

# Assessment of Dietary Diversity among Different Ethnic Groups in Karachi

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## ABSTRACT

**Background:** Karachi is known for its rich cultural heritage and ethnic diversity, which includes various communities. This study explores dietary diversity among the diverse ethnic groups of Karachi, addressing cultural influences, socioeconomic factors, and education levels.

**Aim:** To assess the dietary diversity in different ethnic groups of Karachi

**Methodology:** Cross-sectional with survey design was used in the Department of Community Health Science, Bahria University Health Sciences, Karachi from 1<sup>st</sup> January 2023 to 30<sup>th</sup> May 2023. Three hundred and ninety-six patients from each of the six ethnic groups were allocated 66 samples (Punjabi, Sindhi, Balochi, Pathan, Saraiki, and Muhajir) in Karachi using a multistage quota. The focus was on individuals aged 20 to 60, excluding those with chronic diseases. In this study, the FFQ standardized questionnaire was used, which was further translated into local languages and then used to collect information.

**Result:** There was a strong association between dietary diversity and ethnicity, with Muhajirs having the most diverse diet, comprising mainly grains and dairy, while Saraiki and Balochi had the least diverse diet. Higher family income correlated with greater dietary diversity. No significant impact of education level, marital status, and age has been determined on dietary diversity.

**Practical Implication:** Dietary diversity is linked to ethnicity and family income, not education or marital status. Interventions to improve nutritional outcomes should be culturally tailored, focusing on diverse diets among ethnic groups and economic stability policies. Education-based strategies may not be as effective, suggesting socioeconomic and cultural factors should be considered.

**Conclusion:** A large urban center study should be planned to investigate cultural casual factors on dietary diversity to determine malnutrition's root cause and impact.

**Keywords:** Dietary diversity, Ethnicity, Culture, malnutrition, Karachi

## INTRODUCTION

Culture is the most important aspect of our daily lives, affecting our body weight and dietary diversity. It is not genetically predetermined but learned from our environment, surroundings, and companies, and it passes from generation to generation. Every ethnic group has a culture that they pass down to their descendants<sup>1</sup>. Modern food habits are shaped by changing global populations and rising urbanization<sup>2</sup>. Factors influencing dietary diversity include socio-demographic characteristics like ethnicity, race, gender, age, education, occupation, parity, economic determinants such as income, availability<sup>3</sup>, and biological determinants such as hunger, appetite, and taste<sup>3</sup>.

In Pakistan, the diet consists of cereals, carbohydrates, pulses, fruits, and vegetables, with small amounts of food from animal origin and large amounts of carbohydrates and fats. The socioeconomic diversity affects the lifestyle of adults. Eating habits are also influenced by short time home cooking, junk food accessibility, etc<sup>1</sup>. The inhabitants of Karachi incorporate six significant ethnic subgroups coming from various pieces of Central and South Asia: the Muhajirs, the Punjabis, the Sindhis, the Balochis, the Pashtuns, and the Saraikis. These ethnicities have unmistakable contrasts in social practices and values, dietary propensities, wellbeing convictions, and ways of behaving that could make them powerless to food uncertainty and dietary variety, even inside a similar geographic area. It is likewise known that the absence of mixing of these ethnic gatherings can additionally add to the generally very much saved socio-cultural and dietary acts of every ethnic subgroup that could either safeguard or forestall food security inside every ethnic gathering<sup>2</sup>. Dietary diversity is a main component of a high quality diet, nutrients are distributed in different food items, as no food contains all nutrients<sup>4</sup>. Studies have also suggested the positive impact of dietary diversity on obesity<sup>5-7</sup>. Eating disorders mostly occur in overweight adults of all ethnicities. Prevalence of eating disorders found in different ethnic

groups that are greatly affected by environment. In societies, leanness is esteemed and overweight is condemned, across adults of different cultures, overweight persons are at higher risk of eating disorders<sup>8</sup>. According to Pakistan National Nutritional Survey 2018, the nutritional status of adolescent girls showed prevalence of obesity and underweight girls in KP and KP-NMD, while the nutritional status of adolescent boys showed prevalence of underweight boys in Sindh and obesity in KP-NMD. Moreover, it showed that at the provincial/regional level, Sindh, Balochistan, and AJK have more undernourished women, while overweight and obesity are more pronounced in ICT, KP, and KP-NMD<sup>9</sup>.

Dietary assessment is useful in recognizing well suited and applicable areas of change in an individual's diet and has a significant influence on an individual's nutritional status<sup>10</sup>. Karachi, Pakistan's largest metropolis, is a varied metropolitan region that is home to people of all races and cultures. Each ethnic group has different eating habits and preferences, which might affect their nutritional condition. Hence, investigating the dietary variety of various ethnic groups in Karachi can give insights into their nutritional status and aid in developing focused treatments to enhance their health. In Karachi, Pakistan, there has been little study on dietary variation among different ethnic groups. This knowledge gap allows researchers to look into the food patterns and nutritional conditions of different ethnic communities in Karachi. Policymakers can build successful measures to address these populations' distinct nutritional requirements by analyzing their eating patterns. Therefore, the purpose of this research is to investigate the dietary diversity of various ethnic groups in Karachi, which will provide valuable insights into the dietary patterns of various ethnic groups in Karachi and will contribute to the existing literature on dietary diversity and its implications for health in diverse populations.

## MATERIALS AND METHODS

This cross-sectional survey was evaluating dietary diversity in Karachi using multistage quota sampling and a sample size of 396, with each of 6 ethnic groups being allocated 66 samples among

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Punjabi, Sindhi, Balochi, Pathan, Saraiki, and Muhajir. The Open Epi was used to finalize the sample size by giving a confidence level of 95% and an error margin of 5%, and samples were 396. The focus was on individuals aged 20 to 60 years of age, excluding those with chronic diseases. In this study, the FFQ standardized questionnaire was used, which was further translated into local languages and then used to collect information. A structured questionnaire (FFQ standardized questionnaire, version 3, 2007) was used for all the ethnic groups. The questionnaire was designed in English and Urdu, both. This questionnaire was piloted and employed to collect information using multistage quota sampling. Six ethnic groups based on language (Punjabi, Sindhi, Balochi, Pushto, and Muhajir) represent more than 95% of the country's population. They reside in clusters in different regions of Karachi. Ethnic groups of Karachi (Punjabi, Sindhi, Muhajir, Pathan, Balochi, Saraiki). Both males and females were included in the age groups from 20 to 60. A person with chronic diseases (diabetes mellitus, TB, hypertension) was excluded. Pregnant women and individuals under 20 years of age were excluded. The samples were collected in person at PNS Shifa, comprising mainly of patients' families and attendants.

Dietary diversity was organized by gathering information on individual food items from a set of 20. These 20 items were clustered into six food groups: proteins; vegetables; fruits; fat; grains; and dairy products. A measure of dietary diversity measures the percentage of consumption of each food group by adding the value of the items reflecting each food group. For each ethnicity, the diversity can take a value from 0% to 100%,

representing the percentage of consumption of a particular food group. An ethnicity would get 0% if it does not consume any of the items representing that food group and would get a value of 100% if it consumed all the items representing that food group. Data was entered into SPSS-24. A chi square test was applied, and a p-value of less than 0.5 was considered statistically significant.

**RESULTS**

More than 42% of the representative participants had a family income. 30.5% of the individuals consumed a diverse diet belonging to all economic statuses. Overall 14.3% of the individuals consumed least diverse diet regardless of their economic statuses. Individuals with the family income of more than 100,000 PKR had the most diverse diet (Table 1). Muhajirs had highest consumption of proteins among all the ethnicities with 21% Muhajirs consuming 83-100% of sub groups (Table 2). Highest percentage i.e. 63% of Pathan and Muhajir consumed 100% of vegetable sub-groups (Table 3).

Highest consumption of fruits was observed among the Pathans with 54% of them consuming 100% of the fruit sub groups while Sindhis ranked second with 53% of them consuming 100% of fruit sub groups while Pathan and Muhajir ranked second in with 19% of them consuming 100% of fat sub groups (Table 4). Punjabis were the ethnic group consuming highest percentage of fats (Table 5). 53% of Balochis consumed highest percentage of grains (Table 6). 7.5% of Mujahirs consumed highest percentage of dairy products (Table 7).

Table 1: Comparison of socioeconomic status according to food consumed

Socio economic status (PKR)	Number of food consumed						
	Zero food group	1 food group	2 food group	3 food groups	4 food groups	5 food groups	6 food groups
10,000 -30,000	11	7	5	12	10	10	2
40,000-60,000	4	4	18	25	18	18	5
70,000-90,000	9	4	12	12	14	19	7
>100,000	5	13	22	25	45	44	16

Table 2: Comparison of ethnicity according to protein consumed

Ethnicity	Percent of protein consumed						
	0%	17%	33%	50%	67%	83%	100%
Sindhi	10	10	8	23	9	4	2
Punjabi	3	4	21	24	8	5	1
Balochi	6	7	12	16	19	4	2
Pathan	3	3	12	18	16	13	1
Muhajir	6	4	10	16	16	11	3
Saraiki	8	13	12	16	10	7	0

Table 3: Comparison of ethnicity according to vegetable consumed

Ethnicity	Percent of vegetable consumed		
	0%	50%	100%
Sindhi	14	12	40
Punjabi	14	13	39
Balochi	15	20	31
Pathan	16	8	42
Muhajir	15	9	42
Saraiki	26	8	32

Table 5: Comparison of ethnicity according to fat consumed

Ethnicity	Percent of fat consumed		
	0%	50%	100%
Sindhi	22	34	10
Punjabi	16	25	25
Balochi	27	28	11
Pathan	17	36	13
Muhajir	22	31	13
Saraiki	24	29	12

Table 4: Comparison of ethnicity according to fruit consumed

Ethnicity	Percent of fruit consumed		
	0%	50%	100%
Sindhi	15	16	35
Punjabi	17	20	29
Balochi	23	17	26
Pathan	12	18	36
Muhajir	19	14	33
Saraiki	32	8	26

Table 6: Comparison of ethnicity according to grain consumed

Ethnicity	Percent of grain consumed				
	0%	25%	50%	75%	100%
Sindhi	7	1	9	26	23
Punjabi	4	2	3	25	32
Balochi	10	3	7	11	35
Pathan	4	4	5	26	27
Muhajir	3	2	4	25	32
Saraiki	10	2	12	20	22

Table 6: Comparison of ethnicity according to dairy consumed

Ethnicity	Percent of dairy consumed				
	0%	25%	50%	75%	100%
Sindhi	15	24	16	10	1
Punjabi	19	14	15	16	2
Balochi	24	22	11	9	0
Pathan	12	21	19	10	4
Muhajir	11	20	10	20	5
Saraiki	29	22	9	5	1

## DISCUSSION

The Sindhi community, who are the indigenous people of Sindh province, consumes a diet rich in rice, lentils, and vegetables, but limited in animal-based foods. On the other hand, the Muhajir community, who migrated to Karachi from India during partition, consumes a more diverse diet that includes a combination of proteins, dairy, vegetables, fruits, grains, and fats<sup>2</sup>.

The lack of dietary diversity and minimal utilization of locally consumed nutritious food may exist across all socioeconomic groups, the significance of nutritional literacy, affordability, and accessibility in acquiring a nutritious and diverse diet in all ethnic groups and the findings are similar with prior studies<sup>2,11,12</sup>. Pakistan is experiencing a series of interconnected economic issues that have recently caused its currency to devalue and increased costs for consumer products, especially food. Food affordability is a crucial pillar of dietary diversity; hence, compromise on dietary diversity over quantity is comprehensible<sup>2</sup>.

According to the survey, food insecurity was 2.5 times higher in homes with working women than in those without. Women who work outside the home and financial limitations are to blame for this. Food insecurity was also influenced by the mother's or food preparer's educational background. There may be a lack of variety in diets and insufficient consumption of nutrient-dense food produced locally in all income brackets. Achieving household food security requires both affordable and well-informed nutrition. Nevertheless, the study has drawbacks, such as restrictions on the design, sample, and cultural issues. A significant temporal correlation between a decline in food diversity and an economic crisis was also absent from the study<sup>13-17</sup>.

Furthermore, we experienced that it was rather difficult to acquire information from the Balochis. The reason for which we concluded was the scarcity of their population in Karachi and the lack of influx of such individuals in PNS Shifa Hospital. It was rather difficult to find Balochis for information as their population in Karachi is less comparatively other ethnicities.

In Karachi, the results of the present study have proved that there is a positive association between ethnicities and food groups consumed by them, as well as the socioeconomic status of these ethnicities. The most dietary diversified group was of the Muhajirs as compared to Sindh is and other ethnicities. More research needed to be conducted in both urban and rural locations to examine potential linguistic, religious, and sociopolitical factors that could have a significant impact on the diet of an individual in various cultures.

## CONCLUSION

Muhajir were the ethnic group having the most diverse diet whereas Saraiki and Balochi ethnicities had the least diverse diets. Moreover this study also showed the impact of economic status of the individuals with highest dietary diversity observed in the individuals with family income of more than 100,000 PKR. Therefore, this study provides an insight into the unique dietary practices and food preferences of different ethnic groups residing in Karachi; hence, this information can be employed in other ethnically diverse cities and low-income cities and countries.

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1. Conception and design of or acquisition of data or analysis and interpretation of data.
  2. Drafting the manuscript or revising it critically for important intellectual content.
  3. Final approval of the version for publication.
- All authors agree to be responsible for all aspects of their research work.

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