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Evaluation of Probiotic Use of The Students of Istanbul Medipol University

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ABSTRACT

This research; is planned to determine the level of knowledge about probiotic nutritions and, the consumption of them by university students. The date range of the study was 2018. A total of 100 students were surveyed at the İstanbul Medipol University, 47 men and 53 women aged 18-30 years. General information and demographic status of participants were questioned. Also, height and weight data were recorded by their written notifications. In parallel with the ever-increasing work on the positive effects of probiotics on health; increased consumption of probiotics and increased knowledge.

Microorganisms can directly or indirectly cause the formation of many diseases. 20% of the students consume these nutrients on the recommendation; and 24% of them did not consume it because they think did not need it. Although probiotic dairy products are mostly used for symptoms of constipation, there is not enough information in the context of other diseases.

Keywords: Microflora, probiotic nutrient, fermentation

INTRODUCTION

Probiotics are selectable viable microorganisms used as nutritional supplements that contribute to maintaining human health or have potential benefits for disease prevention. [1] On the other hand, prebiotics, are defined as food components that stimulate the reproduction and activity of beneficial bacteria in the colon, thereby indirectly cause benefit to the host. [2] Symbiotics are also non-digestible substances that activate or strengthen the effect of probiotic bacteria with the po-

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tential synergistic effect caused by the combination of probiotics and prebiotics. [3]

The history of the relationship between gut health and human disease has followed a development from Hippocrates (460-370 BC) to the present day. Within the understanding of modern medicine, the first studies related to intestinal bacteria and digestive physiology, which started with T. Escherich in 1886, has become a common scientific knowledge field including prebiotic, probiotic and symbiotic definitions that form today's common terminology. [4,5]

Functional foods are food itself and, additive ingredients, that provide the human body's need for essential nutrients, provide additional benefits in human physiology and metabolic functions, thereby helping to prevent disease and achieve a healthier life. [6] On the other hand, these foods are also defined as nutrients that can be consumed in the form of nutriment with a daily diet, without containing synthetic compounds and have health and well-being properties. [7]

With the development of healthy eating awareness, consumers expect to benefit from health benefits as well as food. Functional foods have become one of the fastest growing sectors of the food industry as a result of these expectations that consumers show to new products and quality. One of these functional foods is probiotics that have received great interest in recent years. As of the definition given above probiotic bacteria are found in the normal human intestinal flora. Probiotics are naturally present in fermented milk and other fermented foods, but many products originating from yoghurt, sour cream, milk powder, sweets, fruit juice, ice cream, baby milk or butter, butter, mayonnaise, meat and oats can also be added externally.[6]

One of the questions most asked by consumers who see a balanced intestinal flora in relation to an effective immune system is the benefit of probiotic use on healthy people. A response to a healthy microflora composition and the benefits to the host is usually that the answer is that it can prevent complaints that may arise from occasional imbalances, even if they are speculative, even in a balanced system. On the other hand, probiotics have been proven to have effects such as gastrointestinal complaints, normalization of reduced bowel mobility or reduction of long-term risks (cancer, ischemic heart disease) as well as health benefits such as prevention or alleviation of common infectious diseases (eg colds) or atopic diseases caused a general wonder to awaken. However, in no way should probiotic consumption consume a healthy lifestyle and a balanced diet.[8]

Probiotic bacteria have been shown in several publications in recent years as being very useful for human health in research. It has been shown to be beneficial in cancer and inflammatory bowel disease, preventing inflammation, diarrhea and

constipation, preventing inflammation, colonization of the intestinal flora, and prevention of colonization of pathogenic bacteria in the intestine.[9]

This research is to investigate the structure and properties of probiotics, their effects on human health, their usage areas, their effect mechanisms and their reliability in order to reach the desired point by determining information about university students' consumption of probiotic foods and probiotics which are increasingly used nowadays.

METHODOLOGY

This section comprises the methods and tools used in the research and defined in sub-headings as of 'Research Model', 'Research Universe and Sampling', 'Data Collection Techniques' and 'Analysis of Data'.

Research Model

The screening model was used in this study. The research aimed to determine the probiotic nutrient consumption status, probiotic consumption frequency and information about probiotic foods of the students who continue university education.

Research Universe and Sampling

The universe of this research was Istanbul Medipol University. The questionnaire was applied to 100 students selected randomly among the students who continued their education at Istanbul Medipol University.

Data Collection Techniques

The research data were collected by the researcher with the questionnaire technique. The survey form developed as a data collection tool is preferred because it is the most appropriate tool in the data collection. The evaluation and preparation of the questionnaire were consisting of literature expert opinions and the examinations and review of thesis and researches related with the subject.

The questionnaire consists of three parts. In the first part, it is aimed to measure the information about the students and their families, in the second part the probiotic food consumption situation and in the third part the information about the probiotic products.

The questionnaire was applied to the students participating in the research under the supervision of the researcher. The necessary explanations about the questionnaire were made to the students by the researcers and, it was accepted that the students who participated in the research gave accurate and impartial answers to the questions.

Analaysis of Data

The data collected about the sub-problems that are searched for within the framework of the research problem are first processed in the data coding tables on the computer. Then statistical analyzes on the data were performed using SPSS (Statistical PacketforSocialSciences) 20 package program.

Findings are shown in the tables as female and male gender, number and percentage. Frequency (f), percent (%), chi square, arithmetic mean (x) and standard deviation (ss) were used to determine the personal and family characteristics of the students. A significance level of 0.05 was taken to test the differences.

The following formula was used in the calculation of the BMI of the students in the study, and the evaluations were made according to the following classifications.

BMI = (Body Weight (kg)) / (Thickness (m2))

• BMI below 18.5	Underweight
• 18.5- 24.9	Normal Weight
• 25.0- 29.9	Excess Weight
• 30.0- 39.9	Obese
• Morbid (serious) obesity	Over 40,0 °

RESULTS AND DISCUSSION

Participants selected through coincidental sampling are students from the Medipol University who responded to the survey. Demographic data and values for these students and their families were first collected for measurement results of knowledge of probiotic food consumption and probiotic products of research and thesis subjects. The results are summarized in Table 1 below.

Findings / Part 1. Participatory demographic data

Demographic data and values of the participants: General

Demographic data and values related with the enrolled students and their families were considere as of the measurement results of knowledge of probiotic food consumption and probiotic products. The results are tabulated in Table 1-5 and summarized in Figures 1-6 in the foolowin sections.

Table 1. Participants' demographic data and values

Characteristics	(n=100)	Percent Exhibitor (%)	% Mean ± SD	Median (Min-max)	p-value
Gender					
Female	54	54	71.04 ± 12.08	73.5 (44-92)	0.55
Male	46	46	72.5 ± 12.7	73.0 (48-100)	
Department of Education					
Pharmacy	22	22	70.9 ± 14.08	73.0 (48-100)	0.67
One-language speech	18	18	79.39 ± 11.14	68.0 (53-92)	
Medicine	25	25	77.6 ± 8.44	75.0 (57-92)	
Law	34	34	75.6 ± 14.9	69.5 (44-100)	
Physiotherapy	1	1	-	-	
Classs					
1	25	25	72.0 ± 14.9	76.0 (46-100)	0.88
2	30	30	69.6 ± 13.57	68.0 (44-100)	
3	30	30	73.12 ± 10.39	75.0 (48-92)	
4	10	10	75.66 ± 25.06	73.0 (63-92)	
Living Area					
Bay	3	3	60.33 ± 17.21	53.0 (48-80)	0.54
District	23	23	79.15 ± 13.16	74.0 (48-100)	
Province	23	23	80.09 ± 12.87	72.0 (53-92)	
Big city	51	51	74.63 ± 11.79	73.0 (44-99)	
Mother Education					
Illiterate	2	2	-	-	0.79
Educated	3	3	-	-	
Primary school graduate	19	19	70.86 ± 16.55	70.5 (44-100)	
Secondary school graduate	17	17	71.45 ± 11.24	73.0 (48-92)	
High school graduate	32	32	-	-	
University	27	27	73.08 ± 27.3	74.5 (48-92)	
Father Education					
Educated	1	1	-	-	0.88
Primary school graduate	16	16	72.25 ± 12.7	70.5 (50-100)	
Secondary school graduate	15	15	70.16 ± 13.16	73.0 (44-100)	
High school graduate	17	17	-	-	
University	51	51	72.66 ± 11.33	74.0 (48-92)	
Economic Income Level					
Very low	1	1	-	-	0.35
Middle	77	77	72.27 ± 12.8	73.0 (48-100)	
High	19	19	69.9 ± 12.2	73.5 (48-100)	
Very high	2	2	-	-	

Participants' mean height (170.4 ± 14.08) in terms of arithmetic mean ± SD (Std.) body weight (66.45 ± 14.8) and ages (21.35 ± 3.25)

Demographic data and values of the participants: Participant gender differentiation

The values for the data table are also summarized in the figures below. Figure 1 shows the status of the participants in terms of gender differentiation. Total mean values of both sexes (71.04 ± 12.08) (72.50 ± 12.7) p> 0.05 in both males and females, respectively, show no statistically significant difference.

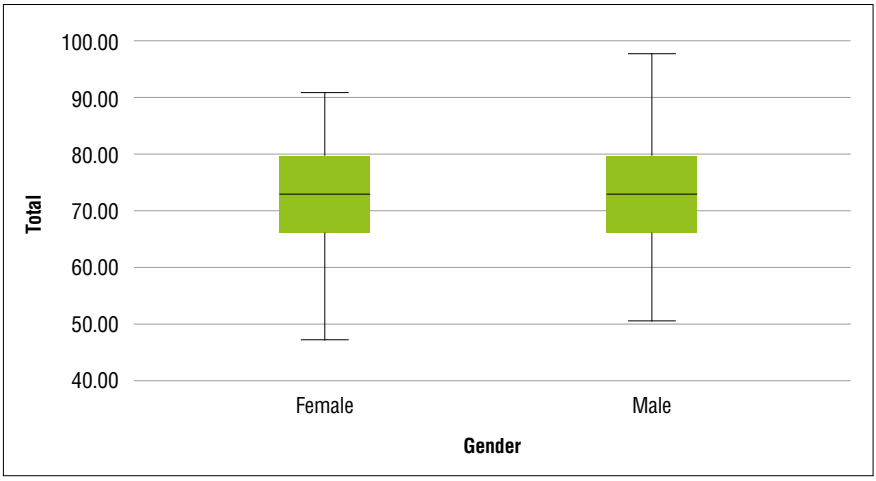

Figure 1. Participant gender differentiation

Demographic data and values of participants: Differences in occupational section preferences of participants

Figure 2 exhibit the training sections preferred by the participants. Participants have a more widespread preference in the field of pharmacy and law, while a language preference in speech and medicine-physics is relatively less favorable than the other two disciplines. However, there is no statistically significant difference between all departmental preferences.

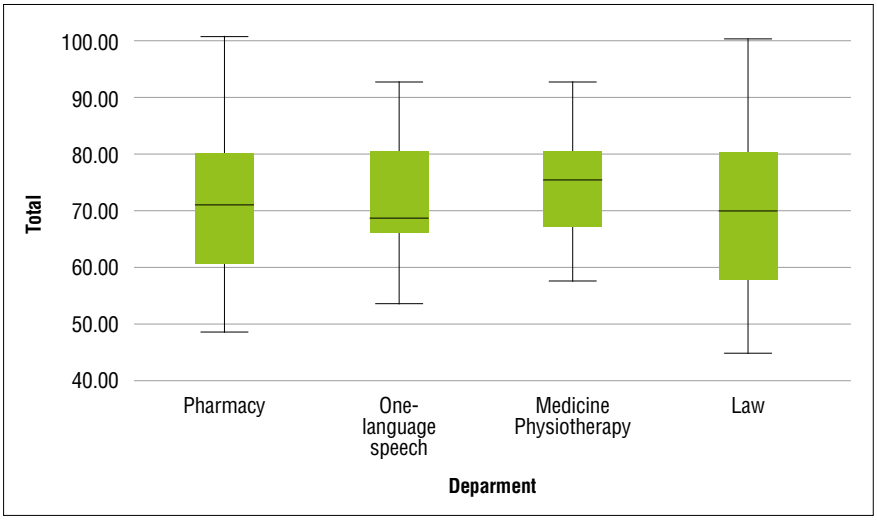

Figure 2. Participants' preference for occupational sections

Demographic data and values of participants: Difference in educational level of participant parents

The results of the differences in educational level of participant parents were exhibited in Table 2, Figure 3 and, Table 3, Figure 4, as of the data of fathers and mothers, respectively. There is a wide range in terms of different graduation categories, but no statistical significance is calculated.

Educational level of fathers:

Table 2. Father: Case Summary

	Father	Cases					
		Current Missing Total		Current Missing Total		Current Missing Total	
		N	Percent	N	Percent	N	Percent
Total	Primary School Graduate	16	94.1%	1	5.9%	17	100.0%
	Secondary School Graduate	29	90.6%	3	9.4%	32	100.0%
	Graduated from a University	43	84.3%	8	15.7%	51	100.0%

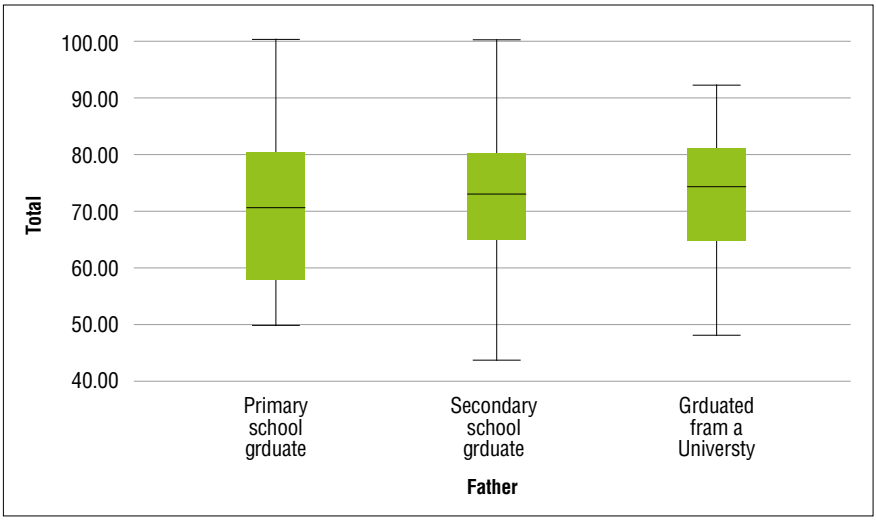

Figure 3. Difference in educational level of participant parents (father)

Educational level of mothers:

Table 3. Mother: Case Summary

	Mother	Cases					
		Current		Missing		Total	
		N	Percent	N	Percent	N	Percent
Total	Primary School Graduate	22	91.7%	2	8.3%	24	100.0%
	Secondary School Graduate	42	85.7%	7	14.3%	49	100.0%
	Graduated from a University	24	88.9%	3	11.1%	27	100.0%

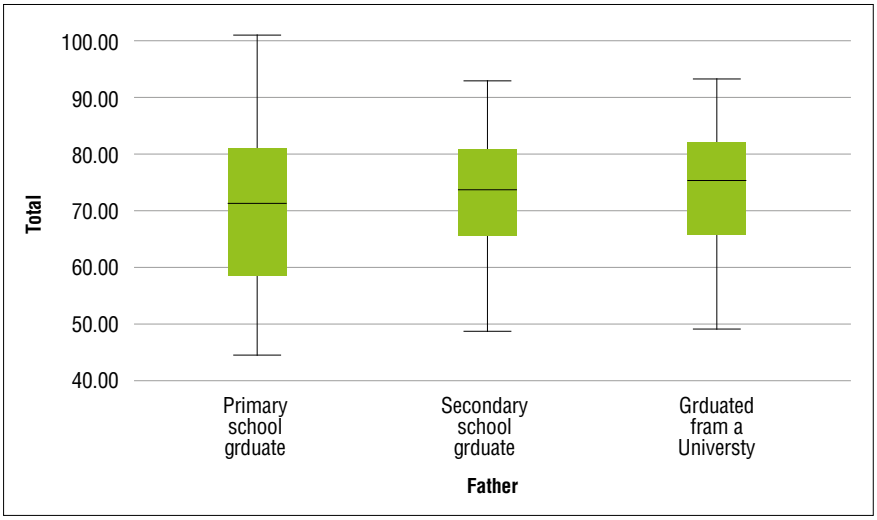

Figure 4. Difference in educational level of participant parents (mother)

Demographic data and values of participants: Differences in economic income level of participant families

The level of income of the participating families is shown in table 4 and figure 5. In terms of income levels, participants are from low, middle income families. However, there is no statistical difference between these groups.

Table 4. What do you think? Economic Level: Case Study Summary

	What do you think? -Economic Level	Cases					
		Current		Missing		Total	
		N	Percent	N	Percent	N	Percent
Total	Low and Medium	68	87.2%	10	12.8%	78	100.0%
	High	20	95.2%	1	4.8%	21	100.0%

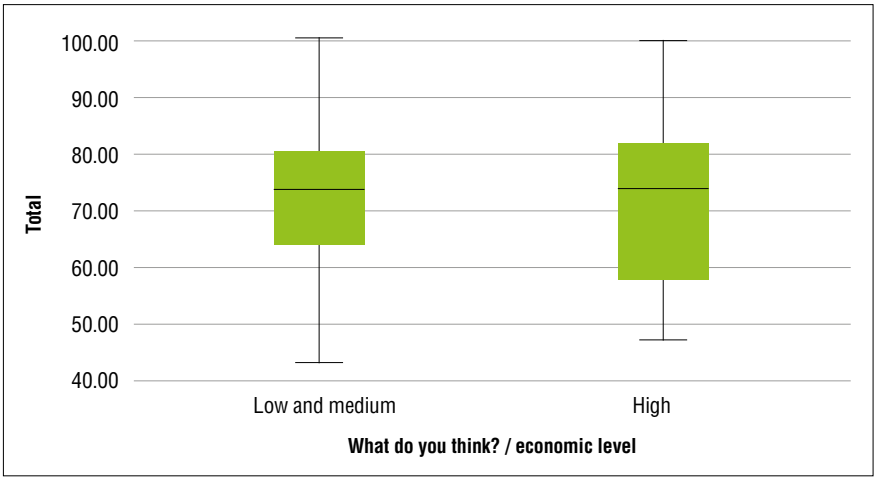

Figure 5. Differences in economic income level of participant families

Participants' demographic data and values: Life zones

Participants' families prefer to live in the cities. However, there is no statistical difference among the participants from the smaller settlement areas.

Table 5. Life: Case Summary

	Life	Cases					
		Current		Missing		Total	
		N	Percent	N	Percent	N	Percent
Total	Town and village	3	100.0%	0	0.0%	3	100.0%
	District	22	95.7%	1	4.3%	23	100.0%
	Province	17	73.9%	6	26.1%	23	100.0%
	Big city	46	90.2%	5	9.8%	51	100.0%

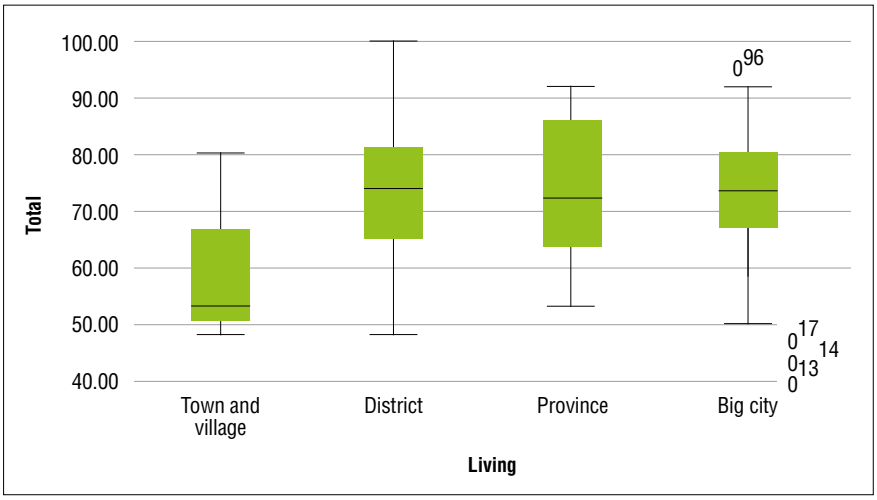

Figure 6. Living area preferences of participating families

Findings / Part 2. Measurement of students' knowledge of probiotic food consumption and probiotic products

This section is based on the answers obtained from questionnaire questions 11-31. Table 6 summurizes the general information related with all questionarry questions.

Table 6. General informations and summaries related with all questionary questions

Questionnaire questions numbers	Number of tables refering the summury results	Results
11	**-**	**Questionnaire question 11** was questioned whether probiotic description is known or not. From the responses "I know the answer" is 77%, "I do not know the answer" is 21%.
12	**7**	-
13	**-**	**Questionnaire question 13** was questioned whether students have problems related with feeding. 85% of the students have no problem.
14	**8**	
15	**-**	**Questionnaire question 15** was questioned students' probiotic fattening consumption. 52% of 100 students answered yes, 8% answered no. There is no idea about the consumption of 40% students.
16	**9**	-
17-20	**10**	-
21	**11**	-
22	**12**	-
23	**13**	-
24		**Questionnaire question 24** was questioned the use of probiotic products as nutritional supplements in students. The percentage that does not use is 68, and the percentage of users who use it is 20. The percentage of people who do not know about the use of probiotic products is 12.
25	**14**	-
26	**15**	-
27	**16**	-
28	**17**	-
29		**Questionnaire question 29** was questioned the students, about the ideal use time probiotics. Duration does not include five different time periods, from one week to over three years. 47% of the respondents answered as not knowing about the usage time period. The 20 %group, gave response for the time period as 1 to 3 months.
30	**18**	-
31	**19**	-

Questionnaire question 12:

This questionnaire question mainly questioned whether the disease (s) benefit or not from probiotic food consumption. Mainly the section measures information in 11 categories including constipation, diarrhea, allergy, lactose intolerance, inflammatory bowel diseases, high cholesterol, urogenital infections, irritable bowel syndrome, helicobacter pylori infection, acute pancreatitis and others. These are summarized in the table 7 below.

Table 7. Questionnaire Question 12: Which disease (s) do you think benefit from probiotic food consumption?

Disease	% Yes	%No
12 1 Constipation	65.0	35.0
12 2 Diarrhea	43.0	57.0
12 3 Allergy	20.0	80.0
12 4 Lactose intolerance	27.0	73.0
12 5 Inflammatory bowel diseases	35.0	65.0
12 6 High cholesterol	15.0	85.0
12 7 Urogenital infections	10.0	90.0
12 8 Irritable bowel syndrome	42.0	58.0
12 9 *Helicobacter pylori infection*	29.0	71.0
12 10 Acute pancreatitis	10.0	90.0
12 11 Other		100.0

Yes answers indicate that students have knowledge only about constipation, without consisting of sufficient information of probiotics usage in other diseases.

Questionnaire question 14:

In questionnaire question 14, it is questioned whether and if there were any diseases diagnosed in the students. The answers to this question are summarized in table 8.

Table 8. Questionnaire Question 14: If you have a diagnosed any health problem.

Disease	% Yes	%No
14 1 Diabetes	4.0	96.0
14 2 Kidney disease	2.0	98.0
14 3 Dental problems	1.0	99.0
14 4 Anemia	8.0	92.0
14 5 Eye illness	6.0	94.0
14 6 Cardiovascular disease	1.0	99.0
14 7 Other	9.0	91.0

Questionnaire question 16:

This questionnaire question, questioned the students' reasons for consuming probiotic food. Belowmentioned table 9 summarizes the answers.

Table 9. Questionnaire Question 16: What are your reasons / reasons for consuming probiotic food?

Preference factor	% Yes	%No
16 1 I find it delicious	19.0	81.0
16 2 I see the benefits of digestive system	38.0	62.0
16 3 I think that strengthens my immune system	30.0	70.0
16 4 I am consuming because of my health problems	2.0	98.0
16 5 I consume on advice	10.0	90.0
16 6 Other		100

Questionnaire question 17-20:

The answers given by the students to ***the questions 17-20 of the questionnaire*** is summarized in the following table 10.

Table 10. Questionnaire Question 17-20 Answers

Question	% No Idea	% Yes	% No
Questionnaire Question 17. Do you see the benefit of the probiotic foods you use?	41	53	6
Survey Question 18. Do you read the packaging labels of the probiotic foods you bought?	40	45	15
Questionnaire Question 19. Do you know the microorganisms in the probiotic foods you consume?	40	30	30
Questionnaire Question 20. Are you proposing for the consumption of probiotic foods?	39	38	23

Questionnaire question 21:

It is questioned that which health problems contributed to the consumption of probiotic nutrients. The returns from the students are summarized in the below-mentioned.table 11.

Table 11. Questionnaire Question 21: Do you think that the consumption of probiotic food contributes to the elimination of the following health problem/problems?

Problems	%Yes	%No
21 1 Circulatory system problems	6.0	94.0
21 2 Digestive system problems	51.0	49.0
21 3 Immune system problems	36.0	64.0
21 4 Obesity	16.0	84.0
21 5 Other	2.0	98.0

Questionnaire question 22:

In this question, students were questioned about the reasons of why they do not consume probiotic foods. In table 12, relevent “yes” or “no” responses as tabulated below.

Table 12. Questionnaire Question 22: What are your reasons / reasons for not consuming probiotic foods?

Causes	% Yes	% No
22 1 Do not know	17.0	83.0
22 2 Not needing	24.0	76.0
22 3 Expensive find	12.0	88.0
22 4 No tasteless find	10.0	90.0
22 5 Other	6.0	94.0

Questionnaire 23 questions:

Students' were questioned of their probiotic food consumption frequency. Probiotic yoghurt takes the first order of 2-3 times a week and consumes 26% from eleven different products. Table 13 summarizes the situation.

Table 13. Questionnaire Question 23: Consumption frequency of probiotic foods in students

	Food consumption frequency					
Food	**0**	**Everyday**	**2-3 times a week**	**1 time per week**	**Once in a month**	**I do not consume**
23 1 Probiotic yogurt	12.0	15.0	26.0	17.0	10.0	20.0
23 2 Probiotic milk	13.0	3.0	15.0	15.0	14.0	40.0
23 3 Kefir	12.0	1.0	5.0	9.0	16.0	57.0
23 4 Kefir cheese	15.0	1.0	2.0	1.0	7.0	74.0
23 5 Bread with sourdough yeast	16.0	7.0	2.0	10.0	17.0	48.0
23 6 Tarhana	10.0	3.0	22.0	24.0	32.0	9.0
23 7 Boza	14.0	-	3.0	4.0	24.0	55.0
23 8 Redfish	15.0	-	1.0	-	1.0	83.0
23 9 Kambucha tea	16.0	1.0	1.0	2.0	-	80.0
23 10 Natural turnip juice	11.0	3.0	5.0	10.0	30.0	41.0
23 11 Pickled olives	13.0	15.0	16.0	9.0	15.0	32.0

Questionnaire 25 questions:

Survey question 25, investigated the reasons of students' supplement.consumptions. The tendency to consume the most important product among the four elements is the recommendation (15%) taken around. Table 14 exhibits the collective results.

Table 14. Questionnaire Question 25: What is the reason for consuming a supplementary probiotic product?

Causes	**% Yes**	**% No**
25 1 Health problems	8.0	92.0
25 2 Advertisements	5.0	95.0
25 3 Recommendation	15.0	85.0
25 4 School education	4.0	96.0

Questionnaire 26 questions:

This questionnaire question 26, examined how the students hear of about the supplementary probiotic products. Among the six different learning sources, "friends, acquaintances, family and similar factors" is more prominent than others. Table 15 summarizes the results of this case

Table 15. Question 26: Where did you hear about the supplementary probiotic products?

Resources	% Yes	% No
26 1 Specialist (doctor, pharmacist or dietitian)	9.0	91.0
26 2 Friends, acquaintances, family etc.	11.0	89.0
26 3 Advertisements (newspapers, magazines, television)	6.0	94.0
26 4 Education, conferences, informal meetings	5.0	95.0
26 5 Pharmacies and sales points	6.0	94.0
26 6 Internet	6.0	94.0

Questionnaire 27 questions:

Questionnaire question 27, questioned the determination of the criteria why students took into account when purchasing supplemental probiotic products. According to five different criteria, the preference factor of the students in purchasing tendency is the content of the product (20%) and table 16 summarizes the results for this parameter.

Table 16. Questionnaire Question 27: What are the criteria / criteria to consider when buying a supplementary probiotic product?

Criteria	%Yes	%No
27 1 Price	4.0	96.0
27 2 Brand	9.0	91.0
27 3 Contents	20.0	79.0
27 4 Recommendation	6.0	94.0
27 5 Appearance	2.0	98.0

Questionnaire 28 questions:

The questionnaire question 28, questioned which 28 students used the supplementary probiotic products as brands. Table 17 summarizes the results and points out that Enterogermina (13%) is the most preferred product.

Table 17. Questionnaire Question 28: Which one do you use as a supplementary probiotic product?

Probiotic products	% Yes	% No
28 1 NBL Probiotic Goldschafts	3.0	97.0
28 2 Enterogermina®	13.0	87.0
28 3 BIFIFORM® Drops	3.0	97.0
28 4 NTBIOTIC Capsule	-	100.0
28 5 Natrol Acidophilus Capsule	-	100.0
28 6 Other	5.0	95.0

Questionnaire 30 questions:

The questionnaire question 30, questioned about the participating students how they recognize the sources of information about probiotics. It is found that, the first order tendency is to acquire information through 61% of health personnel. The answers were documented below in table 18.

Table 18. Survey Question 30: Which do you see as a source of information about probiotics?

A source of information on probiotics	% Yes	% No
30 1 Internet	36.0	64.0
30 2 Written-visual media	24.0	76.0
30 3 Through my friend	7.0	93.0
30 4 Through the health personnel	61.0	39.0
30 5 Medical courses	21.0	79.0

Questionnaire 31 questions:

The most comprehensive questionnaire surveyed among participant students in the questionnaire was ***Question 31,*** and it analyzes 20 sub parameters of "How are reinforcing probiotic products affecting our health". Table 19 is summarizing this data..

Table 19. Survey Question 31: How do you think reinforcing probiotic products are affecting our health?

	I strongly disagree	I do not agree	Partially Agree	I agree	Absolutely I agree
31 1 It contains useful items in health.	2.0	2.0	20.0	36.0	26.0
31 2 Helps strengthen the immune system.	7.0	13.0	41.0	25.0	-
31 3 Does not affect the regulation of the digestive system.	37.0	38.0	2.0	5.0	3.0
31 4 Contains a high number of microorganisms.	2.0	3.0	26.0	37.0	16.0
31 5 Prevents milk-induced discomfort (lactose intolerance).	4.0	8.0	31.0	20.0	13.0
31 6 Supports bone development.	2.0	8.0	15.0	29.0	30.0
31 7 There is no therapeutic effect.	23.0	31.0	21.0	4.0	7.0
31 8 It facilitates digestion by accelerating the transit of consumed foods.	4.0	10.0	13.0	35.0	21.0
31 9 Causes cancer.	42.0	34.0	6.0	5.0	1.0
31 10 Prevents disease-causing microorganisms from setting in the gut	5.0	6.0	23.0	29.0	24.0
31 11 Antibiotic-induced diarrhea is good.	1.0	7.0	28.0	28.0	20.0
31 12 Causes allergic diseases.	21.0	29.0	21.0	10.0	5.0
31 13 Allows living microorganisms to remain in balance in the mouth cavity.	6.0	8.0	33.0	23.0	15.0
31 14 Helps to lose weight.	8.0	14.0	36.0	22.0	8.0
31 15 Provides the synthesis of vitamins (B12, Folic acid).	4.0	8.0	32.0	24.0	16.0
31 16 Supports bone growth by increasing calcium absorption in the intestines.	3.0	4.0	27.0	31.0	18.0
31 17 Affects oral and dental health negatively.	34.0	29.0	10.0	5.0	5.0
31 18 Organizes intestinal functions in old age.	3.0	5.0	16.0	39.0	24.0
31 19 It is not safe to use probiotic-added foods in children.	15.0	38.0	16.0	9.0	7.0
31 20 The living organisms living in the intestines ensure that the microorganisms are in balance.	11.0	17.0	38.0	20.0	100.0

Probiotics are defined as live microorganisms that improve health by promoting health when they are taken in defined quantities. Many of these are obtained by fermentation of dairy products. *Lactobacillus* and *Bifidobacterium* are the most frequently found bacteria.[10]

The use of probiotic dairy products is increasing rapidly in developed countries. The widespread use of such products has great importance in terms of community health. Increasing consumption especially during childhood will contribute to healthier growth of new generations.

The main reason behind the wide use of prebiotics and probiotics is that many diseases are directly or indirectly related to the impairment of the balance of microbial flora and, that microbial flora controls this balance of prebiotics and probiotics. Particularly, if the side effects are negligible, the greatest advantages can be considered.[8]

The use of antibiotics, immunosuppressive agents and radiation for the treatment of infectious diseases can cause changes in the present balance by affecting the host flora. For this reason, the use of probiotics as an ecological method for the prevention and treatment of diseases has been an interesting research area for scientists.[11]

While the therapeutic effects and areas of the usage mentioned for probiotics, do not apply to all probiotics, the right microorganism and correct selection of strains is crucial so that the expected effect can be observed. [12] Therefore, it is very valuable to determine which indications the probioty is acting on, and more importantly, to select the optimum strain to obtain the maximum benefit, in other words, to select the ideal probiotic for each disease and disorder.[13]

Although they support human health with these positive effects, probiotics are not drugs taken to improve health. When the consumption of probiotic foods is stopped, the intestinal flora returns to its original state and the positive effect is lifted. For this reason, probiotics are only microorganisms that have positive effects when they are taken in the body regularly with probiotic foods. The positive health effects of probiotic foods can only be observed by cultivating acid-resistant probiotic bacteria in culture, using the cultures selected from pure cultures, and consuming the products for a long time without interruption.[3]

These foods need to meet certain conditions in order to be able to show desired effects. It should contribute to the nutrition of the individual, help to protect the health and bring it to a better state. At the same time, these characteristics should be based on good nutrition science and medicine. Again, appropriate daily intake quantities should be determined in terms of medical and nutritional knowledge. It should be proven that the consumption of food is reliable. Qualitative, quantitative, physicochemical properties of the components should be determined. If the nutrient is functionalized through processing; should not be lost in nutritional properties. Nutrition is rarely preferred, but it should be a food that is

often preferred to daily nutrition. Nutrient or any component should not have the ability to be used as a medicine. The functional component in foods should be resistant to digestion and should not show any health-affecting properties when taken over daily recommended amounts.

Much of the positive effects of prebiotics and probiotics studies have not yet been proven and the mechanism of action of proven efficacy has not been determined precisely. [14] Therefore, it may be useful to clarify the issues such as precise indications, mechanisms underlying the effect, determination of correct strains, selection of suitable host-microorganism-related prebiotic and, establishment of appropriate symbiotic combinations by making more randomized controlled studies related to this important topic.

The following table is important as a result of this thesis work.

Table 20. Measurement of knowledge of probiotic food consumption and probiotic products by participating students

Survey QUESTION	Parameter	% Yes
Questionnaire Question 12: Which disease (s) do you think probiotic food consumption might benefit?	12 1 Constipation	65.0
Questionnaire Question 14: If you have a diagnosed health problem:	14 4 Anemia	8.0
Questionnaire Question 16: What are your reasons / reasons for consuming probiotic food?	16 2 I see the benefits of digestive system	38.0
Questionnaire Question 17: Do you see the benefit of the probiotic foods you use?		53
Questionnaire Question 18: Do you read the packaging labels of the probiotic foods you bought?		45
Questionnaire Question 19: Do you know the microorganisms in the probiotic foods you consume?		30
Questionnaire Question 20: Are you proposing for the consumption of probiotic foods?		38
Questionnaire Question 21: Do you think that consumption of probiotic food contributes to the elimination of the following health problem / problems?	21 2 Digestive system problems	51.0
Questionnaire Question 22: What are your reasons / reasons for not consuming probiotic foods?	22 2 Not needing	24.0
Questionnaire Question 23: Consumption frequency of probiotic foods in students	23.1 Probiotic yogurt	26.0 (2-3 times a week)
Questionnaire Question 25: What is the reason for consuming a supplementary probiotic product?	25 1 Health problems	8.0
Questionnaire Question 26: Where did you hear about the supplementary probiotic products?	26 2 Friends, acquaintances, family etc.	11.0

Questionnaire Question 27: What are the criteria / criteria to consider when purchasing a supplementary probiotic product?	27 3 Contents	20.0
Questionnaire Question 28: Which one do you use as a supplementary probiotic product?	28 2 Enterogermina®	13.0
Questionnaire Question 29: Optimal use of probiotics	1-3 months	20
Questionnaire Question 30: Which do you see as a source of information on probiotics?	30 4 Through the health personnel	61.0
Questionnaire Question 31: How do you think reinforcing probiotic products have an impact on our health?	I agree + I absolutely agree	
	31 20 The living organisms living in the intestines ensure that the microorganisms are in balance.	20+100

In the context of the above table results, this study presents a summary of the cross-sectional results of the questionnaire on the measurement of knowledge of probiotic food consumption and probiotic products of participating students.

These results are of great importance in support of the literature on probiotic consciousness, relevance and use discussed above.

As a result, probiotic foods, which have numerous benefits in terms of health protection and positive development, do not attract as much interest in the consumer diet. The underlying reason for this is that probiotic foods are more expensive than those produced by conventional methods. Productivity to probiotic appetite and its addition to the diet are only due to the full knowledge of the positive effects of these foods on health. It should be considered that probiotic foods are not medicines and should not be discontinued when consumed, otherwise the intestinal flora will soon return to its former state.

REFERENCES

1. Ali, A. A., Velasquez, M. T., Hansen, C. T., Mohamed, A. I. & Bhathena, S. J. (2004). Effects of soybean isoflavones, probiotics, and their interactions on lipid metabolism and endocrine system in an animal model of obesity and diabetes, *J. Nutr. Biochem. 15*, 583–590, doi: 10.1016/j.jnutbio.2004.04.005.

2. Bertelsen, R. J., Jensen, E. T. & Ringel-kulka, T. (2016). Use of probiotics and prebiotics in infant feeding. *Best Pract. Res. Clin. Gastroenterol. 30*, 39-48, doi: 10.1016/j.bpg.2016.01.001.

3. Vrese, M. De. & Schrezenmeir, J. (2008). Probiotics, Prebiotics, and Synbiotics, *Adv. Biochem. Eng. Biotechnol. 111,* 1–66, doi: 10.1007/10_2008_097.

4. Mizock, B. A. (2015). Probiotics, *Dis. Mon. 61*, 259–290, doi: 10.1016/j.disamonth.2015.03.011.

5. Al-sheraji, S. H., Ismail, A., Yazid, M. & Mustafa, S. (2013). Prebiotics as functional foods: A review. *J. Funct. Foods*, *5*, 1542–1553, doi: 10.1016/j.jff.2013.08.009.

6. Gülbandilar, A. (2017). Fonksiyonel Gıda Olarak Kullanılan Probiyotikler ve Özellikleri. *Tur. J. Sci. Rev. 10,* 44–47.

7. Erba, M., Birle, A. & Birli, A. (2006). Yeni Bir Gıda Grubu Olarak Fonksiyonel Gıdalar. *Türkiye 9. Gıda Kongresi; 24-26 Mayıs 2006. 1,* 791–794.

8. Daniel, C., Pot, B. & Foligne, B. (2013). Probiotics from research to market: the possibilities, risks and challenges. *Curr. Opin. Microbiol. 16*, 284-292, doi: 10.1016/j.mib.2013.06.008.

9. Kanamori, Y., Sugiyama, M., Hashizume, K., Yuki, N., Morotomi, M. & Tanaka, R. (2004). Experience of long-term synbiotic therapy in seven short bowel patients with refractory enterocolitis. *J. Pediatr. Surg. 39*, 1686–1692, doi: 10.1016/j.jpedsurg.2004.07.013.

10. Sanders, M. E., Gibson, G. R., Gill, H. S. & Guarner, F. (2007). Probiotics : Their Potential to Impact Human Health. *36*.

11. Markowiak, P. & Śliżewska, K. (2017). Effects of Probiotics, Prebiotics, and Synbiotics on Human Health. *Nutrients*, *9*, 1021, doi: 10.3390/nu9091021**.**

12. Pinn, D. M., Aroniadis, O. C. & Brandt, L. J. (2015). Is fecal microbiota transplantation (FMT) an effective treatment for patients with functional gastrointestinal disorders (FGID)? *Neurogastroenterol. Motil. 27*, 19–29, doi: 10.1111/nmo.12479.

13. Bertazzoni, E., Donelli, G., Midtvedt, T., Nicoli, J. & Sanz, Y. (2013). *Probiotics and clinical effects* : is the number what Probiotics and clinical effects : is the number what counts ?, *J. Chemotherapy*, *25*, 193-212, doi: 10.1179/1973947813Y.0000000078.

14. Patel, R. & Dupont, H. L. (2015). New approaches for bacteriotherapy: Prebiotics, new-generation probiotics, and synbiotics. *Clin. Infect. Dis. 60*, S108–S121, doi: 10.1093/cid/civ177.