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### RESEARCH ARTICLE

## Energy and nutrient content of weight-loss diets published in high-circulation newspapers

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#### KEYWORDS

Diet;  
Periodical;  
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#### Entry Term(s)

Newspaper.

#### Energy and nutrient content of weight-loss diets published in high-circulation newspapers

#### ABSTRACT

**Introduction:** The press is one of the most effective methods to provide the public with health education and to increase knowledge levels related to health in society. Nutritional advice and weight loss diets are also frequently featured in newspapers. However, diets in newspaper limit food groups and/or nutrients to achieve faster results. This study aimed to assess diet lists published in newspapers in terms of energy and nutrient contents and to compare levels with requirements.

**Material and Methods:** From 1<sup>st</sup> February 2018 to 31<sup>st</sup> January 2019, nutritional and diet news included in 10 newspapers with high circulation in Turkey were investigated and diets published in these newspapers were investigated. The energy, macro, and micronutrient contents were compared with the Turkey Nutrition Guide recommendations.

**Results:** It appeared diet lists met 55.5% of energy requirements for women and 44.5% of energy requirements for men. Carbohydrate and protein contents of diets were below recommendations, while fat contents were identified to be above-recommended levels. Dietary fiber was determined to meet 81.2% of recommendations. For micronutrients, calcium and iron contents were below recommended levels.

**Conclusions:** It appears weight-loss diets in newspapers are insufficient in terms of energy and some nutrients. Though these diets, which are easily accessible by a large portion of society, without expert control they may cause nutrient deficiencies in the long term.



## PALABRAS CLAVE

Dieta;  
 Publicación  
 Periódica;  
 Nutrientes;  
 Pérdida de Peso.

**Entry Term(s)**

Periódico.

➤ **Contenido energético y nutricional de dietas de adelgazamiento publicadas en periódicos de alta difusión**

**RESUMEN**

**Introducción:** La prensa es uno de los métodos más eficaces para proporcionar al público educación sanitaria y aumentar los niveles de conocimiento relacionados con la salud en la sociedad. Los consejos nutricionales y las dietas para perder peso también aparecen con frecuencia en los periódicos. Sin embargo, las dietas que allí aparecen limitan los grupos de alimentos y/o los nutrientes para conseguir resultados más rápidos. Este estudio tiene como objetivo evaluar las listas de dietas publicadas en los periódicos en términos de contenido energético y de nutrientes y comparar los niveles con las necesidades.

**Material y Métodos:** Desde el 1 de febrero de 2018 hasta el 31 de enero de 2019, se investigaron las noticias nutricionales y dietéticas incluidas en 10 periódicos de gran tirada en Turquía y se investigaron las dietas publicadas en estos periódicos. Los contenidos de energía, macro y micronutrientes se compararon con las recomendaciones de la Guía de Nutrición de Turquía.

**Resultados:** Las listas de dietas parecían satisfacer el 55,5% de las necesidades energéticas de las mujeres y el 44,5% de las de los hombres. Los contenidos de carbohidratos y proteínas de las dietas estaban por debajo de las recomendaciones, mientras que los contenidos de grasa se identificaron por encima de los niveles recomendados. Se determinó que la fibra dietética cumplía el 81,2% de las recomendaciones. En cuanto a los micronutrientes, los contenidos de calcio y hierro estaban por debajo de los niveles recomendados.

**Conclusiones:** Parece que las dietas de adelgazamiento en los periódicos son insuficientes en términos de energía y de algunos nutrientes. Aunque estas dietas, a las que accede fácilmente una gran parte de la sociedad, sin un control experto pueden causar deficiencias de nutrientes a largo plazo.

**KEY  
MESSAGES**

1. The press is an instrument to inform the public about nutrition.
2. Since the diets are not specified for the duration of the diet, it can lead to nutritional deficiency.
3. The importance of national dietary recommendations should be better explained to the public.

**CITATION**

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## INTRODUCTION

The prevalence of obesity, has risen to unacceptable levels in both men and women in the United States and worldwide with resultant hazardous health implications<sup>1</sup>. According to the World Health Organization (WHO) 2016 report, 39% of adults over 18 years are above normal weight, with 13% of these comprising obese individuals. This report showed that 1.9 billion people are overweight in the world in general<sup>2</sup>. The frequency is increasing in Turkey in recent years as the global. According to the latest report from Turkey Nutrition and Health Survey; 36.9% of individuals between the ages of 19-64 are overweight and 28.4% are obese. Though there are a variety of causes of being overweight, dietary habits and lifestyle have an important place among these causes<sup>3</sup>.

Obesity is a difficult disease to treat, in which nutrition, exercise, behavioral changes, medications and surgical methods, and often more than one method must be used together<sup>4</sup>. Therefore, to achieve long-term weight control, many factors such as habits, conditions of the living environment, the development history of obesity, previous weight loss attempts should be evaluated in detail and realistic targets should be determined<sup>5</sup>. The main practice in weight control diets is the restriction of energy intake. The daily energy intake of the individual should be reduced in such a way as to lose 5-15% of the current weight in 6 months<sup>6</sup>. This level can be achieved by a reduction of 15-30% or approximately 500-1000kcal from the daily energy intake of the individual<sup>1,7</sup>.

As more research into obesity emerges, obesity is ever more clearly a complex, multifactorial disorder. It presents unique issues for each affected person. Therefore, its treatment should also be individual<sup>8</sup>. A major challenge for successful weight management is tailoring programs to meet individual needs, that is, matching personal attributes and behaviors to a particular weight loss program<sup>9</sup>.

However, the desire for a slim and fit appearance in the society has increased in recent years with the influence of the media and social media<sup>10</sup>, and the interest in popular diets that promise to reach the desired body size as soon as possible has increased<sup>11,12</sup>. In a study conducted on women in our country, the rate of following nutrition news in the media was found to be 58.1%<sup>13</sup>.

The media is a tool determining the ideal body in addition to revealing how to achieve this ideal. As a result, individuals confronted with the ideal body in the media learn what efforts they should make to achieve the ideal body as

a result of this comparison from the media again<sup>14,15</sup>. A national study investigating the subjects students followed in media tools showed that weight-loss diets were followed at a rate of 15.7%<sup>16</sup>.

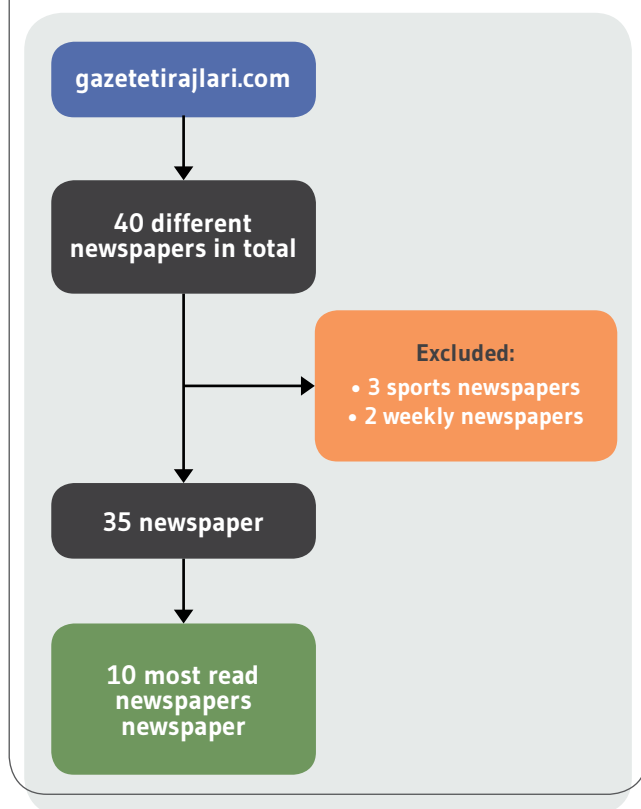
The press is one of the most effective methods to provide the public with health education and to increase knowledge levels related to health in society. Thus, it improves the society's understanding of health and is effective in changing behaviors<sup>17</sup>. However, popular diets can present in the media create a health risk due to insufficient and/or unbalanced nutrition with the aim of rapid weight loss<sup>14,18</sup>. Many popular diets limit food groups and/or nutrients to achieve faster results. However, these limitations might cause vitamin and mineral deficiencies and lead to hidden hunger in the short and long term<sup>19</sup>.

Therefore, it should be known that newspapers are important tools that can have positive or negative effects on public health and their effects on public health should be investigated<sup>17</sup>. The aim of this study is to examine the contents of the diet lists in newspapers in terms of energy and nutrients and food groups, and to determine the level of meeting the national nutritional recommendations of the diet lists.

## MATERIAL AND METHODS

In this descriptive study, 10 high-circulation newspapers published in Turkey were investigated during the duration of one year period from 1<sup>st</sup> February 2018 to 31<sup>st</sup> January 2019. The newspapers were chosen after 1 month of follow-up and observation of the [gazetetirajlari.com](http://gazetetirajlari.com) website monitoring daily circulation. This online platform is a website where newspapers are listed according to the number of copies they distribute daily. As a result of this one-month observation, 10 newspapers with the highest read rates were identified. These newspapers consisted of daily newspapers. Weekly newspapers and newspapers with a specific concept such as sports were not included in these 10 newspapers (Figure 1).

For one-year period, newspapers were investigated every day and diet lists were recorded. It was seen that a total of 64 diet lists were published for a year and 54 weight-loss diets among these diets were analyzed in terms of energy and nutrients. Diet lists in newspapers were analyzed using the Nutrition Information System (BeBis) 8.1 program. This program has a database showing the energy and nutrient contents of each food. The measurements of the meals given in the menus were arranged in grams and recorded in

**Figure 1.** The selection of newspapers.

this program. In this way, the energy and nutrient content of each menu was calculated. Results were compared with recommendations from the Turkey Nutrition Guide (TUBER) according to gender for ages 19-50 years and daily requirement percentages were calculated. Percentages were divided into three categories as 'below recommendations', 'at recommended levels', and 'above recommendations'. The nutrient requirements recommended by the national dietary guide also apply to overweight people. In diets intended for weight loss, no further recommendation has been presented in terms of nutrients; basically, energy restriction has been suggested. In this context, weight loss diets should be arranged according to the individual.

Turkey Nutrition Guide was published in 2015. Nutritional recommendations appropriate for the age, gender, physiological condition, and country conditions are shown in the guide. The guide is constituted of evidence-based data; it is also aimed to be used by consumers, policy makers, nutrition, and health professionals to educate the public and share messages about healthy eating recommendations with the public. Daily energy, nutrients, and food group requirements are shown in TUBER for

different ages and genders. In the Turkey Nutrition Guide nutrients are composed of carbohydrate (CHO), protein, fat and dietary fiber as a macro, and vitamins and minerals as micro. While most of the nutrients are given in a single recommendation, the recommendation for intake of fat, phosphorus, zinc, vitamins A and C are given in a range. Food groups are divided into cereals, fruits, vegetables, dairy products, meat products, and oils. In these food groups, the recommended daily intake is given as the number of portions, and the number of portions in cereal and oil group foods is recommended in a range<sup>20</sup>.

#### **Ethics committee permission is not required for the study.**

Statistical assessment of data used the SPSS 16.0 program, and descriptive statistics are given as numbers, percentages, mean, and standard deviation values.

## **RESULTS**

Of 10 high-circulation newspapers, 7 published diets during one year, while 3 did not publish any. The authors of weight-loss diets published in newspapers were dietitians for 56.2%, doctors for 39.1%, and not stated for 4.7%. When the form of diets published in newspapers was examined, 70.3% were given as subheads. It was identified that 54.7% of diets were published during the week and 45.3% were published at the weekend.

The comparison of the daily energy and nutrient recommendations according to TUBER and the contents of the diet lists in newspapers were shown in Table 1. The amount of energy, macro-micro nutrients, and dietary fiber in the diets in the newspaper was mostly below the recommended levels for both genders. However, the amount of vitamin A, niacin, and riboflavin was above the recommended levels.

The percentages of daily energy and macro-micronutrient contents of the diet lists given in the newspapers to meet the recommendations by gender were shown in Table 2. While the diets met 55.5% of the energy requirements for women, they provided 44.5% of the energy requirements for men. The fat level of macronutrients was identified to be above the requirements for women in newspaper diets (comparative rate 105.2-126.4%). The calcium content in diets met 71.7-75.4% of requirements for both genders, and 84.5% of iron requirements for men, and 58.1-84.5% of iron requirements for women were met.

**Table 1.** Distribution of diet lists meeting the national nutrition recommendation by gender.

Energy and nutrients	TUBER recommendations	Male		Female	
		< recomm. %	= recomm. %	< recomm. %	= recomm. %
<b>Energy (kcal)</b>	2453.2 <sup>a</sup> 1967.3 <sup>b</sup>	100.0	0.0	100.0	0.0
Carbohydrate (g)	130	83.3	3.7	83.3	3.7
Protein (g)	77.4 <sup>a</sup> 69.52 <sup>b</sup>	87.0	1.9	81.5	0.0
Fat (g)	68.1-81.8 <sup>a</sup> 54.6-65.6 <sup>b</sup>	85.2	7.4	59.3	16.7
Fiber (g)	25	83.3	3.7	83.3	3.7
A vitamin (mcg)	750 <sup>a</sup> 650 <sup>b</sup>	14.8	0.0	13	0.0
B <sub>6</sub> vitamin (mg)	1.3	72.2	0.0	72.2	0.0
B <sub>12</sub> vitamin (mcg)	4	42.6	3.7	42.6	3.7
C vitamin (mg)	110 <sup>a</sup> 95 <sup>b</sup>	31.5	1.9	27.8	0.0
D vitamin (mcg)	15	96.3	0.0	96.3	0.0
E vitamin (mg)	13 <sup>a</sup> 11 <sup>b</sup>	46.3	3.7	31.5	1.9
K vitamin (mcg)	120 <sup>a</sup> 90 <sup>b</sup>	53.7	0.0	42.6	0.0
Niacin (mg)	6.7	5.6	0.0	5.6	0.0
Thiamine (mg)	1.2 <sup>a</sup> 1.1 <sup>b</sup>	96.3	0.0	85.2	11.1
Riboflavin (mg)	1.3 <sup>a</sup> 1.1 <sup>b</sup>	37.0	14.8	22.2	5.6
Folic acid (mcg)	330	59.3	0.0	59.3	0.0
Calcium (mg)	950-1000	85.2	3.7	85.2	3.7
Iron (mg)	11 <sup>a</sup> 11-16 <sup>b</sup>	68.5	5.6	68.5	27.8
Copper (mg)	1.6 <sup>a</sup> 1.3 <sup>b</sup>	77.8	1.9	63.0	9.3
Magnesium (mg)	350 <sup>a</sup> 300 <sup>b</sup>	85.2	1.9	68.5	0.0
Phosphorus (mg)	550	7.4	0.0	7.4	0.0
Sodium (g)	1.5	13.0	0.0	13.0	0.0
Potassium (g)	4.7	92.6	0.0	92.6	0.0
Zinc (mg)	9.4-16.3 <sup>a</sup> 7.5-12.7 <sup>b</sup>	74.1	20.4	48.1	44.4
Iodine (mcg)	150	51.9	0.0	51.9	0.0
Fluorine (mg)	3.3 <sup>a</sup> 2.7 <sup>b</sup>	100	0.0	100	0.0

<sup>a</sup>: Male, <sup>b</sup>: Female.

**Table 2.** Mean values for energy and nutrients of diet lists and meeting the national recommendations by gender.

Energy and nutrients		Mean value	Male % requirements	Female % requirements
<b>Macronutrients</b>	<b>Energy (kcal)</b>	1091.3 ± 305.1	44.5	55.5
	Carbohydrate (g)	98.7 ± 45.1	75.9	75.9
	Protein (g)	56.5 ± 19.7	73.0	81.3
	Fat (g)	69.0 ± 107.0	84.3 - 101.3	105.2 - 126.4
	Fiber (g)	20.3 ± 7.3	81.2	81.2
<b>Vitamins</b>	A vitamin (mcg)	1327.8 ± 738.8	177.0	204.3
	B6 vitamin (mg)	1.2 ± 0.4	92.3	92.3
	B12 vitamin (mcg)	4.7 ± 3.4	117.5	117.5
	C vitamin (mg)	146.0 ± 90.2	132.7	153.7
	D vitamin (mcg)	3.8 ± 7.1	25.3	25.3
	E vitamin (mg)	13.7 ± 5.9	105.4	124.5
	K vitamin (mcg)	172.5 ± 185.6	143.8	191.7
	Niacin (mg)	22.7 ± 22.9	338.8	338.8
	Thiamine (mg)	0.8 ± 0.3	66.6	72.7
	Riboflavin (mg)	1.3 ± 0.3	100	118.2
	Folate (mcg)	320.7 ± 113.5	97.2	97.2
	<b>Minerals</b>	Calcium (mg)	716.6 ± 235.2	71.7 - 75.4
Iron (mg)		9.3 ± 3.3	84.5	58.1-84.5
Copper (mg)		1.2 ± 0.4	75.0	92.3
Magnesium (mg)		269.3 ± 83.7	76.9	89.8
Phosphorus (mg)		1019.5 ± 306.7	185.4	185.4
Sodium (g)		2.5 ± 1.3	166.7	166.7
Potassium (g)		2.6 ± 0.9	55.3	55.3
Zinc (mg)		8.3 ± 3.9	50.9 - 88.3	65.4 - 110.7
Iodine (mcg)		156.0 ± 79.9	104.0	104.0
Fluorine (mg)		0.4 ± 0.3	12.1	14.8

When the diet lists in the newspapers were compared with the national nutrition guide recommendations in terms of food groups, it was seen that the cereals were below the recommended 100% for men and 96.3% for women. Additionally, the meat group foods were above recommended values for both genders in 68.5% of diets (Table 3).

Of the food groups, cereals, vegetables, and milk products were below recommended levels, while the number of meat products was above recommended levels. The cereals included in the diets met 29.0% of daily requirements for men and 36.2-41.4% of requirements for women. Milk and milk product requirements met 60.0% of requirements for both genders, while meat group foods were above the recommendations at 163% of requirements (Table 4).

## DISCUSSION

This study assessed the energy, macro and micronutrient contents and status of meeting national recommendations of a total of 54 weight-loss diets published during 1 year in 10 high-circulation newspapers in Turkey.

In a study conducted in our country, the distribution of news about nutrition by their subjects; 35.8% of the effects of foods on health, 19.1% of weight loss and weight control, 14.7% of healthy nutrition recommendations, 13.1% of nutrition in diseases and 10.9% of nutrition on special days have been reported<sup>21</sup>. In one study, about half (43.4%) of a total of 1448

**Table 3.** The meeting status of the portion amounts recommended in the national nutrition guide according to the gender.

Food groups	Mean value	Male % requirements	Female % requirements
Cereal	2.9 ± 1.5	29.0	36.2 - 41.4
Fruit	2.1 ± 3.6	84.0	105.0
Vegetable	1.9 ± 1.1	54.3	76.0
Milk/yogurt	1.8 ± 0.9	60.0	60.0
Meat	4.9 ± 2.2	163.3	163.3
Fat	4.8 ± 2.3	53.3 - 68.6	68.6 - 120.0

health news published in the newspaper are “nutrition” news. The source of 52.3% of health news is doctors. The source of 36.3% of the news is unknown<sup>17</sup>. Research in Brazil investigated magazines and identified that 88.4% of diets in magazines were written by dietitians<sup>10</sup>. In our study, 56.2% of diets were written by dietitians, 39.1% were written by doctors and 4.7% of them had no authors.

Energy and nutrient requirements are affected by situations like age, gender and physical activity<sup>20</sup>.

Additionally; recommendations for permanent weight loss should be 0.5-1kg level per week. For this, the target should be to reduce daily energy intake by 500-1000kcal or lose 10% of weight in 6 months and the diet should be prepared individually<sup>5</sup>. Newspaper diets offering the same diet to everyone were all found to be below the recommended levels for energy in this study. It may be accepted as normal that these diets have low energy content, as they are mainly weight-loss diets. The fact that energy is reduced by 45-55% in diets in the newspapers and it is more than 15-30% recommended for energy reduction in weight loss diets is also a matter of attention. Rapid weight loss diets create a larger energy deficit and contain lower absolute amounts of protein compared to a more gradual weight loss approach, which increase the risk of muscle mass loss<sup>22</sup>.

A study investigating weight-loss diets published in many women’s magazines according to WHO recommendations identified that 83.1% of diets were below recommended CHO rates while 16.8% were at recommended levels. When protein content in diets was assessed in the same study, 97.8% were above recommended levels, while 2.1% were at recommended levels. When fat content was investigated, 31.5% were above recommended levels, while 66.3% were at recommended levels<sup>10</sup>. This study, similarly, found the CHO content of 83.3% of diets in newspapers were below recommended levels for both genders. These diets met

**Table 4.** Average values of portion numbers of food groups in the diet lists and the status of meeting the requirements by gender.

Food groups	TUBER recomm.	Male			Female		
		< recomm. %	= recomm. %	> recomm. %	< recomm. %	= recomm. %	> recomm. %
Cereals	10 <sup>a</sup> 7-8 <sup>b</sup>	100.0	0.0	0.0	96.3	0.0	3.7
Fruit	2.5 <sup>a</sup> 2 <sup>b</sup>	81.5	1.9	16.7	57.4	24.1	18.5
Vegetables	3.5 <sup>a</sup> 2.5 <sup>b</sup>	96.3	0.0	3.7	87.0	0.0	13.0
Milk/Yogurt	3 <sup>a</sup> 3 <sup>b</sup>	87.0	7.4	5.6	87.0	7.4	5.6
Meat	3 <sup>a</sup> 3 <sup>b</sup>	24.1	7.4	68.5	24.1	7.4	68.5
Fat	7-9 <sup>a</sup> 4-7 <sup>b</sup>	79.6	16.7	3.7	33.3	53.7	13.0

<sup>a</sup>: Male; <sup>b</sup>: Female.



75.9% of the CHO requirements according to national nutrition guidelines. Diets containing low CHO provide successful results for weight loss. However, low calorie and low CHO diets are stated to cause a reduction in fat-free body mass<sup>23</sup>. Due to the popularity of CHO-limited diets with the aim of rapid weight loss, especially in recent years, newspapers have included these types of diets more often. However, these diets are stated to increase the risk of cardiovascular diseases in the long term due to increased protein and saturated fat intake<sup>24</sup>. Of the diets in the newspapers, 11.0% had protein content above the recommended level for men, while 18.0% were above the recommended level for women. For fat content, 7.4% were above the recommended level for men, while 24.1% were above the recommended level for women. Since only newspapers were analyzed in the study, the duration of the diets could not be evaluated. The long-term health effects of these diets should be evaluated separately. Because in a study conducted with the readers of the Hamilton Spectator newspaper in Canada, 75% (298) of 396 readers stated that they read health and nutrition information, and 46% stated that the news was effective in changing nutritional behavior<sup>17</sup>.

Low energy and low CHO diets limit consumption of cereals and fruit. In this situation, insufficient fiber, vitamin and mineral intake may be observed<sup>25</sup>. Dietary fiber has important physiologic effects like protecting against digestive system diseases, treating obesity and reducing serum lipid levels<sup>26,27</sup>. A study by Martinighi and Silva<sup>10</sup> identified that 83.1% of diets were below recommended levels for fiber, while 16.8% were at recommended level. Similarly, in this study, dietary fiber contents were below recommendations meeting 81.2% of daily requirements. It was calculated that diets included mean 20.3g of dietary fiber, while an adult individual is recommended to consume 25-30g of dietary fiber per day<sup>20</sup>. According to the results of National Turkey Nutrition and Health Survey (2017)<sup>3</sup>, it has been shown that the average daily fiber intake in the population is 22.4g. Although the fiber content of the diets analyzed in this study was below the recommended one, the average daily fiber content of the diets was found to be 20.3±7.3g. This amount meets 81.2% of the need in adults. Although the fiber content of these diets with energy restriction decreases in parallel, it is close to the general average of the population.

A prospective Norwegian study reported women with low animal protein intake and calcium intake who did not eat milk products had a significantly high risk of hip fracture<sup>28</sup>. In most of the diet lists in this study, the protein content is not above the daily requirement. In this

study, diets met 60% of milk product requirements for both genders, and this situation met 71.7-75.4% of daily calcium requirements. When the diets are investigated in terms of iron content, these diets appeared to be very much below the recommended iron intake levels. These diets met 84.5% of the daily iron requirements of men and 58.1-84.5% of requirements for women. Iron deficiency is the most common nutritional disorder in the world. Consequences such as fatigue, communication disorder, reduced academic performance; mental-motor development retardation, and reduced cognitive performance may be observed<sup>29</sup>.

Studies related to cereal especially whole grain consumption show that they are effective in protecting against chronic diseases like diabetes, cardiovascular diseases, obesity, and colorectal cancer<sup>30,31</sup>. These effects are realized especially by the high content of fiber in these foods<sup>32</sup>. The whole grain product content in diets in newspapers appeared to be mean 2.9±1.5 portions. This amount meets 29.0% of daily recommendations for men and 36.4-41.4% of recommendations for women. The restriction of grain products in the diets in newspapers is one of the most important reasons for the low fiber content. Also, low whole grain levels and high intake of saturated fat from meat products may increase the risk of chronic diseases. It has been reported that low-carbohydrate diets containing insufficient whole grains may cause an increase in LDL cholesterol, especially in individuals with cardiovascular disease<sup>33</sup>. Therefore, it may be harmful for people with chronic diseases to follow non-individualized newspaper diets.

## CONCLUSIONS

In conclusion, it has been observed that especially the energy content of the diets in the newspapers are insufficient to meet the requirements. Also, limited recommendations in newspapers are not sustainable, as long-term goals and behavior change are required to achieve more permanent results. Therefore, dietary recommendations in the media should be prepared following the recommendations of expert specific guidelines and include sustainable suggestions. In terms of public health, it is important to make it easier for individuals who are trying to control weight to reach a specialist. The number of studies evaluating newspaper articles on health and nutrition is very few in our country. Comprehensive studies are required to determine the social effects and effectiveness of health and nutrition news.



## AUTHORS' CONTRIBUTIONS

The authors are responsible for the research and have participated in the concept, design, analysis and interpretation of the data, writing and correction of the manuscript.

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## COMPETING INTERESTS

The authors state that there are no conflicts of interest in preparing the manuscript.

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