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BREAD CONSUMPTION AND WASTE OF HOUSEHOLDS IN URBAN AREA OF ADANA PROVINCE

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ABSTRACT

The bread, which is consumed in small or large quantities in all countries, is the most essential food for people, and it is the most consumed floury products. Being one of the largest cities of Turkey, Adana province is used to determine the major socio-economic characteristics of households, bread consumption, and amount of bread waste and their reasons in urban areas. According to the survey results, the number of the daily purchased bread loaves is 4.65 per household, whereas the consumed amount is 4.45 loaves on average. As income level of household increases, the amount of bread consumption decreases as it is expected. This proves that bread consumption is higher in households with low-income level compared to in those with high-income level. The rate of daily bread waste in the analyzed households is averagely 9.63%. It is determined that this rate is maximum in the highest group of income and minimum in the lowest group of income. It is also determined that the most important way to prevent bread waste is to buy fit to need.

Key words: bread consumption, bread waste, consumer behavior.

INTRODUCTION

Agricultural sector has an important role for the development in countries such as Turkey whose economy largely depends on agriculture. Turkey has a very high rate of population increase. Not only because of providing nutrition to population but also social reasons, agricultural sector plays an important role for a balanced and healthy development of the country [3].

Taking into account the current agricultural productions, it can be said that there is enough food for all people in the world. But it is impossible to say that there is a well-balanced distribution among regions and countries. Insufficient and unbalanced nutrition is one of the most important problems for developed and developing countries [8]. But it can't be said that there is a productive and effective usage of foods produced in the developing countries as well as Turkey.

The share of food in total expenditures is approximately 35.6% in Turkey. Food consumption per capita is increased from 3.045 cal/day in 1970 to 3.416 cal/day in 2000. Nevertheless, in the EU countries, this has been increased from 3.140 cal/day to 3.486 cal/day over the last 30 years [10].

Bread is a product made by adding the drinking water, yeast, in the need, enzyme, cereal flours, soybean flour, potato, milk powder, under cheese water, vegetal oil, saccharine, glucose syrup, wheat bran, dry gluten, and similar material and in addition to these, the additive material allowed by the Turkish Food Codex, afterwards as leaving to fermentation and cooking [5]. The structure of the bread contains protein, mineral material, group B and energy.

Since bread production technology is simpler and cheaper compared to other food technologies, and it can be stored easily, it plays an important role in daily nourishment consumption.

Around 2600 BC Old Egyptians realized that the bread became softer and more swollen when they add the dough, obtained from the mixture of wheat flour and water, in it. Old Egyptians knew the bread long time before. However, after discovering of the dough randomly, it became symbol of the aristocrats and the palace.

As a result of researches, when an adult man consumes 300 g/daily bread, it averagely compensates for 35% of energy, 40% of protein, 35% iron of, 40% of calcium, 45% of B vitamin, 20% of B₂ and 22% of Niacin. Bread consumption is averagely 41-303 kg/year per capita in the world and 180-210 kg/year per capita in Turkey [12]. Food preferences are influenced by culture, family habits, traditions, religious believes and income. In addition to lifelong eating habits, other factors that affect food intake are living arrangements, food availability, mental and emotional state and physical limitations.

However, there is considerable amount of bread loss and waste in our country. The bread waste is the difference between production and consumption amount of bread and this waste leads to an ineffective use of resources of the country.

The number of countries which has hunger problems goes up everyday. From this point of view, countries have to use their own resources efficiently and minimize resource waste. That's why such food waste studies are getting more and more important.

One of the most outstanding ways of food waste is bread waste. We can approach to this matter from two aspects. Firstly, there are too many bakeries and their capacities are higher than those needed in big villages, and because of competition, bread production is beyond the consumption. Secondly, consumers are buying bread more than their need.

The waste of bread varies according to countries and regions. Adana is one of the largest cities which are located in the southern of Turkey. Since Adana province is rapidly getting more and more industrialized and attracting huge number of immigrants from southeastern part of Turkey, and also has different cultures, studies to be conducted in province level in the field of bread consumption and waste should help to determine the problems and make recommendations to solve them. The purpose of this study is to determine major socioeconomic characteristics of households, bread consumption, and amount of bread waste and their reasons in urban area of Adana province.

MATERIALS AND METHODS

Data is obtained by using questionnaire in central counties of Adana province. Therefore, surveys were conducted with consumers in the household. Counties and districts were determined according to social status of habitants.

Besides, in this study the information obtained from the result of the domestic and foreign researches were benefited considerably.

In this study, sampling size is determined by using the method of “One Stage Simple Random Sampling Leaning against Population Rates”. In the consumer studies, for the times when there is no information about characteristics of the population, the theoretical explanation and advantages of this method used are explained by Collins [2]. The sampling formula is given below:

$$n = \frac{t^2 [1 + (0.02) \times (b - 1)] \times p \times q}{e^2} \quad (1)$$

where:

n - sample size

t - T value in the level of the confidence 95%

b - sampling stage (since there is only 1 stage, it is 1)

p - probability of occurrence for the investigated event (since there is no ... it is 0.50)

q - probability of none-occurrence for the investigated event (q=1-p)

e - error (5% in this study)

When b equals to 1, Equation 1 is transformed to Equation 2;

$$n = \frac{t^2 \times p \times q}{e^2} \quad (2)$$

So sample size: $n = (1.96)^2 \times (0.50 \times 0.50) / (0.05)^2$, $n = 384$

Sample size was determined as approximately 400 considering out-of-sampling-errors and losses and adding 5% of calculated value.

In the survey, social and demographic characteristics of the households and persons, household's income and the data related to expenditure model were obtained. By forming averages, proportional values and indices, and making cross relations among the variables, these data were evaluated and obtained findings were shown as tables and figures.

While determining the income groups, a rank order was made from the highest income group to the lowest one. According to this order, the income groups were tried to be determined by forming groups in 20% proportions. However, encountering the same income values in different income groups, frequencies in income groups were formed to show normal distribution [9]. Income levels according to the income groups and the number of households for each income group were given [Table 1](#) (1 USD=1,4 million TL, Turkish Central Bank).

Table 1. Distribution of households surveyed according to income groups

Income groups	Income range (million TL/month)	Income range (USD/month)	Number of households	
			Number	%
I (the lowest)	140-250	100-179	29	7.3
II (the second lowest)	251-400	180-286	95	23.8
III (medium)	401-600	287-429	110	27.5
IV (the second highest)	601-1000	430-714	113	28.3
V (the highest)	1001-4000	715-2857	53	13.3
Total/Average	717	512	400	100.0

In the ranking tables, total grade was accounted by giving grade on the raw data, and obtained total grade was divided to total number of survey to make a rank order.

In the investigated households, interview of household who is wasting bread is used. Amount of wasting in the wasted households is the difference between amounts of purchased and consumed, or being reused in any way, bread. In Turkey bread is generally consumed as loaf, therefore in the text bread means loaf of bread.

RESEARCH FINDINGS AND DISCUSSION

The Socioeconomic Characteristics of Households

Distribution of surveyed households to age groups is given in [Table 2](#). In the investigated households, average width of household is 4.14 and 18.11% of these (0.75 person) is 0-14, 67.83% of these (2.81 person) is 15-49, 14.06% of these (0.58 person) is 50 and over. In the completed study else in the same area, average width of household found is 4.34 person [6]. Within the income groups, 4.34 person in the income group I; 4.37 person in the income group II; 4.11 person in the income group IV; 4.07 person in the income group IV and 3.85 in the group V. It is found that there is a decrease from the lowest income group to the highest income group. At the same time, in this group, number of person in the group 0-14 and 50+ is high.

Table 2. Distribution of households according to age groups in the investigated households

Income groups	0-14		15-49		50+		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
I	0.79	18.25	3.21	73.81	0.34	7.94	4.34	100.00
II	0.81	18.55	2.88	66.02	0.67	15.42	4.37	100.00
III	0.70	17.04	2.82	68.58	0.59	14.38	4.11	100.00
IV	0.73	18.04	2.80	68.70	0.54	13.26	4.07	100.00
V	0.75	19.61	2.47	64.22	0.62	16.18	3.85	100.00
Average	0.75	18.11	2.81	67.83	0.58	14.06	4.14	100.00

In the investigated households, distribution of households according to level of education of mothers and fathers is given in the [Table 3](#). 391 persons responded to this question. When the results were analyzed in order to determine mothers' education levels, these results were achieved: primary school (37.85%), high school (25.58%), university (11.76%) illiterate (10.49%), junior high school (9.97%) and literate (4.35%). The same levels for fathers were primary (24.81%), high school (28.13%), university (24.81%), junior high school (12.02%), literate (3.58%) and illiterate (3.07%).

Table 3. Education level of households in the investigated households

Education level	Mother		Father	
	Frequency	%	Frequency	%
Illiterate	41	10.49	12	3.07
Literate	17	4.35	14	3.58
Primary school	148	37.85	111	28.39
Junior primary school	39	9.97	47	12.02
High school	100	25.58	110	28.13
University	46	11.76	97	24.81
Total	391	100.00	391	100.00

Fathers' occupations in households are also investigated. The results are retired (32.07%), public officer (22.01%), self employed (17.12%), tradesman (13.59%), worker (13.04%) and unemployed (2.17%). For the mother indicates that housewife has the greatest proportion (80.31%) ([Table 4](#)).

Table 4. Work situation of father and mother in the investigated households

Occupation	Father		Mother	
	Frequency	%	Frequency	%
Worker	48	13.04	11	2.81
Public officer	81	22.01	32	8.18
Unemployed	8	2.17	-	-
Tradesman	50	13.59	2	0.51
Retired	118	32.07	32	8.18
Self employed	63	17.12	-	-
Housewife	-	-	314	80.31

Households' Bread Purchase

Amount of purchased and consumed bread of households is distributed as to income groups. Results show that amount of purchasing bread is 4.65 for per household and 4.45 of this is consumed in average. In the study, it is found that the maximum bread consumption amount by one household is 21 loaves a day, while the minimum amount for this is 0.5 loaves a day. In the level of income group I, 4.97 bread is purchased and 5.45 is consumed. In this group, consumed bread is more than purchased. On account of economical reasons, this group also produces their bread in their houses in addition to purchasing them. As a result of the study, average consumption of bread is calculated as 233.46 g/day per capita. It is also determined that the bread consumption according to income groups in the households is 308.45 g/day per capita for the lowest income group, 180.42 g/day per capita for the highest income group. Consequently, as income level is increased, consumption of bread decreases ([Table 5](#)).

Table 5. Averagely purchased and consumed amount of bread in the investigated households

Income Groups	Amount of purchased bread (amount/day)	Amount of consumed (amount/day)	Bread consumption for per capita (g/day)
I	4.97	5.45	308.45
II	5.37	5.21	265.33
III	5.01	4.76	240.76
IV	4.40	4.07	205.18
V	2.98	2.71	180.42
Average	4.65	4.45	233.46

As a result of a study carried out in Konya province, amount of bread consumed by households is 4.4 a day on average. In addition, the maximum consumption made by one household is 30 and the minimum is 2 [4].

In order to find consumption, wasting and evaluating of surplus bread of consumers, another research with 400 surveys were conducted in the Bornova district of Izmir Province. As a result of that research, they determined that all breads are bought and average amount of bread is 421 g/day per capita in the lowest income households, 373 g/day per capita in the middle income group and 374 g/day per capita in the highest income group [13].

In according to the result of another study carried out in the Ankara province, it was found that consumed amount of bread is 107-576 g/day per capita and the average is 327 g/day per capita [1].

In the survey, households were asked to state where they buy bread, and to arrange the first three spots in rank order according the importance. As a result, three top ones were found as groceries, bakeries and markets respectively. By that way it is found that a few of households are buying the bread from supermarket, sales center of municipality or preparing them in their home ([Table 6](#)).

Table 6. Bread purchasing places in the investigated households (%)

Places	1.Preference	2. Preference	3. Preference	Ranking
Grocery	54.57	21.31	14.43	2.06
Bakery	19.01	37.05	22.89	1.26
Market	10.62	24.92	37.31	0.89
Supermarket	5.19	6.56	13.43	0.33
Preparing at home	2.72	5.57	5.97	0.20
Sales center of municipality	7.90	4.59	5.97	0.34
Total	100.00	100.00	100.00	-

According to results of the survey, freshness is the most important factor affecting preference of bread purchase place in the investigated households; distance to purchasing place and price of the bread follows it respectively ([Table 7](#)).

Table 7. The reasons of preference of bread purchasing place in the investigated households (%)

Factors	1. Preference	2. Preference	3. Preference	4. Preference	5. Preference	Ranking
Freshness	39.06	34.85	16.79	13.02	15.00	3.49
Distance	31.77	26.67	30.92	16.15	20.00	3.18
Price	22.66	17.27	21.76	33.85	45.00	2.43
Time	6.51	21.21	30.53	36.98	20.00	1.98
Total	100.00	100.00	100.00	100.00	100.00	

In the ranking of answers according to kinds of bread which consumers prefer, the most preferred bread is loaf of bread, followed by flat bread, thin dough-oven made, fibrous (packed) and fibrous (unpacked) ([Table 8](#)).

Table 8. Kinds of preference bread in the investigated households (%)

Kinds	1. Preference	2. Preference	3. Preference	4. Preference	5. Preference	Ranking
Loaf of bread	89.55	8.18	1.14	4.65	5.56	4.74
Flat bread	4.73	77.32	13.64	13.95	0.00	2.44
Fibrous (Packed)	1.74	5.20	27.27	32.56	16.67	0.49
Fibrous (Unpacked)	1.74	6.32	14.77	39.53	30.56	0.47
Thin dough-oven made	2.24	2.97	43.18	9.30	47.22	0.54
Total	100.00	100.00	100.00	100.00	100.00	

Prices paid by households for bread kinds are shown in the Table 9. As a result, the most expensive kind is fibrous (packed) (0.29 USD), followed by fibrous (unpacked), thin dough-oven made and loaf of bread ([Table 9](#)). In accordance with the results of the survey, the loaf of bread is the most preferred kind and has the cheapest price which is paid for the purchased one.

Table 9. Price of according to kinds of bread in the investigated households

Kinds	Prices (USD/loaf or package)
Loaf of bread	0.168
Flat bread	0.173
Fibrous (Packed)	0.293
Fibrous (Unpacked)	0.214
Thin dough-oven made	0.169

The factors affecting the bread purchase were asked to the households. According to the answers, the most effective factor is hygiene of bread followed by warmth of bread, price and appearance.

It was asked who generally goes shopping for bread. According to the answers, father and children come first and have the same rate (29.00%). In turn, mother, doorkeeper and others are followed ([Table 10](#)).

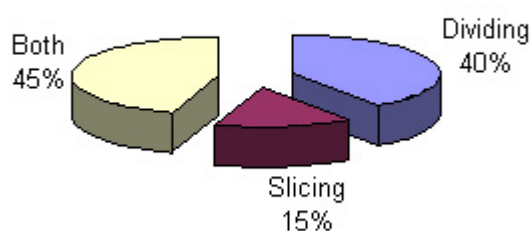
Table 10. Distribution of persons who purchase the bread in the investigated households

Persons	Frequency	%
Mother	86	21.50
Father	116	29.00
Children	116	29.00
Doorkeeper	62	15.50
Other	20	5.00
Total	400	100.00

Bread Consumption of Households

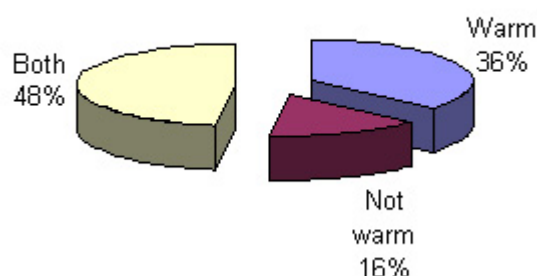
In the survey, it was asked how they consume the bread. As a result of the analysis, it was found that approximately half of the households (44.75%) consume their bread by dividing it or slicing. As a result of the answers, it can be said that consuming by dividing is more common than slicing in Adana province ([Figure 1](#)).

Figure 1. Consuming manner of the bread in the investigated households



According to the result of the surveys, 80.25% of the investigated households have toasting machine. 48% of respondents consume bread both warm and not warm. The rate of the people consuming only warm bread is 36.25%, whereas the rate of the people consuming only “not warm” is 15.75% ([Fig. 2](#)).

Figure 2. The households' bread consumption manner



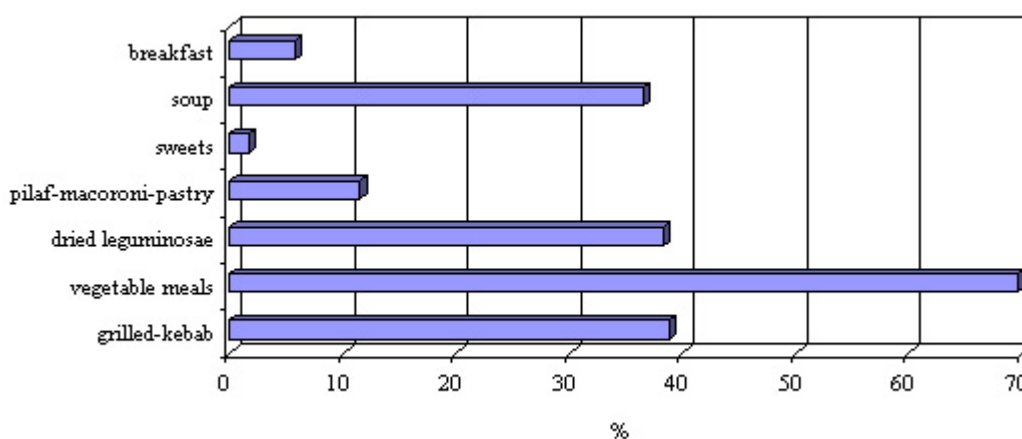
More than half (60.75%) of the investigated households expressed that the bread makes anyone put on weights. The 21% of the respondents agrees that it depends on the amount of the consumption that bread makes someone put on weight. 13.75% of the them expressed that the bread doesn't affect the weight gaining. It is found that a few of households (4.5%) expressed that it depends on the kind of bread consumed. In a study, it was determined that the bread is not a reason for obesity by itself and not a major source of many illnesses [11].

It was asked about appropriateness as regards the health. It was determined that more than half (62.75%) of households expressed that bread is normal concerning health. The rest of the answer proportions are, unhealthy (18%), healthy (15%), too unhealthy (2.25%) and too healthy (2%).

It is asked to investigate households whether bread has a holy meaning or not. It is determined that nearly all of (92%) the responses are “Yes”, while 8% is “No”. These results prove that bread has a holy meaning in the Turkish culture.

Also the question what kind of food they often consume with bread was asked. And it was reminded that more than one answer could be given. But during the evaluation of the surveys, 400 surveys were taken into account, and percentages were calculated. Consequently, 69.5% of them stated that the most consumed food group with bread is vegetable meals. Grilled-kebab (38.75%) follows this. Since Adana has both suitable climate for consuming vegetable food and is famous for consuming meat and meat production, it is quite normal to have this high rate. The others are dried leguminosae, soups, pilaf-macaroni-pastry, breakfast and sweets (Fig. 3).

Figure 3. Meals which are mostly consumed with bread



It was asked whether there is a change on the bread consumption amount with an increase of household income. 87.75% of the answers was “not changing” followed by “decreasing” (7.5%) and increasing (3.25%) (Table 11).

Table 11. The change of consumption amount as to income situation

Attitudes	Frequency	%
Definitely increasing	2	0.50
Increasing	13	3.25
Not changing	351	87.75
Decreasing	30	7.50
Definitely decreasing	4	1.00
Total	400	100.00

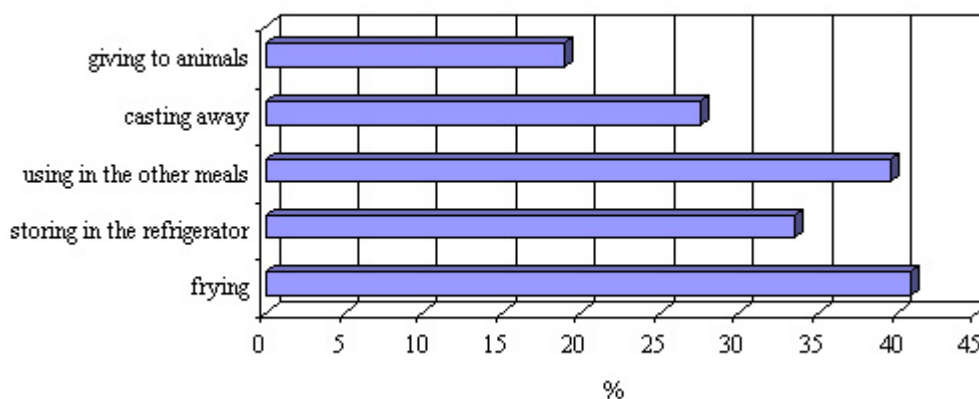
Information Related to Bread Waste of Households

It was asked to consumer how they store the bread in their houses. It was determined that 74% of the answers are in nylon bags. Refrigerator, plastic box, dinning table, wood box, deepfreeze and others are followed respectively (Table 12).

Table 12. The ways of storing bread at home

Storing way	Frequency	%
Nylon bag	296	74.00
Wood box	53	13.25
Plastic box	96	24.00
Dining table	60	15.00
Refrigerator	117	29.25
Deepfreeze	24	6.00
Others	3	0.75

It was asked to the households how they evaluate the stale bread. Moreover, they were allowed to select more than one choice. Among the 400 surveyed, 21% said there was no stale bread remaining. The rest of the surveyed (79%) stated that they benefited this stale bread in some way. This 79% is composed of these following ways; by frying (40.82%), by using in the other meals (39.56%), by feeding animals (18.99%) and casting away (27.53%) respectively. It can be easily concluded from these answers that 27.53% of the surveyed are wasting bread. Nevertheless, it must take into consideration that this rate is just for the surveyed answering the question as “yes there is surplus” ([Fig. 4](#)).

Figure 4. Ways of benefiting of stale bread in the households

It was asked to households what their approach to bread waste is. 78.25% of surveyed households' response was “no wasting”, the rest expressed that they waste bread ([Table 13](#)). Within the wasting bread households, concerning income groups, it was determined that the people purchasing the bread waste 24.90 % of the purchased bread averagely. It doesn't vary so much among income groups; however, rate of the group V and I is higher than the others.

Table 13. Approaches of households to the bread waste

Station	Frequency	%
Definitely wasting	5	1.25
Wasting	16	4.00
Medium	66	16.50
No wasting	171	42.75
Definitely no wasting	142	35.5

If we analyze the distribution of wasting according to income groups, the daily waste is 9.63% on average. This rate is the highest in the group V (10.89%) and the lowest in the group I (6.96%). Amount of bread which is prepared at home is added to this calculation ([Table 14](#)).

Table 14. Distribution of bread waste according to income groups

Income Groups	Rate of Wasting (%)
I	6.96
II	7.81
III	10.63
IV	10.29
V	10.89
Average	9.63

When it was asked to households what the waste situation on their surroundings is. It was found that 58.05% of households expressed that households around them are wasting bread. The rest of 41.95% said there is no waste. It was asked to households already wasting bread what factors can be affective on wasting bread. The participants were demanded to choose the numerical values corresponding with the Likert Scale ([Table 15](#)).

Table 15. The households' justification for bread waste

*: 1: Strongly disagree..... 5: Strongly agree

Reasons*	Unanswered	1	2	3	4	5	Total
Habits	6.90	39.08	14.94	17.24	11.49	10.34	100.00
I don't like stale bread	1.15	12.64	5.75	14.94	16.09	49.43	100.00
I don't know how to evaluate	6.90	34.48	14.94	20.69	12.64	10.34	100.00
I am buying more than needed	6.90	12.64	5.75	20.69	16.09	37.93	100.00
Others (caste away)	85.06	1.15	1.15	1.15	0.00	11.49	100.00

The most important answer is (49.43%) "I don't like stale bread" which is followed by "I am buying more than needed" (37.93%), "Habits", (39.08%), "I don't know how to evaluate" (34.48%) and "others" (11.49%) respectively ([Table 15](#)).

After asked to households what can be done to reduce bread waste, 63.25% of the households stated that the bread should be bought according to the needs. 6.5% stated the wasting can be reduced by training. The other opinions were: 2.25% suggest that there should be bread production in different weight, 1.5% suggest a bread getting stale late should be produced, 1.0% suggest bread prices should be increased, 0.5% suggest that bread kinds should be increased and 25% have no opinion ([Table 16](#)).

Table 16. Opinions of the households to reduce the bread waste

Opinions	Frequency	(%)
To buy as to needs	253	63.25
To explain the importance of the wasting by training	26	6.50
To produce breads in the different weights	9	2.25
To produce bread getting late stale	6	1.50
To increase the price	4	1.00
To improve the kinds	2	0.50
Having no idea	100	25.00
Total	400	100.00

Nowadays most of the foods are stored by freezing or cooling as ready to cook. To prevent bread waste, to present fresh bread without delay, to provide economical and timing advantage to the firms, studies have been carried out about freezing storage and in many EU countries this found many application fields. In our country although some floury products are also being stored as freezing, this kind of application is so early for bread dough [7].

It was asked to households who already not wasting bread about the factors affecting on not wasting bread. They were demanded to choose the numerical values corresponding with the Likert Scale ([Table 17](#)).

Table 17. Reasons of not wasting bread in the investigated households

*: 1: Strongly disagree..... 5: Strongly agree

Reasons*	Unanswered	1	2	3	4	5	Total
Wasting is Sin	9.27	15.34	5.43	15.02	5.11	49.84	100.00
I don't know how to evaluate	9.27	10.86	11.18	13.10	14.06	41.53	100.00
I am buying as much as I need	6.71	4.15	3.51	11.18	15.34	59.11	100.00
Habits	22.04	9.90	4.47	15.34	21.73	26.52	100.00
Other (giving to animals)	85.94	4.47	1.60	1.28	0.00	6.71	100.00

The highest answer (59.11%) is “I am buying as much as I need” followed by 49.84% said “Wasting is sin”, 41.53% said “I don't know how to evaluate”, 26.52% said “Habits” and 6.71% said “Giving to animals” is followed ([Table 17](#)).

While the participants' opinion about the bread prices were asked, the responses were “normal” (47.75%), “expensive” (38.50%), “too expensive” (11.5%), and “cheap” (2.25%) respectively. None of households' answered as “too cheap” ([Table 18](#)).

Table 18. Opinions of households about bread prices

Opinions	Frequency	%
Too expensive	46	11.50
Expensive	154	38.50
Normal	191	47.75
Cheap	9	2.25
Too cheap	0	0.00
Total	400	100.00

In a different study, it was determined that the rate of the people pleased with bread prices was 38.20%, the rate of the people displeased with the prices is 53.50%, and the people undecided or without answer is 8.30% [4].

It was asked to households what their opinions about the municipality's role of determining price. The rate of investigated households thinking that municipality has a role on the determining price is 45.5%. The answers are “too positive” (22.25%), “normal” (19.75%), “negative” (6.75%), “too negative” (2.25%) and “no idea” (3.5%) respectively ([Table 19](#)).

Table 19. Opinions of households about role of the municipality on the determining price

Opinions	Frequency	%
Too positive	89	22.25
Positive	182	45.50
Normal	79	19.75
Negative	27	6.75
Too negative	9	2.25
No idea	14	3.50
Total	400	100.00

Among the households' positive opinions about municipality politics on bread are that there is a good service for the households crowded and with low-income, that the policy provides competition within bread market, that the prices of the bread is cheaper on municipality kiosks. The negative opinions about policy of the municipality on

bread are the insufficiency of the bread selling at municipality kiosks, the crowdedness in front of the kiosks, the lack of control and quality.

According to survey results, it was found that 79% of analyzed households don't complain when they experience any problem about purchased bread. Of the complaining people, 86,90% make this complaint to the place where they bought the bread. The others prefer to apply to the municipality, Chamber of Bakery and Agricultural Directorate of Adana.

When their opinions were asked about selling the bread in nylon bags, from answers it was determined that 40.25% of the answers were "too positive", 32.50% were "positive", 18.5% were "undecided", 7.25% were "negative", and 1.5% are "too negative" (Table 20).

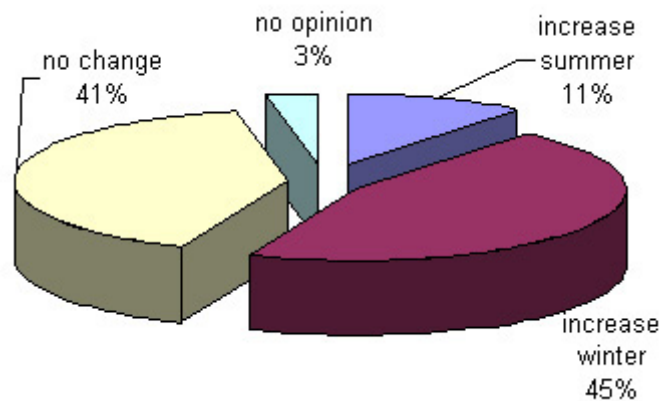
Table 20. Opinions of households about to putting the bread into nylon bag

Opinions	Frequency	(%)
Too positive	161	40.25
Positive	130	32.50
Undecided	74	18.50
Negative	29	7.25
Too negative	6	1.50
Total	400	100.00

The food groups that the households investigated can substitute for bread are macaroni, pilaf, pasta and other floury products.

The rate of households stating that there has no change on their bread consumption recently was 58.5%. When it was asked how they change their bread consumption manner by season, in order to understand if there is any seasonal changes on bread consumption, 45.5% of households expressed that their consumption increases in winter, 40.75% stated there is no change, 10.75% stated that their consumption increases in summer. 3% had no opinion (Fig. 5).

Figure 5. Seasonal changing of households in bread consumption



When it was asked that whether they had any idea about the weight of the bread they purchased, 52.75% of households answered that they did not know weight of the bread while 47.25% stated they knew. It is determined that bread's weight is 207 g according to answer given by the households having knowledge about bread's weight.

CONCLUSIONS AND RECOMMENDATIONS

The most essential food for people in Turkey is bread that is the most common nutrition among in the flour and floury products. Although its consumption depends on economical and social conditions, importance of the bread will continue.

According to the survey results, the number of daily purchased bread per household is 4.65 loaves, whereas the daily consumed bread number is 4.45 loaves in average. As the income of households increases, the purchased and consumed bread amount decreases, as it is expected. This demonstrates that bread consumption is higher in households with low-income level, compared to those with high-income level.

The bread consumption is averagely 233.46 g/day per capita. This amount is lower than the averages determined in previous studies of other provinces.

The grocery is the most preferred spot to purchase bread by households. It is followed by bakery and market. The factors affecting the bread purchase places are freshness, distances and prices respectively.

The loaf is the most preferable kind of bread. This is followed by flat bread, thin dough-oven made, fibrous (packed), and fibrous (unpacked) respectively. While the loaf has the lowest price, fibrous (packed) has the highest prices. It can be concluded that because of the lowest prices and consumer habits, the loaf is the most preferred kind of bread.

According to survey results, the most important factors affecting the bread purchase are hygienic conditions, the warmth of the bread, prices and its appearance respectively. Almost half of the analyzed households consume the bread by both dividing and slicing. Most of the households think that bread causes to gain weight. And also they expressed that gaining weight due to bread depends on the amount of bread.

It is determined that the bread is mostly consumed with vegetable meals. Grilled-kebab is also an outstanding food increasing the bread consumption amount.

There is a bread waste in most households. The surpluses are either reused by turning them into some other food or wasted. The waste rate in the analyzed households is averagely 9.63% daily. It is determined that this rate is the maximum in the highest group of income and the minimum in the lowest group of income. It is determined that 21,75% (87) of the analyzed households are wasting bread.

The most effective factor to increase the waste amount is that consumers have a dislike of stale bread. Since they don't like bread stale, they waste it when it goes stale. The results of survey show that the most effective factor not to waste bread is to buy bread with regard to needs. According to the result of the 400 surveys, 63.25% of the households state that the bread should be bought according to needs, to explain importance of wasting by training, to produce different weights of bread, to produce bread getting late stale, and to improve kinds of bread for reducing bread waste.

Half of the households investigated find the price reasonable. About the role of the municipality in the determining price of the bread, half of the households consider that the policies applied by municipality on the price the bread are affirmative. These households think municipality provides good services especially for the households crowded and with low income.

The result of the surveys shows that the households don't complain with the bread, as for households complaining make their complaints to the place wherever they bought the bread. The rate of the persons who consider putting the bread nylon bag affirmative is 72.75% of the of the whole person participating in survey. Since this rate is high, it can be said that putting the bread into the nylon bag is good service.

According to these results, recommendations that can be ranged as below:

For the reason that grocery is the first place preferred to buy bread, groceries should be investigated according to the quality and hygiene.

As transporting bread from the leaving the bakery to grocery, it should be saved with plastic package and at least in the selling point, it must be compulsory that the bread should be serviced to consumers in nylon bag.

The consumers should insist on their rights of hygiene and bread quality. They should use their preference from the view of quality, and behave in a way to direct the producer more quality production.

To store the bread in the short time storing hygienic bag is benefited, in the long time storing breads should be kept in the deepfreeze or refrigerators. Afterwards it should be used as heating to 60-65°C.

Average daily wasting of bread in households is found to be high. Especially the ratio is higher in the households with high income groups. The best effective way of preventing the bread waste is to buy bread in according to the needs. In the case that this situation is impossible, extra bread should be used in a best suitable condition.

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