

# ASSOCIATION OF FRIED FOOD CONSUMPTION WITH ACUTE CORONARY SYNDROME IN PATIENTS PRESENTING IN EMERGENCY DEPARTMENT

Ali Nasir<sup>a\*</sup>, Syed ali Hamza<sup>a</sup>, Hurmah Shoaib<sup>a</sup>, Fizza Mobasher<sup>a</sup>, Sana Sehar<sup>a</sup>, Mahrukh Mansoor Khosa<sup>a</sup>

<sup>a</sup>Punjab Institute of Cardiology, Lahore.

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## ABSTRACT:

### INTRODUCTION:

*The incidence and prevalence of cardiovascular disease is growing in communities with lower and intermediate incomes. This illness is the main cause of mortality and disability adjusted life years across the globe. Consumption of fried foods and its consequences on the risk of developing cardiovascular disease are still debatable topics. The current body of research has a number of major holes in it, the most notable of which are a lack of information on the specific types of oils that were used for frying foods, a classification of the various kinds of foods that were fried, a procedure for frying, temperature and duration of frying, the frequency with which oils were recycled, and an absence of consideration of overall dietary patterns. The purpose of this study was to examine whether or not consuming fried foods is associated with a higher risk of developing acute coronary syndrome in individuals who presented themselves at an emergency room.*

### AIMS & OBJECTIVE:

**MATERIAL & METHODS:** *The study was conducted at Department of Cardiology of Punjab Institute of Cardiology in Lahore from April 5, 2020 to September 5, 2020. Total 400 (200 in each group) patients were enrolled in the study. Patients were divided in two groups i.e. cases with acute coronary syndrome and controls without acute coronary syndrome. Then patients were admitted in Cardiology Ward and asked for history of fried food consumption including frequency of consumption per week. If patient had history of fried food consumption for  $\geq 3$  days per week, then it was labelled as case. The collected data were analysed statistically by using SPSS v25.0. Odds ratio was calculated to measure association of fried food consumption with acute coronary syndrome. Odds ratio  $>1$  was taken as significant.*

### RESULTS:

*Fried food consumption per week in case group, 47.5% patients consumed fried and in control group, 29.5% patients consumed fried food.*

### CONCLUSION:

*There is a correlation between the eating of fried meals on a regular basis and an increased risk of acute coronary syndrome. There was a significant association in fried food consumption with acute coronary syndrome in patients presenting in emergency department.*

### KEY WORDS:

*Fried Food, Acute Coronary Syndrome*

**Correspondence :** Ali Nasir, Punjab Institute of Cardiology, Lahore. Email: ali\_nasir\_2005@hotmail.com

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## INTRODUCTION:

The incidence and prevalence of cardiovascular disease is growing in communities with lower and intermediate incomes. This illness is the main cause of mortality and disability adjusted life years across the globe. More than eighty percent of cardiovascular disease will be found in these categories by the year 2020, with the greatest burden occurring in the two nations with the most people, China and India, due to the fast urbanisation that is occurring in both of these countries. Researchers from all around the world, including those in Europe, the United States, and Southern Asia, have all independently discovered connections between food and cardiovascular disease.<sup>1</sup>

In low-income and middle-income nations, the preparation and consumption of food have traditionally been confined to the confines of the household. The majority of meals in Costa Rican homes are cooked using a variety of techniques, one of which is frying, which involves submerging food in heated oil.<sup>2</sup> Recent economic growth in low- and middle-income nations has led to changes in the preparation and consumption of food, including an increase in the consumption of refined carbohydrates, salt, and red meat.<sup>3-4</sup> These meals are characterised by the fact that they have undergone extensive processing and have been packed for consumption "on the go" or anywhere besides the house. In point of fact, everything related to food—including lifestyles, cooking techniques, and eating habits—is undergoing tremendous change.<sup>2-3</sup>

Fried meals may have adverse consequences on cardiovascular health, despite the fact that the frying process enhances both flavour and scent. Consumption of fried foods and its consequences on the risk of developing cardiovascular disease are still debatable topics. The current body of research has a number of major holes in it, the most notable of which are a lack of information on the specific types of oils that were used for frying foods, a classification of the various kinds of foods that were fried, a procedure for frying, temperature and duration of frying, the frequency with which oils were recycled, and an absence of consideration of overall dietary patterns.<sup>4-5</sup>

Consuming fried foods on a regular basis,

particularly fried chicken and fried fish/shellfish, was connected with a greater risk of death from all causes and cardiovascular disease among women living in the United States. There are not many epidemiological studies that have been conducted on the effects of specific saturated fatty acids (SFAs) on cardiovascular disease, particularly in developing nations that have distinct dietary patterns.<sup>6-7</sup> One study found that the frequency of consuming fried food was 48.1% in cases of acute coronary syndrome while 38.7% in controls. The difference was significant ( $p < 0.05$ ).<sup>4</sup> Another study also reported that frequency of consuming fried food was 44.8% in cases of acute coronary syndrome while 32.7% in controls. The difference was significant ( $p < 0.05$ ).<sup>8</sup>

Rationale of this study is to establish association of fried food consumption with acute coronary syndrome in patients presenting in emergency department. According to the available research, there is a strong correlation of acute coronary syndrome with the consumption of fried foods above what is required. However, not a great deal of study has been done in this area. In addition, there is no local study that has been published in the relevant literature that may assist us in assessing the scope of the problem in the local population, and the consumption of fried food is on the rise in Pakistan. So, we want to conduct this study to get local data. So that in future we can apply results of this study and can recommend cutting down the use of fried food to prevent and control the acute coronary syndrome occurrence to plan better preventive protocols.

## METHODOLOGY:

The study was conducted at Department of Cardiology of Punjab Institute of Cardiology in Lahore from April 5, 2020 to September 5, 2020. Informed consent was obtained from each patient. Their demographic information (name, age, gender, duration of symptoms, diabetes (fasting BSR  $\geq 126$ mg/dl) and smoking) was also noted. The inclusion criteria were patients of age 18-50 years of either gender presenting with acute coronary syndrome. The exclusion criteria were patients with recurrent myocardial infarction, or along with congestive heart failure, valvular heart disease, previous bypass surgery or per-cutaneous coronary intervention (on medical record), taking

alcohol or intravenous drug user.

Sample size of 400 patients; 200 patients in each group was calculated with 80% power of test with 5% level of significance and taking expected percentage of fried food consumption i.e. 44.8% in cases and 32.7% in controls.<sup>8</sup> Patients were divided in two groups i.e. cases with acute coronary syndrome and controls without acute coronary syndrome. Then patients were admitted in Cardiology Ward and asked for history of fried food consumption including frequency of consumption per week. If patient had history of fried food consumption for  $\geq 3$  days per week, then it was labelled as case (as per operational definition). ACS was defined as presence of chest pain  $>30$  min on rest, dyspnea, (unstable angina), STEMI (chest pain  $>30$  min on rest, dyspnea, ECG changes  $>1$ mm ST segment elevation, CKMB  $>25$ mlU and troponin  $>100$ mlU) and NSTEMI (chest pain  $>30$  min on rest, dyspnea, ECG changes  $>1$ mm ST segment depression, CKMB  $>25$ mlU and troponin  $>100$ mlU). Fried food consumption was labeled, if patient had history of fried / oily food intake including potato chips, burger, shawarma, pakora, samosa roast, etc., inside or outside the house for  $\geq 3$  days per week.

The collected data were analysed statistically by using SPSS v25.0. The mean and standard deviation were used to represent quantitative factors such as age and the length of time the symptoms had been present. The results of qualitative factors, such as gender, diabetes, smoking, and the intake of fried foods, were reported in the form of frequency and percentage. A calculation called the odds ratio was used to quantify the degree of relation between eating fried foods and acute coronary syndrome. A calculation called the odds ratio was used to quantify the degree of relation between eating fried foods and acute coronary syndrome. A significance level of odds ratio greater than one was applied.

## RESULTS:

The mean age of patients in case group was  $40.33 \pm 6.20$  years and in control group was  $33.99 \pm 9.38$  years. Age was categorized in two groups, one is 18-30 years group and second is 31-50 years group. In case group, 6(3.0%) were from 18-30 years group and 194(97.0%) patients were from 31-50 years group. In control group, 81(40.5%) were from 18-30 years group and 119(59.5%) patients were from 31-50 years group. In case group, 104(52.0%) were males and 96(48.0%) patients were female. In control group, 107(53.5%) were males and 93(46.5%) patients were females. Male patients in our study were more than female. The results of diabetes showed that in case group, 108(54.0%) patients had diabetes, while in control group, 97(48.5%) had diabetes.

The results of smoking showed that in case group, 120(60.0%) patients had habit of smoking, while in control group, 109(54.5%) had habit of smoking. In fried food consumption results showed that in case group, 130(65.0%) patients consumed fried food, while in control group, 96(48.0%) patients consumed fried food. In fried food consumption per week results showed that in case group, 105(52.5%) patients consumed fried food per week  $<3$  times and 95(47.5%) patients consumed fried food per week  $\geq 3$  times. In control group, 141(70.5%) patients consumed fried food per week  $<3$  times and 59(29.5%) patients consumed fried food per week  $\geq 3$  times. In our study, results of fried food consumption per week showed in case group 47.5% patients consumed fried and in control group 29.5% patients consumed fried food.

## DISCUSSION

According to the findings of this case control research, which was carried out at the Department of Cardiology at the Punjab Institute of Cardiology in Lahore, an increasing consumption of total fried foods was associated with an increased risk of

**Table-1: Age groups results in study groups**

Age groups	Groups		Total
	Cases	Controls	
18-30 years	6	81	87
	3.0%	40.5%	21.8%
31-50 years	194	119	313
	97.0%	59.5%	78.3%
Total	200	200	400
	100.0%	100.0%	100.0%

**Table-2: Gender results in study groups**

Gender	Groups		Total
	Cases	Controls	
Male	104	107	211
	52.0%	53.5%	52.8%
Female	96	93	189
	48.0%	46.5%	47.3%
Total	200	200	400
	100.0%	100.0%	100.0%

MI. The consumption of fried meals outside of the house was found to be the primary contributor to this connection. In our study fried food consumption per week showed in case group 47.5% patients consumed fried and in control group 29.5% patients consumed fried food.

Intake of total fried foods has been linked to an increased risk of cardiovascular disease in earlier research, a finding that is similar with the findings of the present investigation.<sup>9-10</sup> According to the findings of the Nurses' Health Study and the Health Professionals' Follow-Up Study<sup>10</sup>, consuming an excessive amount of fried foods was related with a 21% increased risk of developing cardiovascular disease. INTERHEART was a standardised case-control study of acute myocardial infarction that involved 5761 nonfatal MI cases and 10,646 controls from 52 nations. The researchers found a consistent positive correlation between acute MI and the consumption of fried foods. After taking into account a number of other factors, the odds ratio was 1.13 when compared to the quartile with the lowest consumption of fried foods.

The consumption of fried meals, both at home and away from home, was shown to be greater in our research than it had been in earlier studies (OR, 1.60). Even though the cause of this outcome is unknown, it is not unreasonable to suppose that the kind of oil that was used in the cooking process might account for some of the variances seen. Cooking with high levels of trans fats and palm oil, both of which have been linked to an increased risk of cardiovascular disease, is more prevalent in Costa Rica than in other nations where similar research has been carried out.<sup>11</sup> In contrast to the findings of other earlier studies, the Spanish Cohort of the European Investigation into Cancer and Nutrition did not find any link between the consumption of fried foods and the risk of developing heart disease. In Spain, olive oil is the primary type of fat that is used in the cooking

process.<sup>12</sup>

In most Costa Rican households, frying is the primary method of preparation for food. In point of fact, greater than 85 percent of the population that was investigated admitted to eating fried meals at home at least once each week. Plantains, potatoes, cassava, maize turnovers, and rice are the kind of foods that are most typically found fried in households around Costa Rica. In spite of the fact that eating fried meals may have negative consequences on one's health, our study did not detect any correlation between eating fried foods at home and the chance of having a myocardial infarction.

This nonexistent connection could be explained in part by the lower levels of oxidation products produced by fried dishes prepared at home. In contrast to the preparation of carbohydrate-rich foods, frying causes a rise in the quantity of cholesterol and other products of lipid oxidation. This effect is particularly pronounced when cooking meat, fish, and vegetables. When frying food in the kitchen, you need to reduce the temperature, cook the food for a shorter amount of time, and use a pan. These aspects of frying meals within the home might have been factors that led to the result that was found. On the other hand, fried dishes that are made in a commercial setting frequently include the recycling of oil many times and the use of higher temperatures throughout the frying process.

Consuming fried foods on a regular basis, particularly fried chicken and fried fish/shellfish, was connected with a greater risk of death from all causes and cardiovascular disease among women living in the United States. There are not many epidemiological studies that have been conducted on the effects of specific saturated fatty acids (SFAs) on cardiovascular disease, particularly in developing nations that have distinct dietary patterns.<sup>6-7</sup> One study found that the frequency

of consuming fried food was 48.1% in cases of acute coronary syndrome while 38.7% in controls. The difference was significant ( $p < 0.05$ ).<sup>4</sup> Another study also reported that frequency of consuming fried food was 44.8% in cases of acute coronary syndrome while 32.7% in controls. The difference was significant ( $p < 0.05$ ).<sup>8</sup>

According to the findings of one study, both thrombotic factors and atherogenic variables play an essential role in the development of early coronary heart disease (CHD). In research conducted in India, thrombotic risk factors were judged to be more relevant in early coronary heart disease (CHD). In earlier case-control studies on early coronary heart disease in India, smoking, high blood pressure, and low HDL cholesterol were found to be significant risk factors.

The largest risks for coronary heart disease were associated with smoking, a poor diet deficient in fruits and vegetables, hypertension, and an unhealthy weight. HDL cholesterol comparable to research conducted on early coronary heart disease in nations with high incomes. A poor consumption

of fruits and vegetables was discovered to be connected with an elevated risk when dietary components were also investigated and analysed. Other connections that were found were with a high consumption of fats, edible oils, ghee, and fried meals; consumption of saturated fats, mono- and polyunsaturated fat; consumption of n-6 fats; and consumption of omega-3 fats, which had the opposite effect. It was interesting to find that the controls had a relatively low intake of ghee as well as shallow and deep fried items. This might be a reflection of shifting dietary patterns or of inaccurate reporting of fat intake.

#### CONCLUSION:

There is a correlation between the eating of fried meals on a regular basis and an increased risk of acute coronary syndrome. According to this research, the current trend toward a larger intake of foods that are commercially available outside the home might have adverse impacts on the risk of developing cardiovascular disease. There was a significant association in fried food consumption with acute coronary syndrome in patients presenting in emergency department.

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