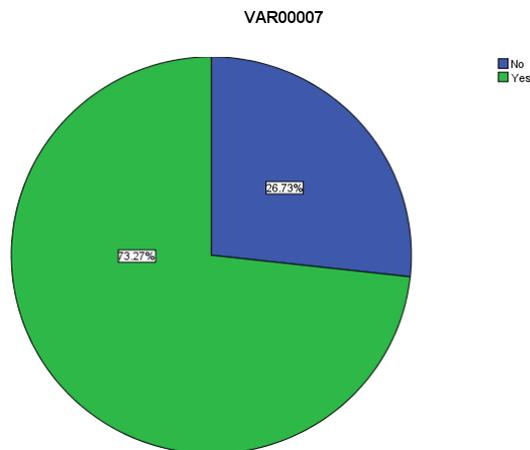


Figure 5: Pie charts showing the percentage distribution on the reduction of GI problems on regular exercise. Majority of the population (73.27) were aware of reduction of GI problems on regular exercise (green) and the remaining (26.73%) were not aware of reduction of GI problems on regular exercise

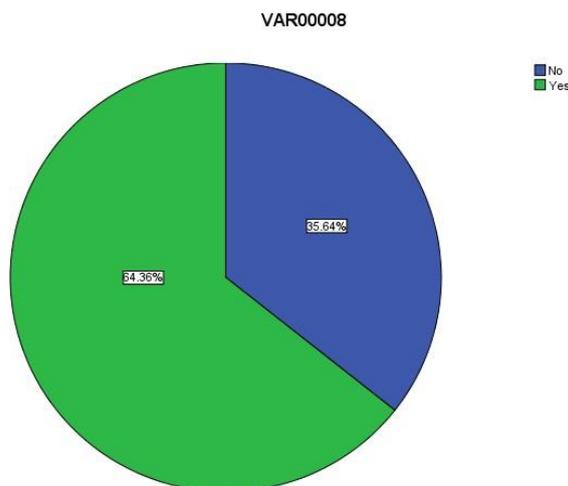


Figure 6: Pie charts showing the percentage distribution on the impact of stress on GI problems. Majority of the population (64.36%) were aware stress on GI problems (green) and the remaining ( 35.64% ) were not aware stress on GI problems (blue)

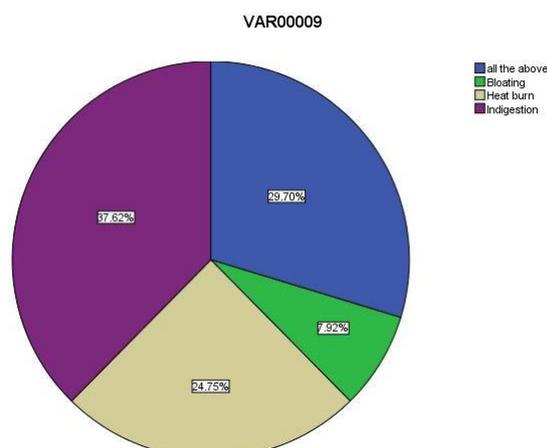


Figure 7: Pie charts showing the percentage distribution on the symptoms of GI problems., 37.62% - indigestion (purple), 24.75%- heat burn (cream), 7.92%-bloating (green), 29.70%-blue (all the above).

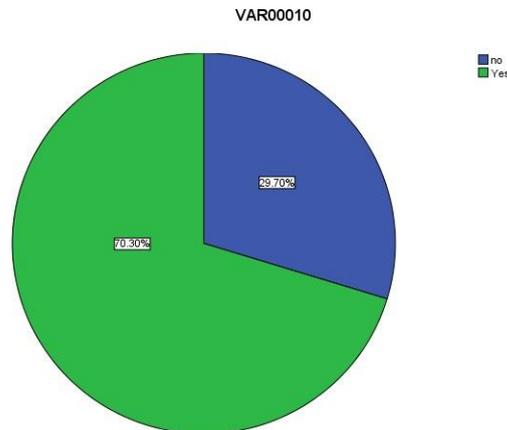


Figure 8: Pie charts showing percentage distribution of complications of GI problems. Majority of the population (70.30%) has GI problems (green) and the remaining (29.70%) do not have GI problems

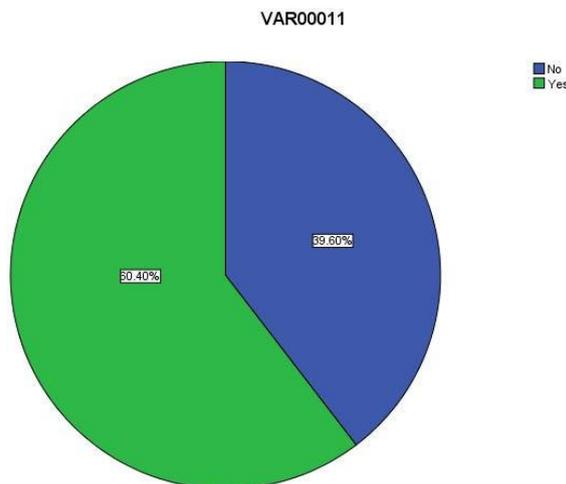


Figure 9: Pie charts showing percentage distribution of consumption of fibers for GI problems. Majority of the population (60.40%) were aware of consumption of fibers for GI problems (green) and the remaining (30.60%) were not aware of consumption of fibers for GI problems (blue)

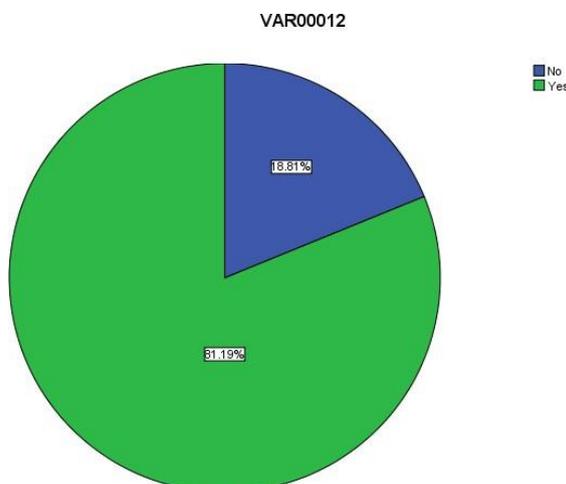


Figure 10: Pie charts showing percentage distribution of more prone countries for GI problems. Majority of the population (81.19%) india more prone for GI problems (green) and the remaining (18.81% ) did not agree (blue)

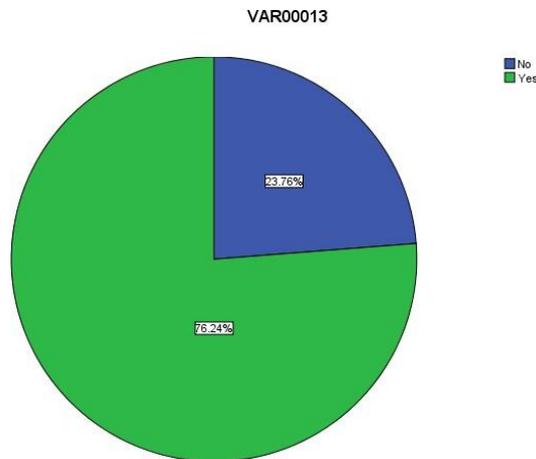


Figure11: Pie charts showing percentage distribution of reduction of GI problems on consumption of drinking warm water. Majority of the population (76.24%) were aware of reduction of GI problems on consumption of drinking warm water (green) and the remaining (23.76%) were not aware of reduction of GI problems on consumption of drinking warm water (blue).

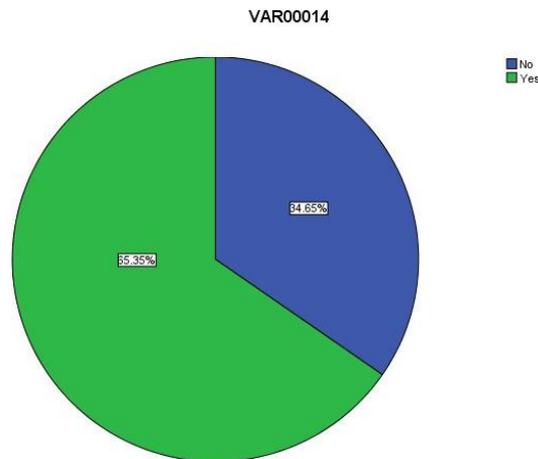


Figure12: Pie charts percentage distribution of consumption of spicy foods leading to severe stomach ache, Majority of the population (65.35%) were aware reduction of spicy foods leading to severe stomach ache (green) and the remaining (34.65%) were not aware reduction of spicy foods leading to severe stomach ache (blue).

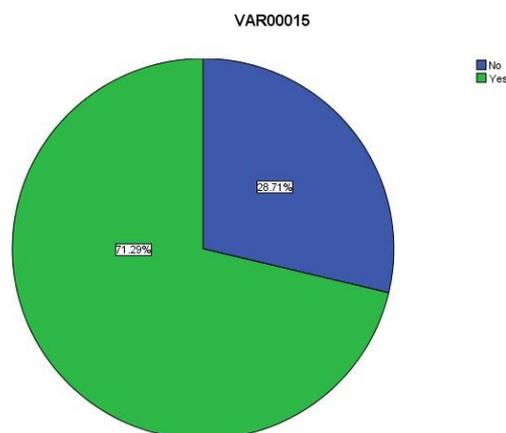


Figure13: Pie charts showing percentage distribution of consumption of spicy food, Majority of the population (71.29%) consume spicy food (green) and the remaining (28.71%) do not consume spicy food (blue).

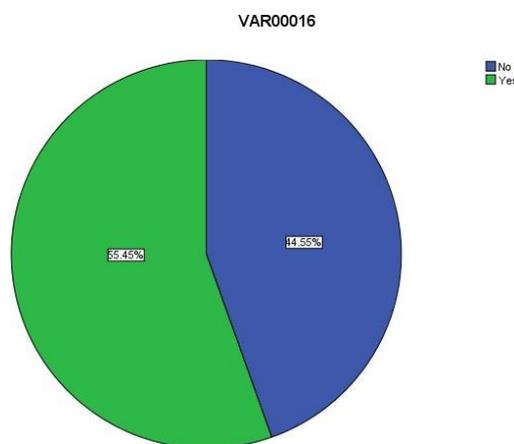


Figure 14: Pie charts showing percentage distribution on prevention of bacteria on consumption of spicy food. Majority of the population (55.45%) were aware of prevention of bacteria on consumption of spicy food (green) and the remaining (44.55%) were not aware of prevention of bacteria on consumption of spicy food (blue)

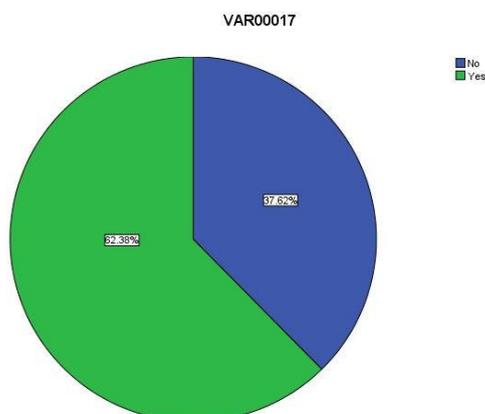


Figure 15: Pie charts showing percentage on the responses of decreased appetite on consumption of spicy food. Majority of the population (62.38%) were aware of decreased appetite on consumption of spicy food (green) And the remaining (37.62%) were not aware of decreased appetite on consumption of spicy food (blue).

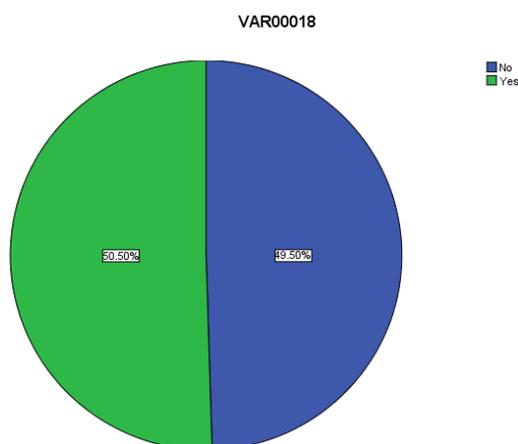


Figure 16: Pie charts represent responses about spicy food cleans colon, Majority of the population (50.50%) believe spicy food cleans colon (green) and the remaining (49.50%) population did not believe spicy food cleans colon (blue)

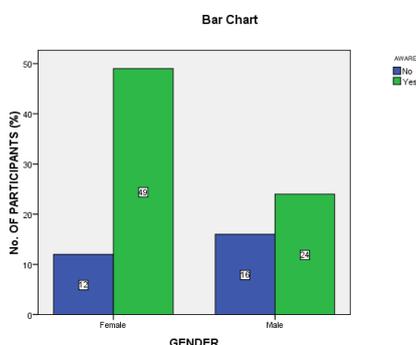


Figure 17: Bar graph showing the correlation between gender and awareness of gastrointestinal problems. X-axis represents gender and Y-axis represents the number of participants of which blue colour indicates no and green colour indicates yes. Majority of the female population (49 participants) are more aware about gastrointestinal problems rather than males. pearson's Chi square value- 4.992, p value=0.026 (p<0.05), hence statistically significant, proving theta females are more aware about the gastrointestinal problems.

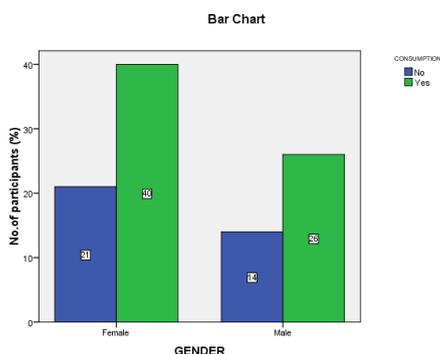


Figure 18: Bar graph showing the correlation between gender and consumption of spicy food which leads to slow digestion. X-axis represents gender and Y-axis represents the number of participants, of which green indicates yes and blue indicates no. Majority of the females (40 participants) are more aware about the digestive problems on consuming spicy food rather than males. However the difference is not statistically significant, pearson's Chi square value-0.004 p value=0.953, (p>0.05) hence, statistically not significant.

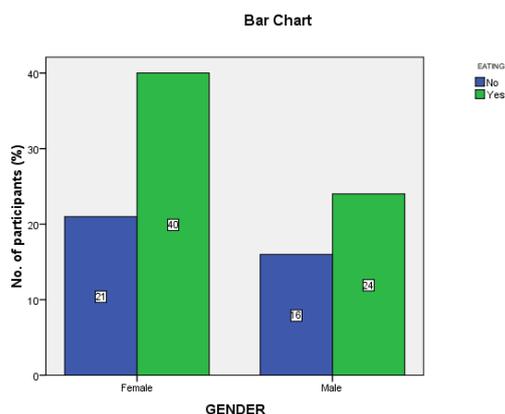


Figure 19: Bar graph showing the correlation between gender and eating spicy food that can lead to cramps. X-axis represents gender and Y-axis represents the number of participants, of which green indicates yes and blue indicates no. Majority of the females (40 participants) are more aware about the complications of consuming spicy food rather than males. However the difference is not statistically significant, pearson's Chi square value-0.323 p value=0.570, ( $p > 0.05$ ) hence, statistically not significant.

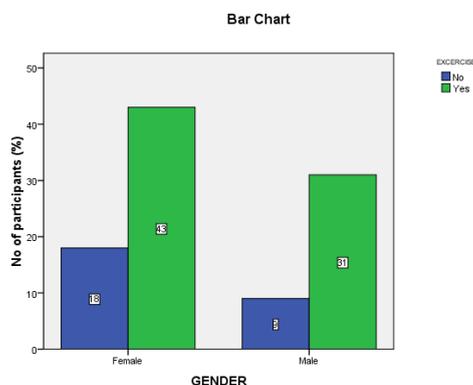


Figure 20: Bar graph showing the correlation between gender and exercise for gastrointestinal problems. X-axis represents gender and Y-axis represents the number of participants, of which green indicates yes and blue indicates no. Majority of the females (43 participants) have a better knowledge of exercises which reduces gastrointestinal problems rather than males. However the difference is not statistically significant, pearson's Chi square value-0.606, p value=0.436, ( $p > 0.05$ ) hence, statistically not significant.

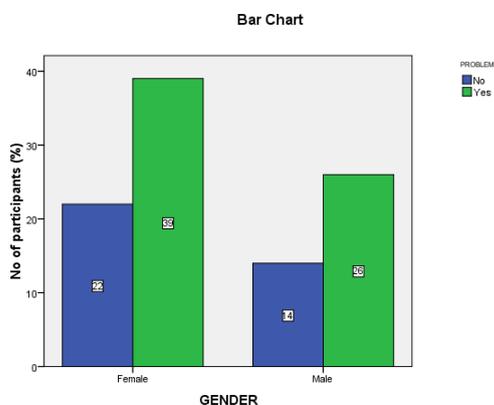


Figure 21: Bar graph showing the correlation between gender and stress leading to gastrointestinal problems. X-axis represents gender and Y-axis represents the number of participants, of which green indicates yes and blue indicates no. Majority of the females (39 participants) are more aware that stress can lead to gastrointestinal problems rather than males. However, the difference is not statistically significant, pearson's Chi square value-0.012 p value=0.913, ( $p > 0.05$ ) hence, statistically not significant.

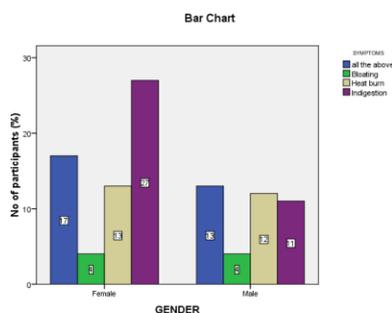


Figure 22: Bar graph showing the correlation between gender and symptoms of gastrointestinal problems.

X-axis represents gender and Y-axis represents the number of participants of which purple indicates indigestion problems, green indicates bloating problem, beige indicates heat burns and blue indicates all of the above problems. Majority of the females (27 participants) have a better understanding that indigestion is the major symptom of gastrointestinal problems when compared to males. However, the difference is not statistically significant, Chi square value-3.077,P value=0.380, hence was found to be statistically not significant.