



Impact of fast foods on developing cardiovascular diseases in adolescent population

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ABSTRACT

Fast foods are foods which are easily prepared, processed food served in snack bars and restaurants. Industrial foods such as canned foods or snacks may also be considered as fast foods. The aim of the study was to show the impact of fast food consumption and awareness on developing cardiovascular diseases especially in adolescents. Several other researchers had given an overall picture about the impact of fast food; this study focuses only on the adolescent population. To check the awareness level among the adolescents population a questionnaire containing 15 questions was prepared. This survey was carried between the months of June 2019 to March 2020 among the adolescent population living in Chennai. This survey was carried under an online platform where the participants responded to their answers. The result showed almost 88% participants are aware that over consumption of fast food can cause adverse effects in the cardiovascular system like cardiac arrest and remaining 12% participants are not aware about the impact caused by fast food- developing cardiovascular disease. So considering the growing interest in out-of-home meals and high prevalence of fast food consumption, food policies with an emphasis on providing healthy foods, and making nutritional information at fast-food restaurants may help consumers to order more healthful or lower-calorie foods.

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INTRODUCTION

Fast foods are foods which are easily prepared, processed food served in snack bars and restaurants. Industrial foods such as canned foods or snacks may also be considered as fast foods (Bahadoran *et al.*, 2015). Fast foods and out of home meals like processed meat are highly rich in refined carbohydrate, sodium, total fat, saturated trans fatty acids, cholesterol and poor in essential nutrients and dietary fibers (Schröder *et al.*, 2007). Habit of eating fast food may show undesirable effects in overall diet quality and affect normal health of children and adolescents (Rudolph *et al.*, 2007).

Fast food consumption and out-of-home eating behavior is a main risk factor for higher calorie

and fat intake and lower micronutrients density of diet. Frequent consumption of fast foods is one of the main reasons for rising trends of overweight and obesity, cardiovascular disease, type 2 diabetes, impaired vision, syndromes and other metabolic abnormalities (Pereira *et al.*, 2005; Duffey *et al.*, 2009). Higher availability of fast food services is associated with higher mortality and hospital admission rates for acute coronary heart disease as well as a higher risk of, blockage in blood vessels, overweight (Pratha and Thenmozhi, 2016), hypertension (Samuel and Thenmozhi, 2015) and obesity (Alter and Eny, 2005; Ledoux *et al.*, 2015).

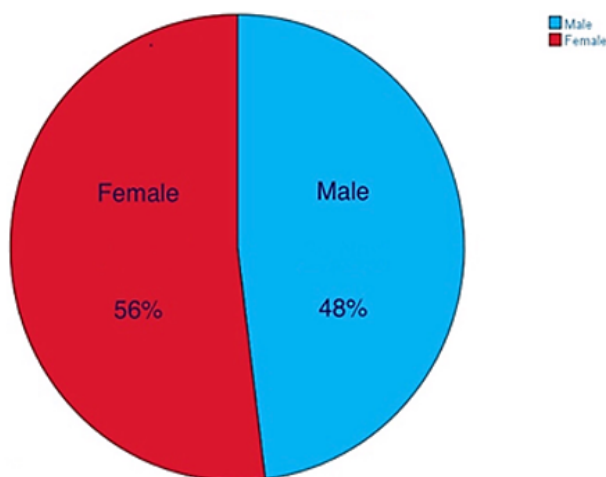


Figure 1: Frequency and Percentage distribution of Gender of participants participated in the Survey

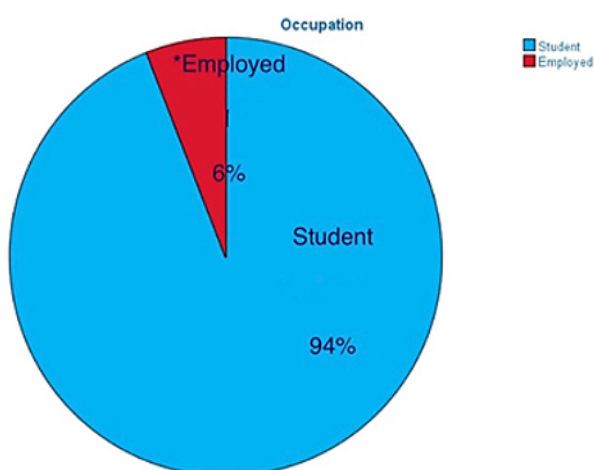


Figure 2: Frequency and Percentage distribution of Occupation of participants participated in the Survey

Fast food consumption may also result in masticatory problems (Lachat *et al.*, 2012; Choudhari and Thenmozhi, 2016). Usage of electronic gadgets (Sriram *et al.*, 2015; Thejeswar and Thenmozhi, 2015), internet (Kannan and Thenmozhi, 2016; Keerthana

and Thenmozhi, 2016), serves as an impact causing lack of physical exercise, junk food consumption and result in obesity (Krishna *et al.*, 2016; Subashri and Thenmozhi, 2016). Obesity results in several endocrine disorders (Hafeez and Thenmozhi, 2016), cardiovascular system (CVS), etc., (Menon and Thenmozhi, 2016; Seppan *et al.*, 2018).

There is a growing concern globally that fast food consumption may result in cardiovascular and related disorders starting from overweight, obesity to myocardial infarction (Nandhini *et al.*, 2018). Considering the growing interest to Western dietary patterns and trend of fast food consumption along with the global burden of cardiovascular diseases, diabetes, obesity and hypertension, and the lack of a comprehensive review study on cardiometabolic outcomes of these dietary patterns (Sekar *et al.*, 2019; Johnson *et al.*, 2020). This study aims to show the impact of fast food consumption and awareness on developing cardiovascular diseases especially in adolescents. Several other researchers had given an overall picture about the impact of fast food and also the present study focuses on the adolescent population.

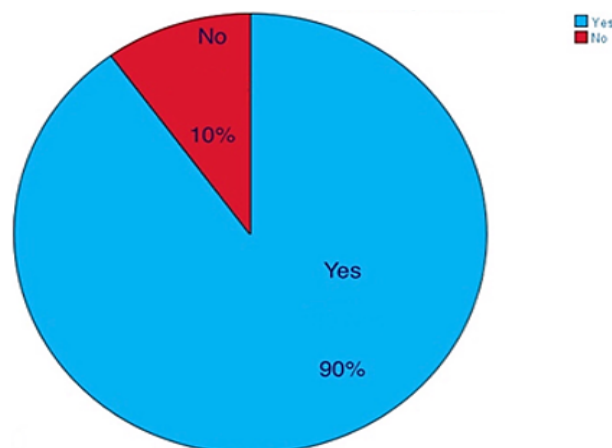


Figure 3: The pie chart shows the percentage of responses of people having the habit of eating fast food

MATERIALS AND METHODS

To check the awareness level among the adolescents population a questionnaire containing 15 questions was prepared. For this survey we got approval from the Institutional Ethical Review Board. This survey was carried between the month of June 2019 to March 2020 among the adolescent population living in Chennai, Tamil Nadu, India. This survey was carried under an online platform where the participants responded to their answers. Around 200 participants aged between 10-25 years partic-

ipated in the survey. Simple randomized sampling method was used to categories the sample population (online survey participants). 200 participants who had the ability to give informed consent, aged between 10 -25 years who had the ability to read and understand English were included to participate in the survey. In order to reduce multiple attempts of single participants, demographic details of participants including name, age, and gender, occupation, and email id was made mandatory to mention by participants before starting the survey. Based on their response, data were tabulated in excel sheets. Excel tabulated data was transferred to SPSS software version 23.0 for software analysis. The type of statistical analysis used was descriptive statistics and represented as frequency distribution. For association analysis Chi square test was used. Statistical tests used in software analysis where participant's age and gender are mentioned as independent variables, Knowledge, educational status were listed under dependent variables. Based on software analysis results were tabulated.

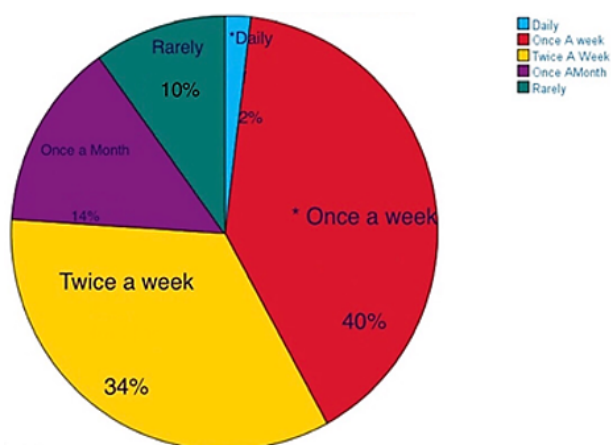


Figure 4: The pie chart shows the percentage of responses of people having frequency of eating fast food habits

RESULTS AND DISCUSSION

In this study we observed the awareness level about the impact caused by fast food on developing cardiovascular disease among the adolescent population-South India. We got 100% response from participants. This survey provides further evidence warning us against the irreparable effects of fast food consumption on adolescent population health and public health as a whole especially the increasing global burden of obesity and cardiovascular diseases. Frequent consumption of fast foods as well as out-of-home meals is a serious dietary risk factor for development of an increasing trend of obesity and other related abnormalities. Around 44%

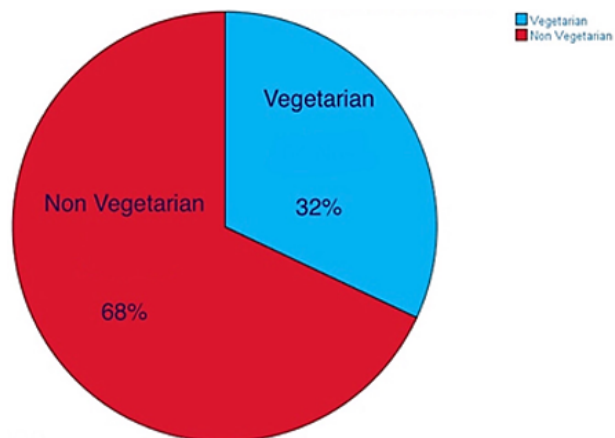


Figure 5: The pie chart shows the percentage of responses by participants for preference regarding fast food

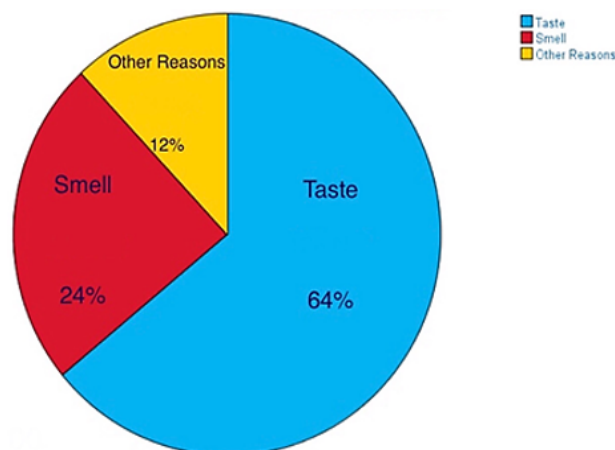


Figure 6: The pie chart shows the percentage of responses of participants view for preferring to eat fast food

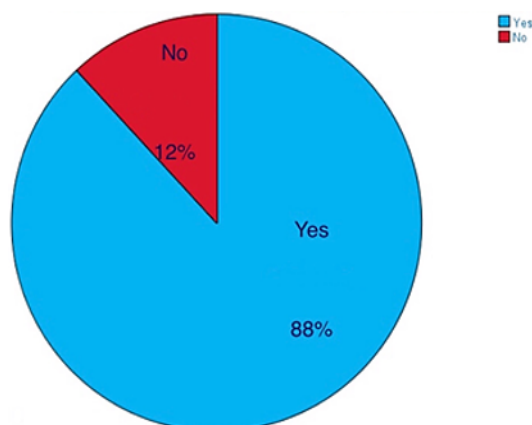


Figure 7: The pie chart shows the percentage of responses on awareness among participants on ill effects caused by fast food in general health

male and 56% female population attended the survey (Figure 1). Almost 94% of the participating sample population were students and the remaining 6% were employed (Figure 2). 90% sample population has habit of eating fast food and 10% responded no for the question (Figure 3), this goes in hand with Zhu SP, et al, where the authors say fast food was most popular event among children and adolescents between the age of 8 and 16 which was similar to our study (Zhao et al., 2019). It was also found that how frequently the survey population takes fast food, where 40% eat fast once a week; 34% eat fast food twice a week; 14% eat fast food once a month; 10% eat rarely; 2% eat fast food most often (Figure 4). This is in relation with Virtanen et al., survey where 39% of his sample population had habit eating fast food twice a week which was almost similar to our survey (Virtanen et al., 2015).

etarian and remaining 32% preferred eating vegetarian fast food (Figure 5). 64% population liked taste; 24% population liked smell and 12% population had other reasons to eat fast food eventually (Figure 6). Around 88% of the sample population was aware and the remaining 12% population was not aware about the impact of fast food in general health (Figure 7). According to Figure 8, 52% of the sample population said obesity; gastrointestinal disorder; cardiovascular disease as the impact of fast food and 12% had no idea about harmful effects of fast food. Several studies say obesity has a major impact caused by fast food which is similar to our survey (Bes-Rastrollo et al., 2006; Popkin et al., 2012). 38% of the population had stomach upset; 22% had heartburn and 8% had motion problems as chief problem after regular consumption of fast food (Figure 9). Several studies say stomach upset is the most common impact caused by fast foods (Whitton et al., 2014; Bahadoran et al., 2015). 86% of the sample population says fast food has a direct impact with the cardiovascular system and causes cardiovascular diseases 14% had no idea (Figure 10).

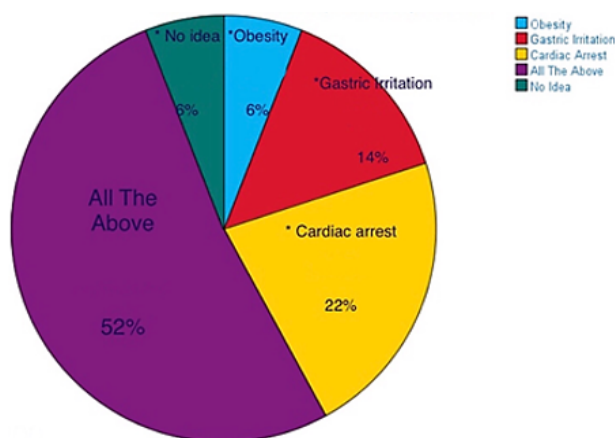


Figure 8: The pie chart shows the percentage of responses given by participants stating major impact caused by fast food

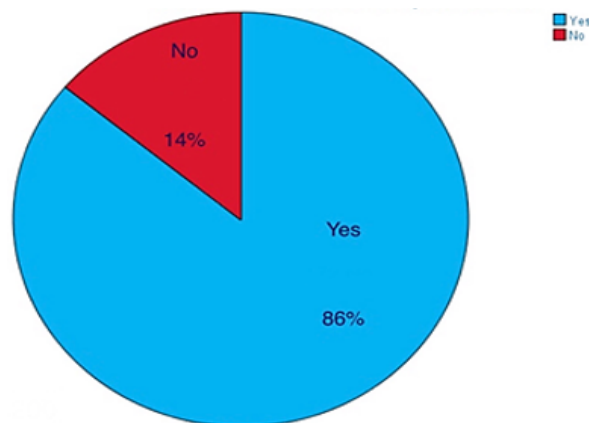


Figure 10: The pie chart shows the percentage of responses of participants on awareness of impact of fast food on cardio vascular system

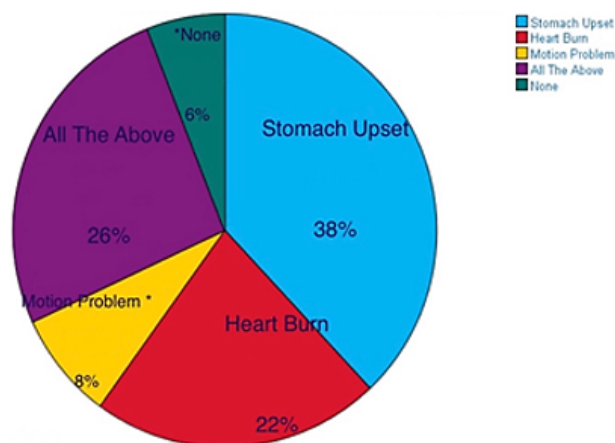


Figure 9: The pie chart shows the percentage of responses given by participants as major symptoms caused after over consumption of fast food

From the data it was found that 82% of the participants said fast food made on road side shops was not hygienic and 12% said it was hygienic (Figure 11). On seeing the percentage of awareness level among the adolescent population, almost 88% participants are aware that over consumption of fast food can cause adverse CVS effects like cardiac arrest and remaining 12% participants are not aware about the impact caused by fast food- developing cardiovascular disease (Figure 12). Figure 13 shows a clustered bar graph representing gender wise response to questions 'do you have a habit of eating fast food' and was found that $p < 0.05$ which was statistically significant. Correlation analysis shows females have

Almost 68% of the population preferred non veg-

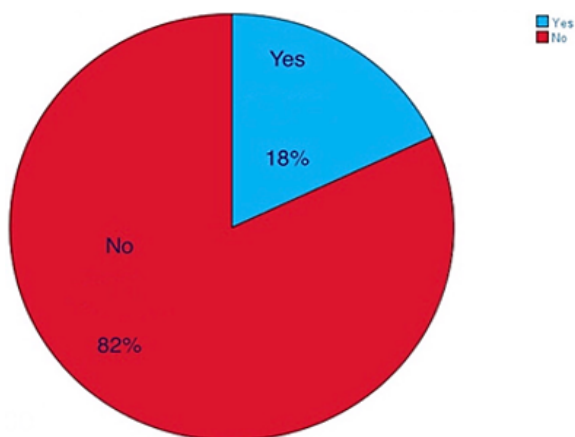


Figure 11: The pie chart shows the percentage of responses of people about hygiene maintenance while preparation of fast food in road side shops/hotels

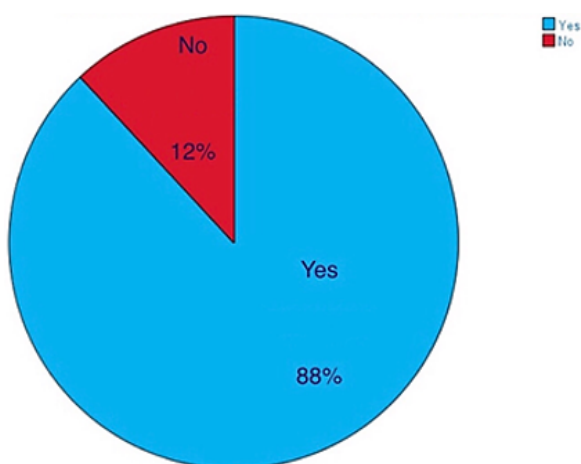


Figure 12: The pie chart shows the percentage of responses of people on awareness about ill effects caused by fast food on cardiovascular systems like cardiac arrest

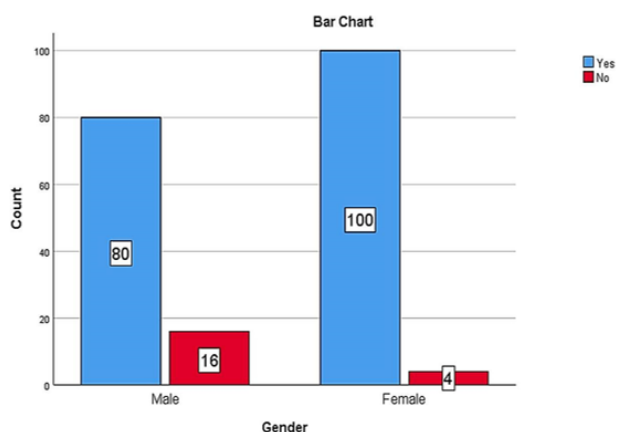


Figure 13: Bar graph representing association between gender and participants habit of eating fast food

more habit of eating fast foods than male.

Figure 14 shows a clustered bar graph representing gender response to the type of fast food you prefer to eat more often. It shows both males and females prefer more to eat non vegetarian food. Figure 14, was observed that $p > 0.05$ indicating statistically not significant.

Figure 15 shows a clustered bar graph representing gender wise response to questions re you aware of the impact caused by fast food in your general health and was found that $p < 0.05$ which was statistically significant. Figure 16 shows a clustered bar graph representing Gender wise representation of awareness level about impact caused by fast food in your CVS and found that $p < 0.05$ which was statistically significant.

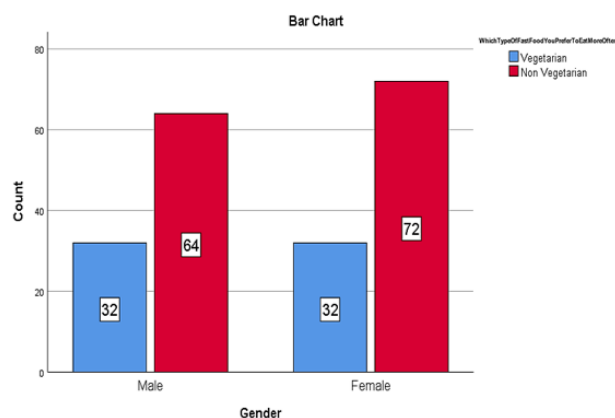


Figure 14: Bar graph representing association between gender and participants preference of eating fast food

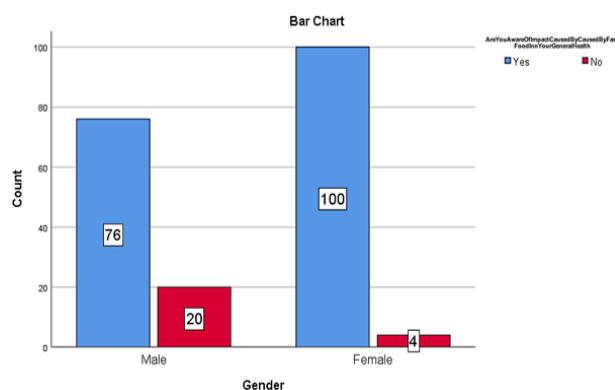


Figure 15: Bar graph showing association between gender and participants awareness about impact caused by fast food

Several other studies say fast food consumption has increased risk of developing Type 2 diabetes (Odegaard et al., 2012) and metabolic syndrome which we didn't include in our survey (Halton et al., 2006; Krishnan et al., 2010). Higher the consumption of fast foods leads to higher exposure to multiple

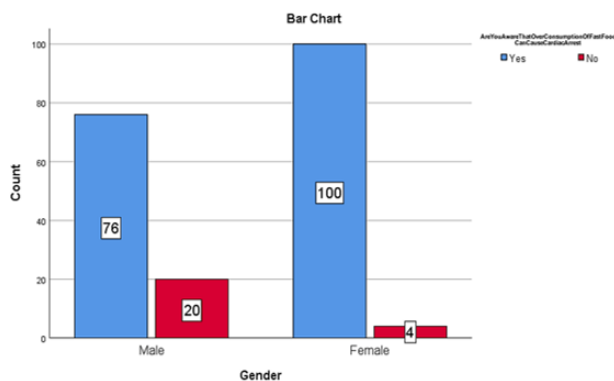


Figure 16: Bar graph showing association between gender and participants awareness level about impact caused by fast food on CVS

sources of accessible, cheap, energy-dense fast foods which is also accompanied with an increased risk of coronary heart disease mortality. Since our survey was with less number of participants, results obtained goes in hand with previous studies and surveys done related to our topic. Limitations of our survey include a small sample population. Result we obtained is based on online survey responses given by participants. Due to several issues general consideration and suggestions of participants was not recorded. Doing surveys with a large population (including different age group people as participants) can give more insight into errors. So in future this survey can be done in small age group people with large numbers of sample population.

CONCLUSION

The main motive of this survey was to check awareness level about the impact of fast food in health. In spite of being aware most of the population practices eating fast food. So considering the growing interest in out-of-home meals and high prevalence of fast food consumption, food policies with an emphasis on providing healthy foods, and making nutritional information at fast-food restaurants may help consumers to order more healthful or lower-calorie foods.

Conflict of Interest

The authors declare that there was no conflict of interest in the present study.

Funding Support

The authors declare that they have no funding support for this study.

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