

## Determination of Different Demographic, Socio-Economic Factors on Bulgur Consumption in Karaman

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### Abstract

Wheat porridge grains or bulgur is one of the oldest wheat grain based food used by human beings. It is major constituent of many of modern and popular Turkish cuisine and is gaining acceptance in other neighbouring East European countries and USA due to their high nutritious value. In Turkey, Karaman province of Central Anatolia region of Turkey is the major producer of bulgur in the region; where bulgur is used in variety of ways by local people. This study focus on the socio-economic factors that affects the use of bulgur consumption in Karaman. A total of 291 consumers (samples) from 6 different regions of Karaman were physically interviewed by asking 52 questions that covered the demographic and socio-economic parameters. The results were summarized on percentage basis. The results of this study showed the clear bearings of factors like education, income, price and brand etc on bulgur consumption in the region.

**Keywords:** Bulgur, Karaman, Socio-economic, Demographic factors

### INTRODUCTION

Wheat porridge grains or bulgur is one of the oldest processed food stuff made from wheat grains dated back to 4000 years BC. Wheat was considered one of the holy plant in Chinese kingdom of Shen Nung (2800 BC) alongwith rice, sorghum, soyabean and common beans. It is well established that wheat was cooked and then dried around 1000 BC [1, 2].

Wheat porridge grains or bulgur is one of the major food product in Turkish Cuisine and consumed everywhere in Turkey. Bulgur is also produced and consumed in Eastern, Central and Western Europe, USA and Canada and all other continents. Similarly, bulgur is consumed by almost every nation World over but is mor popular among Turkish, Arabs, Greeks and Armenians families. However, consumption and production is very low in EU countries [2,3,4] compared to Turkey, where Bulgur is very popular.

In Turkey, There are almost 500 factories making bulgur with annual production of around 100000 tons per annum with annual growth rate of 1.5-2.5%. In Turkey, an average of 12 Kg bulgur is being consumed per person. Turkey is also largest provider of Bulgur to United Nations due to high nutritional value and long shelf life [4]. Bulgur is also very rich in Vitamin A, folic acid, unsaturated fatty acids with no Cholesterol. Bulgur can be used for making pilaff, soup or making other foods like vegetable stuffing and meat balls [5]. The foods made from bulgur can be used hot or cold [4, 6,7].

Bulgur is processed in two different ways in Antep and Karaman regions of Turkey. Karaman type bulgur is more popular and consumed compared to Antep type bulgur due to high nutritious value. Both of them are major wheat producing areas and are famous for wheat and agricultural based industries. A number of factories and famous brands of Bulgur in Turkey belongs to Karaman. Keeping in view, the present study was designed to find out the trend of bulgur consumption in Karaman province. The study will be helpful to find out the demographic and socio-economic factors that affects the use of bulgur in the area.

### MATERIAL and METHODS

The primary material source in this study consisted of bulgur consumers living in Karaman city. Karaman is located in the South East of Central Anatolia region (37°10'52"N, 33°12'54"E). All consumers were interviewed in face to face meetings. A total of 291 consumers from six different locations of the Karaman were interviewed.

A questionnaire was designed with 52 questions in order to find out the use of bulgur and factors affecting its consumption. The questionnaire covered the demographic and socio-economic factors related to bulgur consumption.

In order to meet the objective of the study, extreme care was taken to select random groups representing the main group of population. It is well konwn that constitution of the sample groups is of immense importance. The probability method was employed in this study which is popular method used for sampling in research. The boundaries of the main group are in definite positions and it is possible to determine the confidence level which enabled to commentson the data. The formula for determining the size of the sample is given below [8].

$$n = \frac{N \cdot Z^2 \cdot p \cdot q}{(N - 1) \cdot d^2 + Z^2 \cdot p \cdot q}$$

Where

n: Number of people to be sampled

N: Number of people in main unit/group

Z: The value of the z-table at a certain level of semantics

p: probability of occurrence of the event being investigated

q: Probability of the event being investigated

d: - / + sampling error which is accepted according to the frequency of occurrence of the event being investigated [8].

Population of Karaman Province was estimated as 144.178 in 2011. The sampling error for this population at 0.05 and 95% confidence interval z value is 1.96. Probability of occurrence and non occurrence of the phenomenon studied

was taken as  $p = 0.8$  and  $q = 0.2$ . This showed that a total of 246 samples (consumers) are well enough for sampling. But we used 291 samples for survey to improve the probability level. In this study, available data was calculated and presented as percentage.

## RESULTS

In order to check the scientific reliability of the data research and data collection, reliability test of questionnaire was performed prior to survey. For this purpose, the value of Cronbach's alpha was estimated. Alpha coefficient has a value between 0 to 1. Value closer to 1 shows the reliability of the questionnaire. In this study, the value of Alpha coefficient

was 0.82 that showed the acceptable level of the data and results.

### Effects of Demographic and Socio-Economic Factors

A total of 142 (48.8%) male and 149 (51.2 female consumers with a total of 291 consumers from Karaman province were interviewed during this study. These consumers were selected randomly from all towns of the province. People living in the villages or towns in the surrounding of Karaman city were not included in this study. Other informations included age, education level, profession, average size of family and average monthly income of the consumers (Table 1).

**Table 1.** Socio-Economic parameters of customers

<b>Gender Distribution of Consumers</b>	<b>Frequency</b>	<b>Percentage</b>
Male	142	48,8
Female	149	51,2
<b>Total</b>	<b>291</b>	<b>100</b>
<b>Age Distribution of Consumers</b>		
18-23	24	8,2
24-30	74	25,4
31-40	107	36,8
41-50	43	14,8
51 or above	43	14,8
<b>Total</b>	<b>291</b>	<b>100</b>
<b>Educational Status of Consumers</b>		
Reading-writing	14	4,8
Primary School	73	25,1
Middle School	33	11,3
High School	80	27,6
University	83	28,5
Postgraduate	8	2,7
<b>Total</b>	<b>291</b>	<b>100</b>
<b>Profession Distribution of Consumers</b>		
Not working	77	26,5
Civil worker	81	27,8
Worker	80	27,5
Trader	29	10
Student	17	5,8
Farmer	7	2,4
<b>Total</b>	<b>291</b>	<b>100</b>
<b>The Number of Individuals Living in the Community with Consumers</b>		
1-2	68	23,4
3-4	156	53,6
5-6	64	22
7-8	2	0,7
More than 9	1	0,3
<b>Total</b>	<b>291</b>	<b>100</b>
<b>Distribution of Income Status of Consumers</b>		
Less than 1000 TL	93	32
1001-2000	115	39,5
2001-3000	50	17,2
3001-4000	19	6,5
More than 4001 TL	14	4,8
<b>Total</b>	<b>291</b>	<b>100</b>

Results showed that 71.5% consumers in this study were either workers, civil servants or self-employed and their monthly income was below 2000 TL. 38.1% consumers spent 10-30%; 47.1% spent 30-50%; 13.4% spent 50-70% and remaining 1.4% spent 70-100% of their income on purchasing food stuff. This result showed that person with low income spent most of his income on buying food stuff. It was also notable that consumers with monthly income below 1000 TL preferred more bulgur compared to other income status which might be due to its low price. Results on age clearly defined that bulgur was the most preferable by the consumers with age between 31-40 followed by age range of 24-30 years. Contrarily, consumers from age group of 18-23 were the least to prefer bulgur. Results on education level also highlighted the relationship between education level and bulgur consumption. Consumers with education of pre school university graduate preferred bulgur due to its high nutritional value and positive effects on the health.

However, consumers without any education or postgraduates were the among with least bulgur consumption. Most of the families comprised of 3-4 persons followed by 1-2 persons that represented the general family structure of Central Anatolian region .

#### Factors taken into account Prior to purchase of Bulgur

Results on expiry date, brand consciousness, appearance and price show the purchasing ability and consciousness of the consumer. Our results showed that higher percentage of consumers paid attention to expiry date (82.5%), brand consciousness (82.5%), appearance (78 %) and price (83.2%) of the product. Whereas, very low percentage of consumers remained undecided to answer these questions that was recorded as 7.6%, 5.5%, 10% and 8.2% for expiry date, brand, appearance and price respectively (Table 2).

**Table 2.** Distribution of concerning points of consumers prior to purchase bulgur

		Frequency	Percentage (%)
<b>I pay attention to manufacturing and expirat date prior to buying Bulgur</b>	Fully Disagreed	11	3.7
	Disagreed	18	6.2
	No Idea	22	7.6
	Agreed	100	34.4
	Fully Agreed	140	48.1
<b>I pay attention to brand prior to buy Bulgur</b>	Fully Disagreed	11	3.8
	Disagreed	24	8.2
	No Idea	16	5.5
	Agreed	116	39.9
	Fully Agreed	124	42.6
<b>I pay attention to outlook prior to buy Bulgur</b>	Fully Disagreed	12	4.1
	Disagreed	23	7.9
	No Idea	29	10
	Agreed	121	41.6
	Fully Agreed	106	36.4
<b>I pay attention to price prior to buy Bulgur</b>	Fully Disagreed	9	3.1
	Disagreed	16	5.5
	No Idea	24	8.2
	Agreed	104	35.7
	Fully Agreed	138	47.5

#### Primary Factors affecting bulgur consumption

Question related to availability of bulgur in packaging, taste, nutritive value, longer shelf life, resistance to microbial pests, fast cooking and cheapness reflected the preferences of the consumer compared to other alternative food product like rice. Results showed that packaging of Bulgur is not important for the consumer as it falls between 11.7 % (undecided) to 26.5 % (agreed). However, 82.2% consumers preferred bulgur due to its taste and 61.5% preferred due to

its nutrition value. 52.6% and 50.9% consumers preferred it due to its long shelf life and resistance against microbial pests (mainly fungus) under household conditions. 79.7% preference of consumers was due to cheaper price compared to other competitors like rice. It was interesting to note that only 30.6% consumers preferred bulgur due to fast cooking time which showed that cooking time is not a main interest for the consumers (Table 3).

**Table 3.** Primary Factors affecting preference about bulgur by consumers

		Frequency	Percentage (%)
<b>I prefer to buy Bulgur in packing</b>	Fully Disagreed	40	13.7
	Disagreed	78	26.8
	No Idea	34	11.7
	Agreed	77	26.5
	Fully Agreed	62	21.3
<b>I prefer Bulgur due to its taste</b>	Fully Disagreed	11	3.7
	Disagreed	15	5.2
	No Idea	26	8.9
	Agreed	130	44.7
	Fully Agreed	109	37.5
<b>I prefer Bulgur due to its nutritional value</b>	Fully Disagreed	23	7.9
	Disagreed	52	17.9
	No Idea	37	12.7
	Agreed	112	38.5
	Fully Agreed	67	23
<b>I prefer Bulgur due to its longer shelf life</b>	Fully Disagreed	16	5.5
	Disagreed	54	18.5
	No Idea	68	23.4
	Agreed	100	34.4
	Fully Agreed	53	18.2
<b>I prefer Bulgur due to its resistance against micobial pathogens</b>	Fully Disagreed	27	9.2
	Disagreed	73	25.1
	No Idea	43	14.8
	Agreed	105	36.1
	Fully Agreed	43	14.8
	Total	291	100
<b>I prefer Bulgur due to its quick cooking time</b>	Fully Disagreed	55	18.9

#### Decision making and Bulgur consumption

In general, females are considered to be a good judge of food products due to continuously cooking them at home. In this survey, the role of parent (mother or father) on making decision to buy bulgur was also investigated. The results were very interesting as only 24.4% females were found responsible for decision making about buying bulgur.

Whereas, 77% fathers in the family used their decision power to buy bulgur in Karaman. In Karaman, males (Fathers) role in selecting bulgur was 3 fold higher compared to females (mothers) that could be due to conservative and rural agricultural background of the province (Table 4).

**Table 4.** Decision making about purchasing of Bulgur at home

		Frequency	Percentage (%)
<b>My mother made decision to buy Bulgur in our house .</b>	Fully Disagreed	65	22.3
	Disagreed	110	37.8
	No Idea	45	15.5
	Agreed	45	15.5
	Fully Agreed	26	8.9
<b>My father made decision to buy Bulgur in our house .</b>	Fully Disagreed	15	5.2
	Disagreed	23	7.8
	No Idea	29	10
	Agreed	126	43.3
	Fully Agreed	98	33.7

#### Nutritional value-health and bulgur consumption

A number of questions about the importance of bulgur on nutritional values and health were asked to the consumers in this survey. These questions were about the preference of bulgur due to high pulp/fiber, B1 vitamin, folic acid, unsaturated fatty acids and no cholesterol. Results showed that majority of the consumers (54.7%) accepted the nutritional value of bulgur and its positive effects on health

(Table 5). However, most of the consumers had no idea about the role of these parameters mentioned above. Relatively high percentage of consumers gave either negative response or had no idea about the nutritional value or its effects on health. The possible reason might be unawareness due to low education level of the consumers about nutritional value of bulgur.

**Table 5.** Importance of Bulgur due to its nutritious values and its effects on health

		Frequency	Percentage (%)
<b>I prefer Bulgur due to high nutritional values and health as it contain high pulp and fiber</b>	Fully Disagreed	11	3.8
	Disagreed	36	12.4
	No Idea	85	29.2
	Agreed	107	36.8
	Fully Agreed	52	17.9
<b>I prefer Bulgur due to containing vitamin B1</b>	Fully Disagreed	15	5.2
	Disagreed	34	11.7
	No Idea	122	41.9
	Agreed	88	30.2
	Fully Agreed	32	11
<b>I prefer Bulgur due to containing Folic acid</b>	Fully Disagreed	8	2.7
	Disagreed	34	11.7
	No Idea	100	34.4
	Agreed	109	37.5
	Fully Agreed	40	13.7
<b>I prefer Bulgur due to containing unsaturated fatty acids.</b>	Fully Disagreed	17	5.8
	Disagreed	29	10
	No Idea	65	22.3
	Agreed	119	40.9
	Fully Agreed	61	21
<b>I prefer Bulgur due to not containing Cholesterol</b>	Fully Disagreed	45	15.5
	Disagreed	129	44.3
	No Idea	50	17.2
	Agreed	50	17.2
	Fully Agreed	17	5.8

**Consumption interval of bulgur**

The consumption of bulgur frequency on Daily basis, once a week, once a fortnight or once a month was also enquired in this study and the response towards bulgur consumption frequency were variable. More than half of the consumers (52.9 %) used bulgur on daily basis (Table 6); that showed the importance of bulgur in family diet programme of the Karaman. Similarly, results about the consumption of bulgur once a week or fortnight also reflects

the high consumption of bulgur in Karaman. However, 74.7% consumers accepted that they prefer to eat bulgur at least once a month. The high consumption rate of bulgur in Karaman might also be due to its easy availability, price and purchasing power of the consumers or inclusion of bulgur in lunch menu in university, school or private institutions.

**Table 6.** Frequency of bulgur Consumption

		Frequency	Percentage (%)
<b>I use Bulgur everyday</b>	Fully Disagreed	23	7.9
	Disagreed	66	22.7
	No Idea	48	16.5
	Agreed	101	34.7
	Fully Agreed	53	18.2
<b>I use Bulgur once a week</b>	Fully Disagreed	49	16.8
	Disagreed	99	34
	No Idea	45	15.5
	Agreed	80	27.5
	Fully Agreed	18	6.2
<b>I use Bulgur once in 15 days</b>	Fully Disagreed	83	28.5
	Disagreed	105	36.1
	No Idea	40	13.7
	Agreed	45	15.5
	Fully Agreed	18	6.2
<b>I use Bulgur once a month</b>	Fully Disagreed	8	2.7
	Disagreed	26	8.9
	No Idea	40	13.7
	Agreed	131	45
	Fully Agreed	86	29.7

### Forms of Food made from bulgur

In this study, three questions were asked about the type of food prepared using bulgur. The preferences was for pilaff (cooked like rice), making soup or use in making other foods like meatballs or vegetable (pepper, vine or cabbage leaves) stuffing. 78.6% consumers used bulgur for making pilaff

whereas, 73.2% (Table 7) used bulgur for making other food stuffs like meatballs or stuffing. Very low percentage of consumers (27.5%) used bulgur for making soup. The main reason of using bulgur as pilaff or making other food stuffs is the high use of these products in daily food in Karaman.

**Table 7.** Forms of Bulgur consumption

		Frequency	Percentage (%)
<b>I consume bulgur as Pilaff</b>	Fully Disagreed	14	4.8
	Disagreed	29	10
	No Idea	25	8.6
	Agreed	163	56
	Fully Agreed	60	20.6
<b>I consume bulgur as soup</b>	Fully Disagreed	35	12
	Disagreed	103	35.4
	No Idea	73	25.1
	Agreed	64	22
	Fully Agreed	16	5.5
<b>I used Bulgur in dolma and meat balls</b>	Fully Disagreed	13	4.5
	Disagreed	21	7.2
	No Idea	44	15.1
	Agreed	136	46.7
	Fully Agreed	77	26.5

### Alternatives of Bulgur used

A number of questions were also asked about the competitors of bulgur in food chain of Karaman. These competitors were rice, macaroni and noodles. It was interesting to note that consumers preferred bulgur compared to rice, macaroni or noodles. The preference of

rice, macaroni and noodles over bulgur was recorded as 16.5%, 11.4% and 8.2% respectively (Table 8). This results showed the highly acceptance of bulgur in the kitchen of Karaman. Other reasons might be local production, taste or low price etc.

**Table 8.** Preferences substitute products instead of bulgur by Consumers

		Frequency	Percentage (%)
<b>I use Macaroni in place of bulgur</b>	Fully Disagreed	80	27.5
	Disagreed	129	44.3
	No Idea	49	16.8
	Agreed	29	10
	Fully Agreed	4	1.4
<b>I use rice in place of bulgur</b>	Fully Disagreed	69	23.7
	Disagreed	110	37.8
	No Idea	64	22
	Agreed	39	13.4
	Fully Agreed	9	3.1
<b>I use noodle in place of bulgur</b>	Fully Disagreed	77	26.5
	Disagreed	128	44
	No Idea	62	21.3
	Agreed	19	6.5
	Fully Agreed	5	1.7

### Role of Advertisement and community on bulgur consumption

In modern World, the role of electronic, printing and social media plays an important role in promoting products. The development of brand by mean of advertisement or by sharings their experience by the consumers to the specific product is very important and also affects the use of that

product. In this study, we asked about the role of advertisement and community on bulgur consumption irrespective of brand consciousness. The results were same for both questions; where almost 51 % and 49 % consumers accepted the role of advertisement and community on bulgur consumption (Table 9).

**Table 9.** Effects of other Adverstising and community on purchasing bulgur

		Frequency	Percentage (%)
<b>Advertisement increase the consumption.</b>	Fully Disagreed	29	10
	Disagreed	66	22.6
	No Idea	48	16.5
	Agreed	103	35.4
	Fully Agreed	45	15.5
<b>Friends. neighbours and working environment affects the bulgur consumption</b>	Fully Disagreed	26	8.9
	Disagreed	61	21
	No Idea	62	21.3
	Agreed	107	36.8
	Fully Agreed	35	12

**Role of income and price on bulgur consumption**

The results about the relative effects of family income and price of bulgur was also investigated in this study. 45% consumers agreed to this question whereas 55% answered no effect of income and price on bulgur consumption. This

might be due to the cheaper price of bulgur as almost 75% of the consumers were satisfied with the price. Whereas, only 25 % consumers complained for the high price of bulgur (Table 10).

**Table 10.** Effects of income and price on bulgur consumption

		Frequency	Percentage (%)
<b>Bulgur consumption increase with low income</b>	Fully Disagreed	32	11
	Disagreed	71	24.4
	No Idea	59	20.3
	Agreed	102	35
	Fully Agreed	27	9.3
	Total	291	100
<b>I find bulgur price expensive</b>	Fully Disagreed	38	13.1
	Disagreed	89	30.5
	No Idea	89	30.6
	Agreed	46	15.8
	Fully Agreed	29	10

**Role of selling places**

Reliability and credibility of the product and place where they are available for selling is also very important factor which reveals the quality of the final product. 60% consumers preferred to use their own made bulgur for

consumption. Similarly, 24 % consumers preferred to buy from shops, market or supermarkets which showed that making bulgur at home or farm is common practice in Karaman. 50% of consumers showed their trust on the local brand introduced by the regional supermarkets (Table 11).

**Table 11.** Information about the place from where they purchase the bulgur

		Frequency	Percentage (%)
<b>We produced Bulgur by ourselves</b>	Fully Disagreed	11	3.8
	Disagreed	29	10
	No Idea	85	29.2
	Agreed	120	41.2
	Fully Agreed	46	15.8
<b>I get Bulgur from shops. market or supermarkets</b>	Fully Disagreed	56	19.2
	Disagreed	97	33.3
	No Idea	71	24.4
	Agreed	47	16.2
	Fully Agreed	20	6.9
<b>I always preferred to buy brand of bulgur belongs to supermarket</b>	Fully Disagreed	18	6.2
	Disagreed	49	16.8
	No Idea	77	26.5
	Agreed	96	33
	Fully Agreed	51	17.5

**CONCLUSION**

The study presents the general overview of bulgur consumption in Karaman province on the basis of demographic and socio-economic factors. It was concluded that most of the consumers were farmers and civil workers with education level from university graduate to school education. Expiry date, brand and price were the main

factors and more than 82 % consumers paid attention to these factors prior to purchase. Similarly, taste was also the important factor by the consumers. Packing and cooking time were the least attention paid factors by the consumers. Regarding gender, significantly high number of males in the family were found responsible for purchasing decision. It was also notable that most of the consumers in this study did not have sufficient knowledge about the nutritional

effects of bulgur on human health. However, consumers with higher education had knowledge about the nutritional effects which increased with the increase of their education. Minimum frequency of bulgur consumption was once a month. Most of the use of bulgur was in the form of Pilaff. This study is supposed to be helpful for determining the socio-economic factors responsible for bulgur consumption at Karaman. It is also highly recommended that consumers from the surroundings of Karaman living in villages and towns must be included in the future studies. Furthermore, a comparative study must be designed in order to find the preference of bulgur due to highly variable demographic and socio-economic factors.

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