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ASSOCIATION BETWEEN FAST FOOD CONSUMPTION AND CARDIOVASCULAR RISK FACTORS IN SINDH, PAKISTAN

Yasmeen[*1], **Paras Tunio**[2]

[*1]*MSPH, Health Service Academy, Islamabad, and BSPH Graduate, People's University of Medical and Health Sciences for Women, Nawabshah, Sindh, Pakistan.*

[2]*BSPH Graduate, People's University of Medical and Health Sciences for Women, Nawabshah, Sindh, Pakistan.*

[*1]yas.sial95@gmail.com

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Corresponding Author: *
Yasmeen

Abstract

Background: *Urbanization in Pakistan is increasing rapidly and this is leading to an increase in the consumption of fast food, especially among young and middle-aged people. Fast foods are very high in calories and are made from saturated fats, trans fats, sodium and refined carbohydrates. These foods can lead to increasing the risk of cardiovascular disease (CVD).*

Objective: *This study aims to investigate the relationship between fast food consumption and CVD risk factors among adults living in Sindh, Pakistan.*

Methodology: *A cross-sectional analytical study of 420 adults aged 20–60 years, residing in urban/semi-urban areas of Sindh was conducted to collect data on eating habits, fast food consumption frequency, physical activity, smoking status, and medical history with a validated questionnaire. Anthropometric and biochemical measurements were also taken. Logistic regression analysis was used to quantify associations.*

Results: *Participants eating fast food ≥3 days per week had a significantly higher mean body mass index (BMI), systolic blood pressure, serum LDL cholesterol, and fasting blood glucose compared to those eating fast food <1 day/week ($p<0.05$). Frequent fast-food consumption was also independently associated with obesity (AOR=2.41), hypertension (AOR=1.96), and dyslipidemia (AOR=2.18).*

Conclusion: *Frequent fast-food consumption represents a substantial association with major cardiovascular disease risk factors among adults in Sindh, Pakistan. Thus, public health strategies to target poor dietary habits are necessary and urgent.*

INTRODUCTION

Globally, heart and blood vessel diseases are the biggest killer with about 18 million people dying every year from these cardiovascular diseases. One of the biggest contributors to cardiovascular disease has been the trend toward eating convenience and fast food. Fast foods are high-calorie, high-fat, high-sodium, and high-sugar foods that encourage obesity, high blood pressure, insulin resistance, and high triglycerides [1,2].

In Pakistan, increasing urbanization has changed people's eating habits. People who once ate home-cooked meals are now eating more and more fast food; the main reason for this is that fast food offers convenience, it is inexpensive,

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and there has been aggressive marketing promoting fast food as being good. There is evidence from Karachi and Peshawar showing a clear relationship between eating fast food and developing coronary artery disease [3,4].

Since Sindh is the most urbanized province of Pakistan, obesity, diabetes, and high blood pressure continue to increase. There is very little data at the local level to show the association between fast food consumption and cardiovascular risk factors in the Sindh province of Pakistan, and this study was conducted to fill this gap in knowledge [5].

The objectives of this research are to determine the association between fast food consumption and cardiovascular risk factors for adults in Sindh, Pakistan.

METHODOLOGY

Study Design

Cross-sectional analytical study.

Study Setting

Conducted in Karachi, Hyderabad, and Sukkur districts of Sindh.

Study Duration

January 2025 to September 2025.

Study Population

Adults aged 20–60 years residing in Sindh for at least 5 years.

Sample Size

Using Cochran's formula [6], with 95% confidence interval:

$n=Z^2 \cdot p \cdot (1-p)/d^2$

Where:

- Z=1.96 (95% confidence level)
- p=0.5 (expected prevalence)
- d=0.05 (margin of error)

$n=(1.96)^2 \cdot 0.5 \cdot 0.5/(0.05)^2=384.16$

n = 384.16

Final sample including 10% non-response = 420 participants

Sampling Technique

Multistage random sampling.

Inclusion Criteria

- Adults 20–60 years
- Residents of Sindh
- Consented participants

Exclusion Criteria

- Pregnant women
- Known cardiac patients
- Chronic renal disease
- Severe illness

Data Collection

A structured questionnaire assessed:

- Demographics
- Frequency of fast food intake
- Smoking
- Physical activity
- Family history

Fast food categories included:

- Burgers
- Pizza
- Fried chicken
- French fries
- Soft drinks
- Processed snacks

Measurements

- Weight (kg)
- Height (m)
- BMI
- Blood pressure
- Waist circumference
- Fasting blood glucose
- Lipid profile

Operational definitions

Frequent fast-food consumption: ≥3 times/week

Hypertension: BP ≥140/90 mmHg

Obesity: BMI ≥30 kg/m^2

Dyslipidemia: LDL >130 mg/dL or HDL <40 mg/dL

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Statistical Analysis

SPSS version 29 was used.

- Mean ± SD
- Chi-square
- Independent t-test
- Logistic regression

Significance at $p<0.05$.

RESULTS

Table 1: Socio-demographic Characteristics (n=420)

Variable	Frequency	Percentage (%)
Male	236	56.2
Female	184	43.8
Age 20–35	188	44.8
Age 36–50	142	33.8
Age >50	90	21.4
Urban	278	66.2
Semi-urban	142	33.8

Table 2: Frequency of Fast Food Consumption

Frequency	Frequency	Percentage (%)
<1 time/week	96	22.9
1–2 times/week	174	41.4
≥3 times/week	150	35.7

Table 3: Cardiovascular Risk Factors by Fast Food Consumption

Variable	<1/week	1–2/week	≥3/week	p-value
BMI (kg/m²)	24.1±2.8	26.2±3.1	29.3±4.2	<0.001
SBP (mmHg)	118±9	124±11	132±14	<0.001
LDL (mg/dL)	98±18	112±22	134±28	<0.001
FBG (mg/dL)	88±10	96±12	108±16	<0.001

Table 4: Multivariate Logistic Regression

Risk Factor	Adjusted OR	95% CI	p-value
Obesity	2.41	1.52–3.84	0.001
Hypertension	1.96	1.18–3.24	0.008
Dyslipidemia	2.18	1.34–3.56	0.002
Elevated glucose	1.72	1.03–2.87	0.037

DISCUSSION

Frequency of fast-food consumption was found to have a positive relationship with significant cardiovascular risk factors in adults in Sindh. When looking at individuals who consume fast food three or more times per week, they had higher ($p<0.001$) values for all measures of cardiovascular risk: body mass index (BMI), blood pressure, low-density lipoprotein (LDL) cholesterol, and fasting glucose (these measures all represent cardiovascular risk) [7,8].

These results are consistent with findings from other study conducted in Pakistan noting an increased risk of coronary artery disease in frequent consumers of fast food. The body of literature supporting the link between fast-food consumption and development of metabolic syndrome and cardiovascular disease internationally has also been growing [9].

Several mechanisms may explain these associations:

- High sodium raises blood pressure

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- Saturated fat increases LDL cholesterol
- Refined carbohydrates worsen insulin resistance
- Large portions increase obesity risk

Because of urban sprawl and the ready access to fast-food outlets, it is expected that people in urban areas consume more fast food than those living in semi-urban areas, indicating the effects of access to fast food due to demographics [10,11].

CONCLUSION

The frequency of fast-food consumption is significantly related to obesity, hypertensive disorders, lipid disorders and glucose disorders; therefore, decreasing the frequency of fast-food consumption may reduce the burden of cardiovascular disease in adults in Sindh.

Recommendations

- Public awareness campaigns on healthy eating.
- Regulation of trans fats in commercial foods.
- Nutrition labeling in restaurants.
- School and workplace dietary interventions.
- Promotion of traditional healthier diets.

Limitations

- Cross-sectional design limits causality.
- Self-reported dietary data may cause recall bias.
- Physical activity was not objectively measured.

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