Zsófia NÁBRÁDI[1], Zoltán SZAKÁLY[1]

Attitudes towards health foods in terms of diet and physical activity

1. SUMMARY

In our research, the aim was to examine consumer attitudes related to health foods, and these were analyzed in terms of physical activity and diet. Our studies were carried out in three stages. First, a netnographic analysis (a study of social interactions in the contemporary digital communication environment – Editor) was performed with data recorded in a search engine on the one hand and with the content analysis of posts and comments made in groups of publicly available social media sites on the other hand. The interest and its changes of consumers present in the online space were detected in the common subset of health-conscious eating and physical activity. While the number of hits shows a variable rate growth from year to year, the contetns are concentrated in relatively stable groups. Based on this, four main topics can be distinguished in the online space in the common subset of healthy eating and exercise:

- **Training plans with recipes,**
- **Requests for recommendations,**
- **Providing advice,**
- **Motivational examples.**

During teh second stage of our research, focus group interviews were conducted. The impact of regular exercise on the purchase and consumption of health foods was examined, and also the implications of this in developing and maintaining a diet perceived to be healthier by the consumers. 7 people were included in each study, based on preliminary criteria. The differentiating factor in joining the groups was the performance of regular physical activity, so an active and a passive group was formed. The identification of differences and characteristics was fundamental to the design of our quantitative research. During the third stage of our research, we were the first in Hungary to adapt the Consumer Style Inventory (CSI)[1] test for health foods, the final version of which contains 25 items. In adition, differences in the way people transition to a healthy diet were examined. Based on the Eurobarometer survey, statements related to physical activity and sedentary lifestyle were formulated, which were classified as

---

[1] A method designed for the measurement of consumer decision-making style

[1] University of Debrecen, Faculty of Economics and Business, Institute of Marketing and Commerce

Zsófia NÁBRÁDI	nabradi.zsofia@econ.unideb.hu	https://orcid.org/0000-0002-8436-4201
Zoltán SZAKÁLY	szakaly.zoltan@econ.unideb.hu	https://orcid.org/0000-0001-8332-3152

background variables in the analysis. The survey includes a gender-representative sample of 300 people. In our exploratory research, attitudes appearing in CSI were identified by principal component analysis, and then groups were formed by K-means cluster analysis. Based on this, four homogeneous consumer groups were identified in terms of attitudes towards health foods:

- Uninterested,
- Health-oriented,
- Variety seekers,
- Uncertain brand choosers.

Our results show that a sedentary lifestyle has no effect, while a diet considered healthy, as well as the regularity and duration of physical activity have significant effects on attitudes toward health foods.

2. Introduction, literature review

2.1. Risk factors for health loss

Parts of health behavior are all health-related behaviors that manifest themselves as components of a healthy lifestyle, and as behaviors resulting from health motivations and health needs [1]. In Hungary, according to the NEFI (National Institute for Health Development) [2], 80% of the risks of health loss can be attributed to behavioral factors, of which a sedentary lifestyle and inadequate nutrition stand out.

Physical inactivity is responsible for 10% of cancers, has a serious impact on coronary heart disease, type 2 diabetes and osteoporosis, results in depressive symptoms, and last but not least, is responsible for 5 million deaths worldwide each year [3, 4]. Physical activity and active sporting activities are separate conceptual categories. Activities related to physical activity can be divided into four groups according to their medium and way of implementation. Based on this, work-related, transport-related, household-related and leisure-time physical activities can be distinguished [5]. 53% of Hungarian never participates in any sporting activity and roughly half of the population does not engage in even moderate physical activity [6].

The concept of a sedentary lifestyle is important in the study of health behavior, as it has become a typical way of life in developed societies in recent decades. Any activity during waking hours where the metabolic equivalent (1 MET = 3.5 ml/min/kg body weight oxygen consumption) is less than 1.5 is considered sitting. A sedentary lifestyle has extremely negative effects on health in the long run [7, 8]. Nearly half of the adult population of Hungary spends more than 5 hours 31 minutes sitting daily, and 10% work more than 8 hours 31 minutes sitting [9].

It si well known that obesity is a risk factor fro many chronic diseases. In 2008, there were 1.5 billion overweight people [10], in 2014, the number was more than 2.1 billion, and half of humanity is projected to be overweight by 2030 [11]. Results of the latest surveys are depressing, as they indicate that 58% of the adult population is overweight or obese based on their body mass index [12].

2.2. Health foods

The problems outlined are global and pose significant challenges for the food industry, among others. Improvements are needed which, due to their beneficial health effects, can slow down the spread of diseases of civilization and increase life expectancy spent in health [13]. Health foods have been created to treat the deficiencies caused by an unbalanced diet, to restore energy balance and to maintain health. Their names are extremely varied (e.g., healthy food, designer food, functional food, pharmafood), and the term *functional food* is most commonly used in the literature [14].

Foods with special health protection effects are not officially categorized and defined in Hungary, but the term *functional food* is widely used in the international literature. Based on the internationally accepted definition of ILSI[2], this includes foods that, due to their bioactive ingredients, in addition to normal nutrition, have health benefits [15]. The main groups of functional food ingredients are vitamins and minerals, proteins, peptides, antioxidants, fatty acids and phytochemicals, and pre- and probiotics [14]. In the early 2000s, the most popular functional foods were energy and sports drinks, probiotic dairy products, "heart-friendly" products and ready-to-eat cereals [16]. According to the 2016 statistics of Google Food Trends, within the category of functional foods, "healthy ingredients", such as turmeric, apple cider vinegar and avocado oil, as well as bitter

---

[2] International Life Sciences Institute

melon and kefir proved to be the most popular among consumers [17]. Between January 1990 and June 2018, the most studied functional foods and ingredients were prebiotics, probiotics and antioxidants, according to the bibliometric assessment of Yeung et al. (2018), who analyzed the most cited and sought for items in the literature [18]. Among the factors influencing consumers' willingness to buy, the most significant are health effects, taste, quality, value for money, and their knowledge about functional foods [19,20]. Consumption of health foods and a healthy diet can be considered cornerstones of health behavior.

2.3. Examining health behavior

To study health behavior, a number of models are used by researchers. The transtheoretical model of behavior change, hereinafter TTM[3], was originally introduced as an integration of different theoretical concepts in clinical psychology [21, 22]. Prochaska and Prochaska [23], in order for professionals to be able to have a significant and lasting impact on health-threatening behaviors, have developed a model that can be applied to study the health behavior of not only the minority who is motivated for change, but the entire population. TTM encompasses process-oriented variables to predict and explain how and when subjects change their behavior [24]. Behavior change is a process that takes place over a long period of time and goes through a defined series of stages [25]. The model can be used to examine exactly where a person/group is in the transition to sustainable health behavior. Based on this, five stages are distinguished [26]:

- Precontemplation,
- Contemplation,
- Preparation,
- Action and
- Maintenance.

In the *precontemplation* stage, the individual is unaware of the consequences of risk behavior, does not seek information and is not interested in changing health behavior in a positive direction. In the *contemplation* stage, the individual weighs the benefits of the change and compares them to the costs of change. They are aware of the need for change, but if the costs are considered to be excessive, further steps are not taken. In the *preparation* stage, the individual is already prepared to take certain steps and possesses an action plan. In the *action* stage, he individual takes specific steps to protect their health. As awareness increases, the chances of returning to past behavior decrease. Real behavior change can be achieved in the *maintenance* stage, after at east six months. At this point, the new form of behavior becomes a natural part of the individual's life and there is no need for reinforcements from the environment either [14, 26].

In the primary research outlined in the present study, TTM was used by our group to investigate the transition to a healthy diet.

From an economic point of view, the elements of health behavior that manifest themselves in behavior are shopping and consumption. Consumers approach the market with basic decision styles. These can be defined as mental shopping orientations that characterize consumer choices [27]. To measure the diversity of decision styles, the Consumer Style Inventory, hereinafter referred to as the CSI test [28]. CSI has been validated in many countries around the world (e.g., the United Kingdom, New Zealand, South Korea, Germany, Singapore, China, Malaysia, India, Turkey, USA) and is widely used [29]. CSI has been used in the past in general commerce [30, 31], in the monitoring of online behavior [28] and in organic food buying [32], among others. With regard to health/functional foods, no research has been carried out so far in which CSI has also been incorporated, and this was attempted by our group in our quantitative studies. In addition to exploring the decision-making styles and attitudes related to the purchase and consumption of health foods, it was also considered important to carry out a study in the online space, as this is one of the most relevant information source and communication interfaces today.

2.4. Health communication nowadays – obtaining information online

According to 2021 data, there are approximately 5.16 billion active Internet users worldwide [33], and 4.48 billion of them use social media [34]. In recent years, social media has changed people's interactions, including health-related communication [35]. Benetoli et al. [36] identified convenient and quick access, improved health knowledge and a sense of social and emotional support as the benefits of obtaining health information through social media. Disadvantages of social media included questionable credibility, information overload and the increased time spent online, among others. Johns et al. [37] classified studies published between 2000 and 2016 in terms of changes in health behavior and the impact of social media. As a result of their research, it was found that social media had no effect on giving up smoking or weight loss, but had an effect on increased physical activity.

---

[3] Transteorethical Model

As an axiom, it can be stated that digital communication is an integral part of of the advanced societies of today. Research in the online space is a useful addition to a type of marketing research that are group has been working on. Netnography is a qualitative research method that adapts the techniques of netnographic studies to examine the culture of online communities [38]. It can be used to understand the mindset and decision-making mechanisms of online consumer groups [39]. Ten years ago, Dörnyei and Mitev [40] recorded the basic forms of online communication: instant messengers, e-mail lists, game interfaces, chat applications, blogs, search engines, forums, social media sites. In terms of their usage, these channels have undergone a radical change. While blogs and forums flourished in 2010, today consumers barely use these platforms at all. Today's most popular, almost exclusive virtual communication interfaces are content and video sharing sites under the umbrella of social media, of which Facebook stands out, with 2.853 billion users wolrdwide [34].

3. Materials and methods

In our research, the goal was to examine consumer attitudes towards health foods, which we analyzed in the common subset of physical activity and the diet. The research took place between April and November of 2019, and then a follow-up was performed in April 2021 by repeating our netnographic analyses. Our studies were carried out in three stages.

In the first step of primary data collection, a netnographic research was conducted with data recorded in a search engine on the one hand and the content analysis of of posts and comments made groups of publicly available social sites on the other hand. The interests of consumers present in the online space, as well as changes in them were detected in terms of health-conscious eating and physical activity.

In the second stage of our research, two focus group interviews were conducted. The impact of regular exercise on the purchase and consumption of health foods was examined, and the implications of this in developing and maintaining a diet considered to be healthier by consumers. 7 people each were included in the studies, based on preliminary criteria. The conditions for inclusion in the groups were as follows:

- The subject is over 18 years of age;
- The subject does not work in the fields of journalism, marketing, advertising, PR or market research;
- The subject has not participated in a market research survey related to the topic of physical activity and/or health-conscious eating in the previous year;
- The subject has not participated in a focus group discussion in the previous year;
- The subject does not have a milk protein allergy;
- First group: The subject regularly engages in physical activity;
- Second group: The subject does not engage in physical activity.

The differentiating factor for inclusion in the groups was performing regular physical activity, so an *active* and a *passive* group were created. At the start of the study, participants introduced themselves one by one, and then they had a conversation for a few minutes under the guidance of the moderator, creating group cohesion and an atmosphere of trust. The first part of the scenarios examined the factors that play a role in the development of a healthy lifestyle. In the second block, buying and consumption habits related to health foods were explored. The transtheoretical model of behavior change was incorporated in the scenarios, and it was examined with respect to the topic of healthy eating. In both cases, group discussions took place in an informal style and lasted an hour and a half. Minutes and audio recordings of the discussions were taken, which allowed for accurate analysis.

In the third stage of our research, an online questionnaire survey was conducted, which was shared several social media groups with the help of dietitians. A total of 378 people completed the questionnaire. To ensure representativeness, the sample was adjusted so that it reflects the composition of the Hungarian population in terms of gender distribution. As a result, mathematical-statistical analyses were performed on a sample of 300 people. In addition to key demographic data, based on Eurobarometer [9] surveys, statements related to physical activity and sedentary lifestyle were formulated, which were classified as background variables in the analysis. The questionnaire included the Hungarian translation of the Consumer Style Inventory (CSI), which was adapted and modified for health foods based on the research of Prakash et al. [32]. Items with Cronbach's alpha values above 0.7 were included in our own research, and one dimension, statements related to environmentally conscious consumption, was omitted. As a result, 25 statements were formulated that respondents had to rate on a Likert scale of 1 to 5. The transtheoretical model of behavior change was incorporated into the questionnaire and it was examined in relation to healthy eating. Based on the focus group discussions, expansion of the TTM statements was considered to be justified, so the 6-point ordinal scale of Szabó [41] was incorporated in the questionnaire. This essentially separates the 5 stages defined in the literature by dividing the action phase into two subcategories. The main goal of our quantitative research was to identify consumer attitudes in the CSI adapted to health foods. To achieve this, in the first step the normal distribution of the variables was tested, and then the reliability of the scales was analyzed,

in each case obtaining good or excellent reliability. Following this, factor analysis was performed using the CSI variables. After running several possible procedures, principal component analysis was finally applied with Varimax rotation and Kaiser normalization. The KMO criterion of factor analysis was met, exhibiting an almost excellent value (0.853). During the analysis, three variables were excluded from the CSI scale, as they distorted both reliability and the results of factor analysis ("Typically, I buy health foods at a discount price.", "I usually choose lower priced products.", "I'd rather buy well-known, domestic brand products."). As a result, the explanatory power of the model has improved. A total of four factors were created to form differentiated attitude structures. In the next step, the reliability of the factors obtained was checked by calculating Cronbach's alpha values, and then sample segmentation was carried out. The analysis was performed using the K-means clustering procedure, during which four well-separated, homogeneous groups were identified, based on consumer attitudes in the CSI. Characterization of each cluster was performed by cross-tabulation analysis and analysis of variance.

4. Results and their evaluation

4.1. Results of the netnographic study

Our study was conducted in line with today's trends, using a search engine on the one hand and by content analysis of social media sites on the other hand. Different search engines and browsers have been optimized for different terms, and so search results and and hit lists may differ from each other. We used the Google search engine through the Google Chrome browser both in 2019 and 2021. As a first step, our results were compared to those of Gál et al. [42] in terms of search hits of nutrition-related keywords. Then the changes in search hits were identified for terms related to healthy eating and regular exercise over the intervening two years. Changes in nutrition-related keyword search results are shown in *Figure 1*.
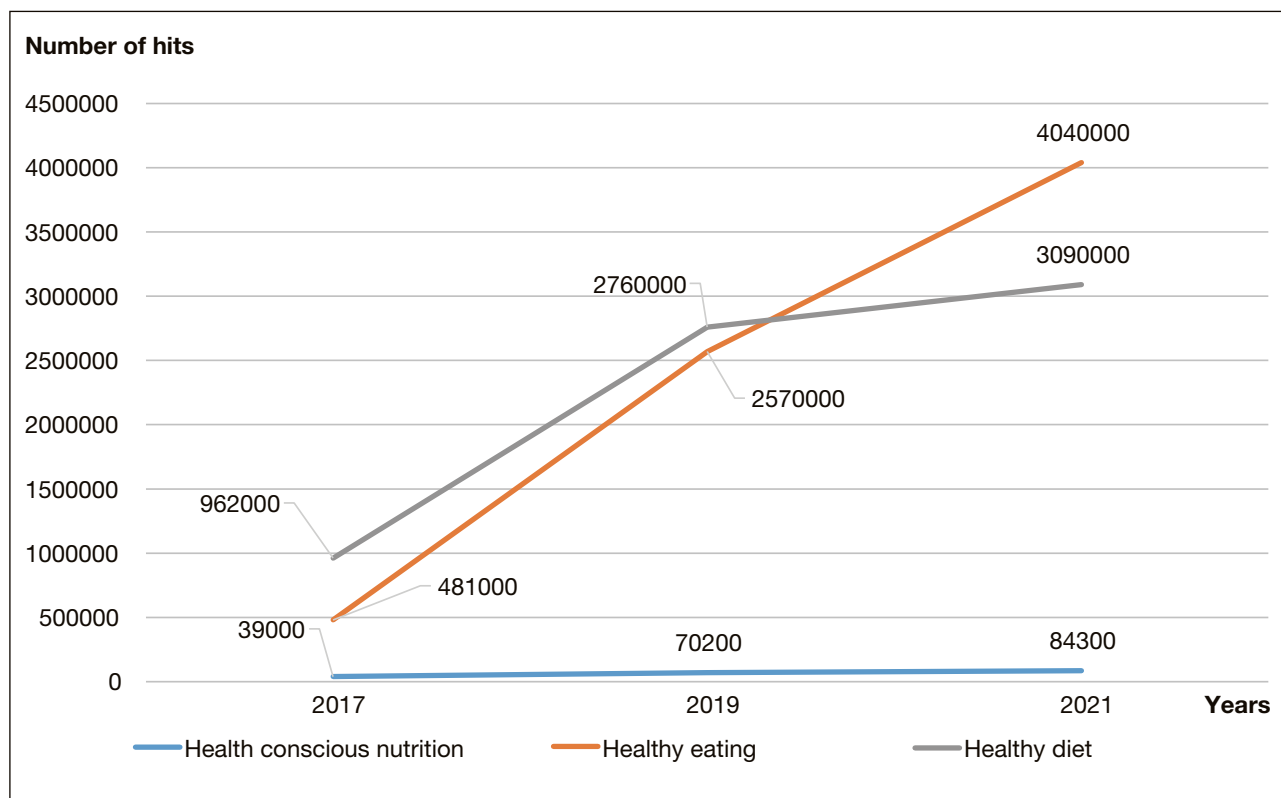

Figure 1. Changes in nutrition-related keyword search results

Gál et al. [42] included the terms "healthy diet" and "healthy eating" as synonyms for "health-conscious eating". It can be seen that both in 2017 and 2019, the leading hits were generated by the term healthy eating, but in 2021 an explosive growth of the term "healthy diet" can be observed. The number of hits has increased nearly tenfold in four years. Search results for terms related to both nutrition and sports are shown in *Figure 2*.
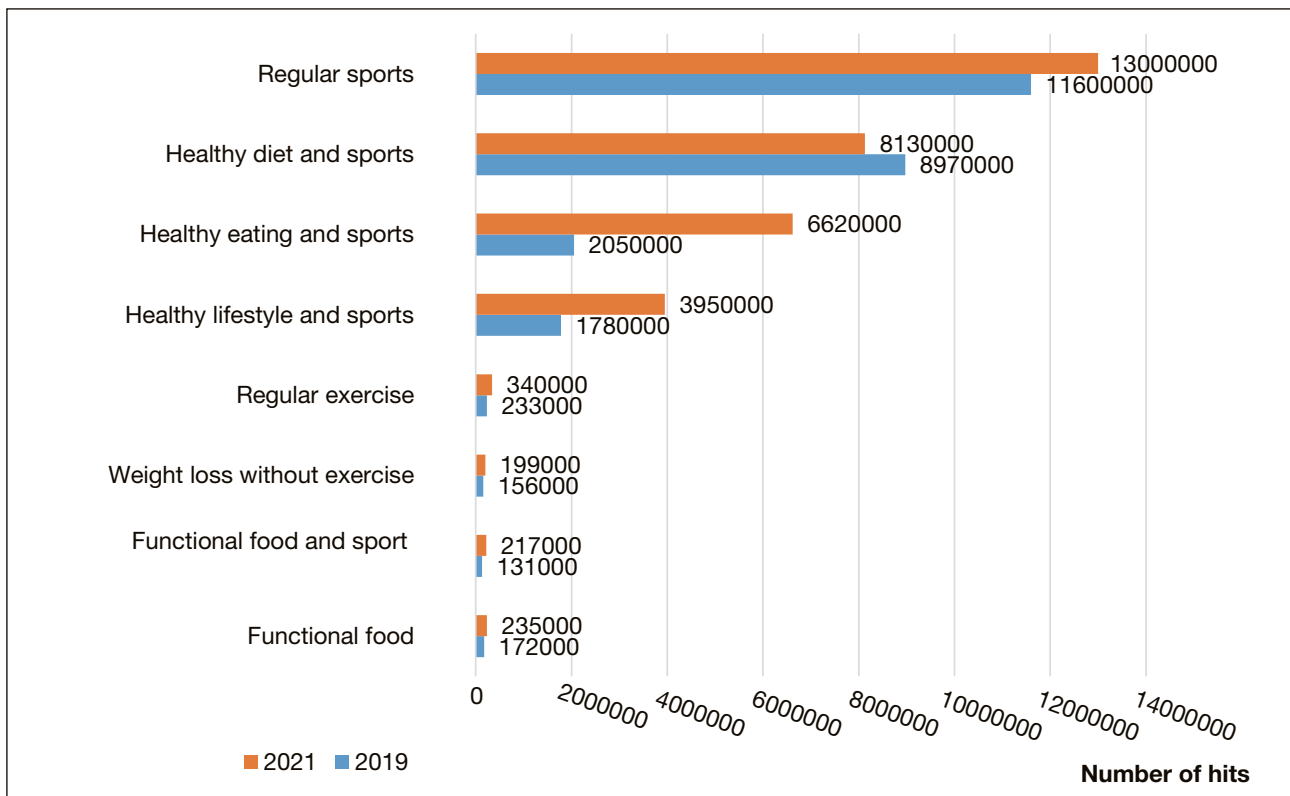
Figure 2. Search results for nutrition and sports terms

The number of hits for search engine terms shows a variable rate increase. Of the key terms provided by us, "regular sporting activities" and "healthy eating and sports" proved to be the most sought after. "Healthy eating and sports", although the second most common content among search terms, shows a declining trend compared to 2019. At the same time, content on the topic "healthy eating and sports" has tripled, yielding more than 6.5 million hits in 2021.

After defining the keywords, posts from publicly accessible pages were analyzed, and this was followed up by monitoring in 2021. The popularity of forum portals continued to show a declining trend, so those sites were not investigated. However, it is important to note that there was a periodic activity in the case of forum portals (e.g. hoxa.hu, gyakorikerdesek.hu) in 2020. It is assumed that this can be attributed to the quarantine caused by the pandemic. But the explosive growth of social media groups has now almost completely overridden the activity of forum portals.

In Hungary, of the social media sites, currently the trinity of Facebook, Instagram and YouTube is the most popular among active internet users. The "hashtag" is an international communication tool for navigating between and orientation on the surfaces. Hashtags allow us to get to the type of content that interests us on any of the social media giants' websites (YouTube videos; photo-based short Instagram posts / users / pages; typed text based Facebook posts / users / groups / pages). In addition to the three basic pillars, also appearing are Tik-Tok, which is mainly used by young people, and Twitter, which is less popular in Hungary but more popular internationally. Of social media, the analysis of Facebook pages and groups was chosen, because nowadays most of the internet user community communicates on this interface. All open and closed groups, as well as pages, with at least 3,000 members and followers were examined. Only Hungarian groups and pages were analyzed. In addition to keywords, their hashtag variations were also used (e.g., #regularsports; #healthyeating) to facilitate more accurate content analysis. Four main topics were identified during the analysis of the groups and pages, and these are illustrated in *Figure 3*.
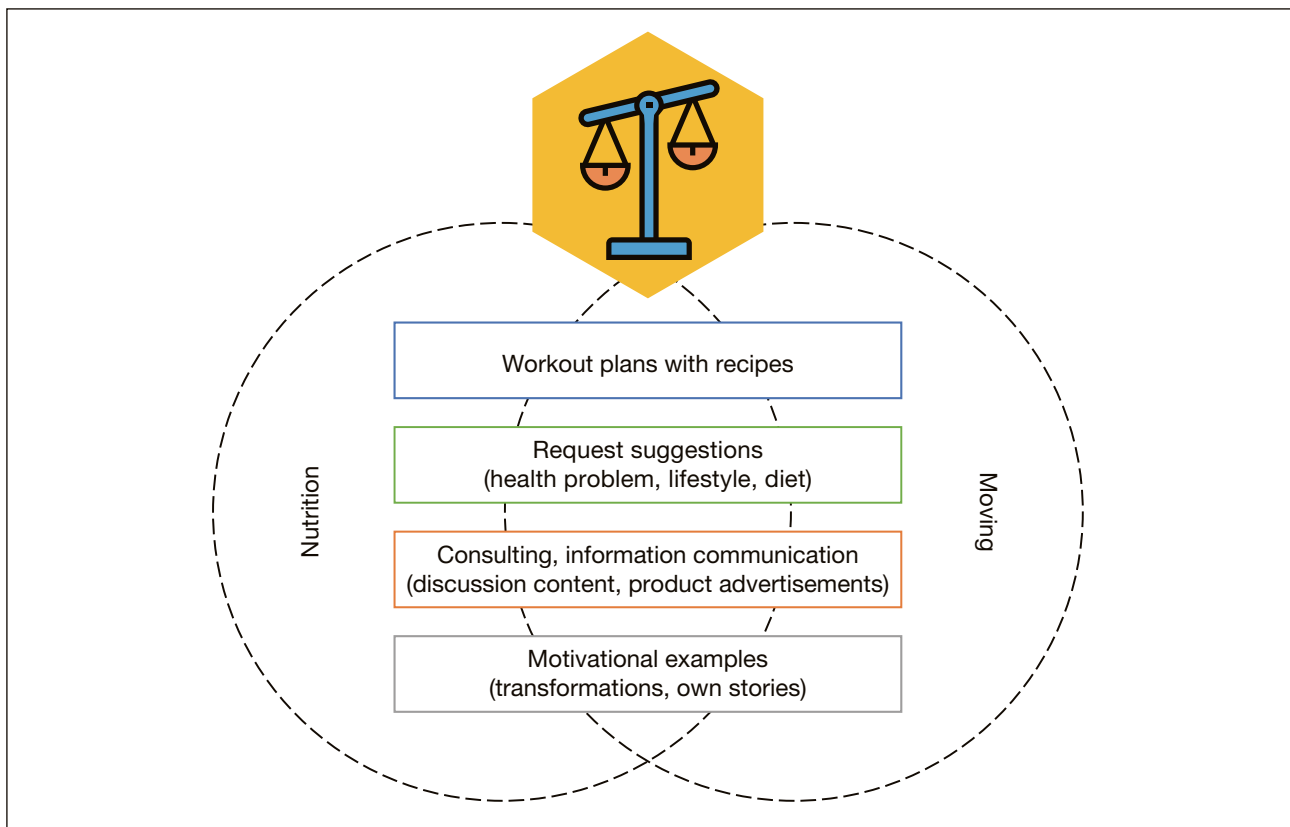
Figure 3. Social media content on nutrition and physical activity

Based on our analyses, when weighing nutrition and exercise, the topic of healthy eating clearly appears in a more pronounced way in the interest of consumers. Healthy foods and dishes are most commonly associated with the terms "free" and "reduced" in public awareness, such as the terms *sugar-free, chemical-free, reduced salt, reduced carbohydrate*. In addition, there is an increasing emphasis on gluten- and dairy-free eating and different types of diets. This confirms the previous research results of Gál et al. **[42]**, according to which a health-conscious diet and lifestyle is associated with some kind of diet or weight loss program by the majority of people.

The most common content in Facebook groups or pages in the common subset of diet and exercise is a combination of *workout plans* and *recipes*. These include short videos or photos that offer some kind of recipe along with a form of exercise or workout plan, typically using "reduced" or "free" ingredients. Workout plans are typically "challenges" over a longer period of time (e.g., broken down for a month), or forms of movement presented in a short video. Particularly popular contents are home exercises that can be performed without any aids or with minimal use of aids (e.g., dumbbells).

The content encountered second most frequently is *requests for suggestions* on a health problem or a change in lifestyle or diet. This is most noticeable regarding the topic of eating, less content requesting suggestions is found on exercise and physical activity.

The third most common content is *providing advice* or *information*. In the case of this type of content, mainly articles and stories, often with questionable authenticity, from associated sites appear on the pages, as well as short videos and infographics. Advice on the topic of physical activity is typically about how to start exercising regularly, what pitfalls and difficulties one might encounter. In the field of nutrition, the most common are discussion initiating contents related to gluten and sugar consumption, as well as dairy products and caffeine. This is followed by the presentation and promotion of "healthy products" and posts emphasizing the importance of fruit and vegetable consumption.

Other major type of content is the presentation of *motivational examples*. In this content, photos of "transformations" that occur as a result of some diet, dietary change or regular exercise are typically uploaded by users. Motivational examples often include presentations of "own stories" about restoring health. In these stories, people who share the content report a positive change in health as a result of a diet considered to be healthy and/or regular physical activity.

Overall, it can be stated that healthy eating and physical activity are popular activities among internet users. In the common subset of diet and exercise, the emphasis was typically on issues related to nutrition in the media examined by us. The most popular types of content are personal in nature and have a community-building power.

4.2. Results of focus group studies

4.2.1. Factors that play a role in the development of a healthy lifestyle

When describing the results of our focus group research, groups are referred to as *"active"* and *"passive"* ones, revealing the attitudes and peculiar characteristics of the given group. In the first block of the scenario, we sought to answer the question what similarities and differences could be detected between the groups in the topic of health. Regarding the groups, it can be generally said that in the subjective assessment of health, the *active group* considers their lifestyle to be healthy, while the *passive group* considers it to be unhealthy. In the development of a healthy lifestyle, the groups studied unanimously thought that the right amount and quality of sleep, proper nutrition, mental health and regular exercise were vital.

Following this, the groups had to rank 15 factors according to the influence of each component. Based on the ranking thus developed, the 5 most important factors according to each group are listed in **Table 1**.

Table 1. The most important features of a healthy lifestyle

Hierarchy	Active group	Passive group
1	Consumption of healthy foods	Awareness of what is healthy and what is not
2	Regular exercise	Access to quality food
	Adequate vitamin and mineral intake	Adequate income
3	Diverse diet	Consumption of healthy foods
4	Omission of harmful pleasures	Diverse diet
5	Mental well-being	Regular exercise

Regarding the second most important features of the groups, 2 factors were raised to the same level by each group, as in neither case were they able to reduce the ranking to 1 component at this level. Nutrition and exercise were considered to be relevant by both groups, but it should be emphasized that information, accessibility and adequate financial situation were the most important for the *passive group*. Regarding the transition to a healthy lifestyle, the groups studied had to make arguments as to why it could be easy, as well as what would be difficult in the process. Overall, the same factors were listed both as pros and cons. The groups attached similarly great importance to the influence of the social environment, which they believed had a strong impact on the individual's health behavior.

4.2.2. Customer and consumer habits and motivations related to health foods

There are differences between the categories of food most often purchased and consumed by the two groups. The *passive group* consumed a higher proportion of meat products, quick-frozen and processed foods. The *active group* preferred seasonal fruits and vegetables, dairy products and fresh bakery products. Members of the *active group*, according to their own statements, plan their purchases in advance, while impulse buying is more common among the *passive group*.

Prior to examining consumer attitudes towards health foods, their concept as clarified with group members: *"They are foods that have one or more nutritional biological benefits in addition to excellent taste. These advantages include lower energy content, mainly through the reduction of fat content or the omission of sugars, enrichment in certain minerals (Ca, Se, Mg), depletion in others (Na), addition of multivitamins or the use of probiotic lactic acid bacteria in different foods."* All of the subjects in the study bought and consumed health foods. For members of the *active group*, "being free of something" was important, which manifested itself mainly in the avoidance of fat, salt and sugar. Members of the *passive group* typically preferred products "fortified with something". The *active group* bought more types of health food more often than the *passive group*.

It was characteristic of both groups that subjects had changed their eating habits over the previous year. The reason for this was the development of some kind of sensitivity/allergy, as well as the need to change lifestyles and to try new diets. Nutritional trends affected the *active group*, but they usually researched a diet before trying it. Members of the *passive group* are generally said to be uninterested in different trends, as well as dietary recommendations.

Regarding the purchase and consumption of food, the *active group* considers the healthiness of food to be the most important factor, while for the *passive group* it is value for money. Members of the *active group* attach particular importance to nutrient composition, to products that are "free of something". For the *passive group*, in addition to easy availability, previous positive experience has an impact on food buying habits.

4.2.3. Differences in the transition to a healthy diet based on the TTM

Using the statements translated by Soós et al. **[26]** based on the TTM, it was examined where the groups were in the transition to what they considered to be a healthier diet. Stages in the behavior change are described below, with examples of the statements made:

- Precontemplation: *In the next six months, I do not intend to switch to a diet I consider healthier*;
- Contemplation: *I feel a strong urge to switch to a diet I consider healthier*;
- Preparation: *Over the next month, I will be taking steps to switch to a diet I consider healthier*;
- Action: *Over the past six months, I have switched to a diet I consider healthier*;
- Maintenance: *I have been eating healthier for over six months now*.

In the transition to a diet that is considered healthy, 30% of the *active group* was in the action stage, while 70% was in the maintenance stage. In contrast, 70% of the *passive group* was in the precontemplation or contemplation stage, while 30% was in the preparation stage. Based on this, it can be concluded that the *passive group* is less open to developing and maintaining a health-conscious diet.

Overall, it can be stated that great emphasis is placed on the consumption of health foods among the group who perform physical activity regularly. Purchases are planned more purposefully by the *active group* and, according to their own statements, their diet is more based on awareness.

4.3. Results of the questionnaire survey

4.3.1. Presentation of the sample

Our quantitative study was conducted in the online space. The gender distribution of our sample reflects the composition of the Hungarian population, however, our results are more exploratory, as the sampling took place in a specific medium. The sample was made up of people who follow the online work and activity of dietitians, and themselves spend time regularly in the online space. The distribution of the sample according to different background variables is shown in *Tables 2 and 3*.

Table 2. The distribution of the sample according to the main background variables

Name	Sample distribution	
	Individual	%
All respondents		
Total	300	100
By gender		
Men	143	47.7
Women	157	52.3
By age		
18-29 years	106	35.3
30-39 years	61	20.3
40-49 years	61	20.3
50-59 years	41	13.7
60 years and older	31	10.3
By highest educational qualification achieved		
Maximum 8 years of primary education	4	1.3
Vocational school. specialist school	7	2.3
Secondary school leaving certificate	75	25.0
Higher education degree	214	71.3
By the household's monthly income		
They make a very good living from it and can also save money	83	27.7
They make a living from it but can save little money	149	49.7
The money is just enough to make a living from it but they can no longer set aside	56	18.7

Name	Sample distribution	
	Individual	%
Sometimes it is not enough to make a living from it	3	1.0
I don't know, I don't answer	9	3.0

Table 3. The distribution of the sample according to the other background variables

Subjective health awareness		
Not health conscious at all	11	3.7
Mainly not health conscious	38	12.7
Only sometimes health conscious	66	22.0
Mainly health conscious	144	48.0
Very health conscious	41	13.7
Performing physical activity (eg cycling, dancing, gardening)		
Regularly	184	61.3
Occasionally	75	25.0
Rarely	38	12.7
Never	3	1.0
Daily duration of physical activity		
30 minutes or less	81	27.0
Between 31 and 60 minutes	125	41.7
Between 61 and 90 minutes	53	17.7
Between 91 and 120 minutes	16	5.3
More than 120 minutes	11	3.7
Never do physical activity	3	1.0
Daily sitting time		
2 hours 30 minutes or less	44	14.7
Between 2 hours 31 minutes and 5 hours 30 minutes	96	32.0
Between 5 hours 31 minutes and 8 hours 30 minutes	101	33.7
More than 8 hours 31 minutes	52	17.3
Don't know	7	2.3

Examining the age distribution, it can be stated that our sample is representative of internet users, i.e., the 18 to 49 age group is typically represented. Compared to the demographic composition of the Hungarian population, the proportion of people with higher education is much higher in our sample. Nearly half of the respondents consider themselves mostly health-conscious, engage in physical activity regularly, and 41.7% of these people spend 31 to 60 minutes with exercise daily. Two thirds of the sample spend between 2 hours 31 minutes and 8 hours 30 minutes a day sitting, with an additional 17% spending even more. This rate is higher than the Hungarian data measured by the Eurobarometer [9].

The transition to a healthier diet shows a more positive picture compared to the overall data of the Hungarian population. It must be added that, based on our representative national surveys, the proportion of people in the precontemplation stage is decreasing, while the proportion of people in the preparation, action and maintenance stages is increasing. In 2014 and 2019, 48% and 41% of the population was in the precontemplation stage, respectively, while the proportion of people maintaining a diet considered to be healthier has increased from 17.4% to 23.6% [43]. Development of the transition to a diet considered to be healthier in our sample is shown in *Table 4*.

Table 4. The evolution of switching to a nutrition considered healthier

Stages of the change	Individual	%
In the next six months I don't intend to switch to a nutrition considered healthier by me (closedness)	50	16.7
I feel strong urge to switch to a nutrition considered healthier by me (contemplation)	55	18.3
In the next one month I will take steps to switch to a nutrition thoughtconsidered healthier by me (preparation)	50	16.7
I have been eating healthily for at least six months (action)	43	14.3
I have eaten healthier for more than six months, the chance of setback to my old nutrition habits is minimal (action)	54	18.0
I have always eaten healthy (maintaining)	48	16.0

4.3.2. Results of the factor analysis

According to our results, CSI's attitudes towards health foods are determined by four factors in our sample. The factor structure of the CSI test is illustrated in **Table 5**.

The first is the *Health- and self-conscious* value dimension (explained variance: 26.543%). High factor weights suggest that the value system of respondents is greatly shaped by this dimension, and this is strongly differentiated from other factors. The factor is significantly skewed to the left (Skewness = -802), which means that in the whole sample, respondents consider themselves to be decidedly health-conscious, and it is extremely imoprtant for them to buy and consume health foods.

The second factor is the *Recreational, hedonistic* value dimension, where the explained variance is 11.834%. This attitude is driven by the joy of of shopping, which has a decisive influence. Once again, high factor weights can be seen in the analysis, so this attitude is significantly separated from the other factors. This factor is skewed to the right (Skewness = 0.275), which means that in the whole sample, respondents do not really consider this attitude to be characteristic of themselves.

The third factor is the *Uncertain, confused* value dimension, in which the explained variance is 11.308%. It is characteristic of this attitude that the individual has difficulties making a decision about where to buy, as well as about what brand to choose, they feel that purchases should be planned more carefully. This factor is slightly skewed to the right (Skewness = 0.049), suggesting that the respondents who completed the questionnaire consider this attitude to be less characteristic of themselves.

The fourth factor is the *Devoted, brand-loyal* value dimension (explained variance: 10.872%). This attitude is characterized by brand loyalty and identifies quality with a higher price. The factor is significantly skewed to the left (Skewness = -0.882), so this type of behavior appears with a positive sign in the mindset of the respondents in the sample.

Table 5. Factor structure of the Consumer Style Inventory test

	Components (factors)			
	Health- and self-conscious	Recreational, hedonistic	Uncertain, Confused	Devoted, Brand loyal
I make a special effort to choose the very best quality of functional food products.	0.873			
Getting very good quality of functional food is very important for me.	0.859			
I keep my kitchen up-to-date with the functional food products.	0.811			
I'm willing to buy functional food while shopping.	0.800			
I will make an effort to buy functional food in the near future.	0.796			
I consider myself as a health-conscious consumer.	0.796			
I choose food carefully to ensure better health.	0.774			

	Components (factors)			
	Health- and self-conscious	Recreational, hedonistic	Uncertain, Confused	Devoted, Brand loyal
I usually buy latest available functional food.	0.740			
To get a variety I shop at different stores.	0.523			
Going shopping is one of the enjoyable activities of my life.		0.879		
Shopping is not a pleasant activity for me.		-0.837		
I enjoy shopping just for the fun of is.		0.813		
I make my shopping trips fast.		-0.531		
I should plan my shopping more carefully than I do.			0.748	
Sometimes it is hard to choose which store to shop.			0.747	
There are so many brands to choose from that often I feel confused.			0.747	
I'm impulsive when purchasing functional food products.			0.565	
I take time to shop carefully for the best buys.			0.435	
I have a few favourite brands, I buy them over and over.				0.846
Once I find a brand I like, I stick with it.				0.824
I go to the same store each time I shop for functional food products.				0.569
The higher price of the product, the better its quality.				0.447

Method: Principal Component Analysis, Rotational method: Varimax with Kaiser Normalization. KMO=0,849

Prior to the cluster analysis of the CSI adapted for health foods, it was considered necessary to validate the list of claims. The *Health- and self-conscious* value dimension includes nine items, with a Cronbach's alpha index of 0.922. There are four elements in the *Recreational, hedonistic* value dimension. Two of these items are considered inverted ("Shopping is not a pleasant activity for me", "I make my shopping trips fast"), after the recoding of which the scale has a Cronbach's alpha index of 0.720. The *Uncertain, confused* value dimension contains five elements, with a Cronbach's alpha index of 0.701. The fourth value dimension is *Devoted, brand-loyal*, which contains four statements. The Cronbach's alpha index of the scale is 0.673. By deleting elements, there was no significant improvement in the Cronbach's alpha index in any of the value dimensions. Based on our results, the list of statements is suitable for the characterization of the examined dimensions.

4.3.3. Segmentation results

The results of the factor analysis confirmed that the obtained factors are suitable for the cluster analysis, so in the next step the segmentation of the sample was performed. The analysis was performed using the K-means clustering procedure, and four groups were separated along the 22 factors. The value dimensions characteristic of the clusters are illustrated in *Figure 4*.
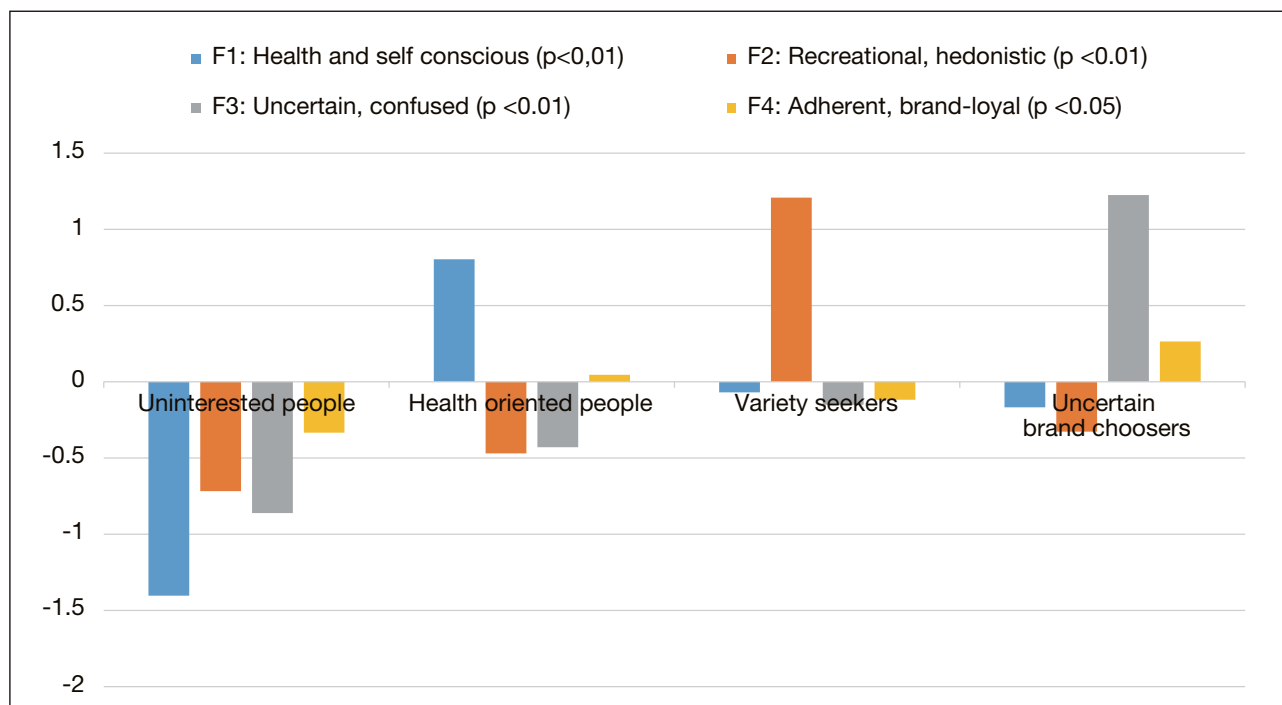

Figure 4. Clusters formed from CSI value adapted for health foods, based on the factors developed

Following this, the socio-demographic background of each segment was characterized by cross-tabulation analysis and the deviations from the mean were examined by analysis of variance. Finally, the differences between the groups in the areas of physical activity, sedentary lifestyle and the transition to a diet considered to be healthier were examined.

4.3.3.1. Uninterested (cluster 1)

For those in the *Uninterested* group, the impact of foods on health is less important, they make no effort to buy good quality health food. Of the clusters, they show the least propensity to consume health foods, but cannot be considered dismissive. They do not identify the price of products with quality. They do not have favorite brands, and if they find a brand they like, they are not loyal to it. They want to finish shopping as soon as possible, since it is not a pleasant activity for them at all, they make quick decisions in the choice of both the store and the product. Typically, all statements are undervalued by *Uninterested* people compared to the other clusters.

The first cluster is the smallest group, making up 14.3% of the sample. In this cluster, men are inordinately overrepresented (72.1%), and the youngest age group, 18-29 is prominent (41.9%). This group has the highest proportion of people with high school diplomas (37.2%). *Uninterested* people has the highest proportion of respondents who are not health-conscious at all (16.3%) or mostly not health-conscious (34.9%). 60.5% of the group do not intend to switch to a diet they consider healthier in the next 6 months. They perform physical activity occasionally (32.6%) or infrequently (27.9%), spending on it 30 minutes or less (55.8%). Members of the group typically spend between 5 hours 31 minutes and 8 hours 30 minutes sitting daily (41.9%).

4.3.3.2. Health-oriented (cluster 2)

For *Health-oriented* people, it is extremely important to buy high quality health foods, and they are making a special effort to do so. They believe less that the price of a product determines its quality. For the sake of variety, they shop in several stores and always have health foods in their kitchen. Shopping is not one of the favorite activities in their lives, they like to get it done quickly. They have a few favorite brands and typically

buy these. When they buy health foods, they usually do so in the same store. Of the clusters, they consider themselves the most health-conscious. In order to maintain their health, they choose foods very carefully and intend to make efforts in the near future to buy health foods.

The second cluster accounts for nearly one-third of the sample (32.6%). In this group, we find almost equal numbers of women (49%) and men (51%). Based on age, the majority belong to the 30-39 (25.3%) and 40-49 (18.4%) age groups, who typically have college degrees. Those in the group consider themselves mostly (54.1%) or very health conscious (27.6%). According to their own statements, almost one-third of the cluster (29.6%) have been eating healthily for at least six months, while one-fifth (20.4%) have always been eating healthily. This group contains the highest proportion of those who engage in physical activity regularly (76.5%). They typically spend 31-90 minutes on active movement. Members of the cluster mostly spend between 2 hours 31 minutes and 5 hours 30 minutes sitting daily (40.8%).

4.3.3.3. Variety seekers (cluster 3)

Variety seekers are less likely to identify product quality with high price. A higher than average proportion of them is reported to be looking for new types of health foods for purchase. Shopping is a decidedly pleasant and fun experience for them, members of the group believe that it is one of the really enjoyable activities of their lives that they spend a significant amount of time on. Compared to the sample average, they are more likely to have health foods at home. They are less loyal to brands, much more interested in novelty and variety.

The third cluster makes up 28% of the sample. Two-thirds of the group are women (64.3%). In this cluster, people in the 18-29 and 30-39 age groups make up two-thirds of the group (67.8%). A quarter of the group (26.2%) say they are partially health-conscious, while 20.2% feel a strong urge to switch to a diet they consider to be healthier. Two-thirds of the cluster performs physical activity on a regular basis, spending on average 31-60 minutes on it daily. *Variety seekers* typically (38.1%) spend between 5 hours 31 minutes and 8 hours 30 minutes sitting daily.

4.3.3.4. Uncertain brand choosers (cluster 4)

It is important for *Uncertain brand choosers* people to buy high quality health foods, they are the ones who clearly identify product quality with a high price. Compared to the sample average, they are more likely to look for new types of health foods to buy, but these are not accumulated in their homes. They consider shopping less enjoyable and usually do this activity quickly. They have a few favorite brands that they are loyal to. They believe they should plan their shopping more carefully. For them, it takes time to choose carefully for the best possible purchase, many times it is even difficult to choose the store where they want to shop. It presents a great difficulty for them when they have to choose from a number of brands, a large selection confuses them. Compared to the sample average, they consider themselves less health-conscious, but they would like to make an effort to buy health foods in the near future.

The fourth cluster makes up one-fourth of our sample (25%). This group is also characterized by the majority of women (54.7%). Age groups 50-59 (16%) and over 60 years (18.7%) dominate this group. This cluster contains a higher proportion of partially health-conscious respondents (28%) who would like to take steps in the near future to switch to a diet they consider healthier (22.7%). *Uncertain brand-loyal* people tend to engage in occasional physical activity (32%), spending less than 30 minutes on it. On average, they spend between 2 hours 31 minutes and 5 hours 30 minutes (32%) sitting daily.

The four clusters show distinctly different socio-demogpraphic characteristics and represent different value dimensions in relation to attitudes towards health foods. They are at different stages in the transition to a diet that is considered healthy. Significant differences can be detected in our sample regarding the regularity and duration of physical activity and the diet considered to be healthier. However, a sedentary lifestyle cannot be considered determinant of attitudes towards health foods.

5. Summary

In the online space, *when balancing nutrition and exercise, consumers clearly place more emphasis on healthy eating*, based on our netnographic survey. Search engine hit lists show a variable rate growth from year to year in the area of healthy eating and exercise. *For the keyword healthy eating, a nearly tenfold increase was observed between 2017 and 2021*. In social media, in the common subset of diet and exercise, *four main types of content can be distinguished, the most popular of which are posts dealing with a combination of training plans and recipes*. Our focus group studies have highlighted that different consumer preferences can be observed for health foods depending on whether we are talking about *active* or *passive* grouops. According to the active group, the most important feature of a healthy lifestyle is the consumption of health foods, while the passive group believes that the most important thing to be informed about what is healthy and what is not. The active group characterizes health foods with being free of something, while the passive group

characterizes them with fortification with something. Those who engage in physical activity regularly are more open to consuming health foods and are more affected by diet-related trends. Based on our quantitative research, attitudes towards health foods are determined by four value dimensions. In the *Health- and self-conscious attitude*, consumption of health foods is of paramount importance. The *Recreational, hedonistic attitude* is characterized by the joy of shopping. In the *Uncertain, confused value dimension*, uncertainty and indecisiveness stand out, which is reflected in both store and brand choices. The *Devoted, brand-loyal attitude* identifies quality with a high price, and both store and brand selection are carried out along definite ideas. Following factor analysis, sample segmentation was performed, resulting in the identification of four major groups. Among the clusters, *Uninterested* people represent the smallest proportion of our sample, and they undervalue all statements. The *Uninterested* group does not want to switch to a diet they consider healthier, for them it is not important to consume health foods. They perform physical activity infrequently and for a short period of time. The *Health-oriented* cluster is characterized by the exact opposite set of values. For them, it is important to buy health foods and they make an effort to do so. Shopping itself is not a pleasant activity for them. Members of the cluster perform physical activity regularly and for longer periods of time, and they have the highest proportion of actors and maintainers among the stages of the diet they consider healthy. For *Variety seekers*, quality is not related to a high price. They are looking for new types of health foods, however, they are more motivated by the joy of shopping. they are not loyal to a particular store or brand type. They engage in physical activity regularly and feel a strong urge to switch to a diet they consider healthier. In contrast, *Uncertain brand choosers* people stick to one brand type, but are confused by a large selection of brands. They consider themselves less health-conscious, but in the future they would like to strive to buy health foods and also to switch to a diet they consider healthier. Typically, they perform physical activity occasionally and for shorter periods of time.

According to the results of our research, the purchase and consumption of health foods and attitudes towards health foods are related to the diet and physical activity of the individuals, however, independent of the time consumers spend sitting daily.

6. Acknowledgment

7. References

[1] Szakály, Z. (2016): Egészségmagatartás, viselkedésváltozás és személyre szabott táplálkozás: az élethosszig tartó egészség koncepciója, in Fehér, A., Kiss, V. Á., Soós, M., Szakály, Z. (szerk.): *Hitelesség és Értékorientáció a Marketingben*. Debreceni Egyetem Gazdaságtudományi Kar, Debrecen, pp. 5-25.

[2] NEFI (2017): Egészségjelentés 2016. Információk a népegészségügyi beavatkozások célterületeinek azonosításához a nem fertőző betegségek és az egészségmagatartási mutatók elemzése alapján. Nemzeti Egészségfejlesztési Intézet, Budapest.

[3] Griera, J.L., Manzanares, J.M., Barbany, M., Contreras, J., Amigó, P., Salas-Salvadó, J. (2007): Physical activity, energy balance and obesity. *Public Health Nutrition*. **10** (10A) pp. 1194-1199. DOI: https://doi.org/10.1017/S1368980007000705

[4] Chaput, J.P., Saunders, T.J., Mathieu, M.È., Henderson, M., Tremblay, M.S., O'Loughlin, J., Tremblay A. (2013): Combined associations between moderate to vigorous physical activity and sedentary behaviour with cardiometabolic risk factors in children. *Appl Physiol Nutr Metab*. **38** pp. (5) 477-483. DOI: https://doi.org/10.1139/apnm-2012-0382

[5] Csányi, T. (2010): A fiatalok fizikai aktivitásának és inaktív tevékenységeinek jellemzői. Új pedagógiai szemle. **60** (3-4) pp. 115–129.

[6] Ács, P., Prémusz, V., Morvay-Sey, K., Kovács, A., Makai, A., Elbert, G. (2018): A sporttal, testmozgással összefüggésben lévő mutatók változása Magyarországon és az Európai Unióban az elmúlt évek eredményeinek nyomán. *Sport- és egészségtudományi füzetek*. **2** (1) pp. 61-76.

[7] Biswas, A., Oh, P. I., Faulkner, G. E., Bajaj, R. R., Silver, M. A., Mitchell, M. S., Alter, D. A. (2015): Sedentary Time and Its Association With Risk for Disease Incidence, Mortality, and Hospitalization in Adults. *Annals of Internal Medicine.* **162** (2) pp. 123-132. DOI: https://doi.org/10.7326/M14-1651

[8] Marshall, A., Miller, Y., Burton, N., Brown, W. (2009): Measuring Total and Domain-Specific Sitting. *Medicine & Science in Sports & Exercise*. **42** (6) pp. 1094-1102. DOI: https://doi.org/10.1249/MSS.0b013e3181c5ec18

[9] EUROBAROMETER (2018): Sport and physical activity https://ec.europa.eu/sport/news/2018/new-eurobarometer-sport-and-physical-activity_en (Hozzáférés: 2021.03.21.)

[10] Ádány, R. (2011): Megelőző orvostan és népegészségtan, Medicina Könyvkiadó Zrt, Budapest

[11] Dobbs, R., Sawers, C., Thompson, F., Manyika, J., Woetzel, J., Child P., Mckenna, S., Spatharou, A. (2014): How The World Could Better Fight Obesity. McKinsey&Company https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/how-the-world-could-better-fight-obesity (Hozzáférés: 2021.03.27.)

[12] KSH (2020): Tehetünk az egészségünkért; Társadalomstatisztikai összefoglaló kiadványok https://www.ksh.hu/docs/hun/xftp/idoszaki/elef/te_2019/index.html (Hozzáférés: 2021.02.22.)

[13] Szakály, Z. (2017): Táplálkozásmarketing. In: Szakály, Z. (szerk.): Élelmiszer-marketing. Akadémiai Kiadó, Budapest, 487–439. ISBN: 978-963-454-061-8

[14] Szakály Z. (2011): Táplálkozásmarketing. Mezőgazda Kiadó, Budapest

[15] Papp-Bata, Á., Csiki, Z., Szakály, Z. (2018): Az egészségvédő élelmiszerekkel kapcsolatos fogyasztói magatartás - A hiteles tájékoztatás szerepe. *Orvosi Hetilap* **159** (30) pp. 1221-1225. DOI: https://doi.org/10.1556/650.2018.31121

[16] Weststrate, J. A., Poppel, G. Van, Verschuren, P. M. (2002): Functional foods, trends and future. *British Journal of Nutrition* **88** (2) pp. 233–235 DOI: https://doi.org/10.1079/BJN2002688

[17] GOOGLE (2016): 2016 Food Trends from Google Search Data: The Rise of Functional Foods https://www.thinkwithgoogle.com/consumer-insights/2016-food-trends-google/ (Hozzáférés: 2021.02.25.)

[18] Yeung, A.W.K., Mocan, A., Atanasov, A.G. (2018): Let food be thy medicine and medicine be thy food: a bibliometric analysis of the most cited papers focusing on nutraceuticals and functional foods. *Food Chem*. 269 pp. 455–465. DOI: https://doi.org/10.1016/j.foodchem.2018.06.139

[19] Urala, N., Lähteenmäki, L. (2003): Reasons behind consumers' functional food choices, Nutrition & Food Science, 33 (4), pp. 148-158. DOI: https://doi.org/10.1108/00346650310488499

[20] Lau, T.-C. (2019): Regulations, opportunities, and key trends of functional foods in Malaysia. Nutraceutical and Functional Food Regulations in the United States and Around the World, 561–573. DOI: https://doi.org/10.1016/B978-0-12-816467-9.00034-4

[21] Prochaska, J.O., Diclemente, C.C. (1982): Transtheoretical therapy: Toward a more integrative model of change. *Psychotherapy: Theory, Research and Practice* **19** (3) pp. 276-288. DOI: https://doi.org/10.1037/h0088437

[22] Prochaska, J.O., Diclemente, C.C., Norcross, J.C. (1992): In search of how people change: Applications to addictive behaviors. *American Psychologist* **47** (9) pp. 1102-1114. DOI: https://doi.org/10.1037//0003-066x.47.9.1102

[23] Prochaska J.O., Rochaska, J. M. (2011): Behavior change. In D. B. Nash, J. Reifsnyder, R. J. Fabius, V. P. Pracilio (Eds.), Population Health: Creating a culture of wellness pp. 23-41.

[24] Johnson, S.S., Paiva, A.L., Cummins, C.O., Johnson, J.L., Dyment, S.J., Wright, J.A. (2008): Transtheoretical model-based multiple behavior intervention for weight management: Effectiveness on a population basis. *Preventive Medicine*, **46** (3) pp. 238-246. DOI: https://doi.org/10.1016/j.ypmed.2007.09.010

[25] Czeglédi, E. (2012): A viselkedésváltozás transzteoretikus modelljének alkalmazási lehetőségei az elhízás kezelésében. *Mentálhigiéné és Pszichoszomatika* **13** (4) pp. 411-434. DOI: https://doi.org/10.1556/Mental.13.2012.4.4

[26] Soós, M., Kovács, B., Szakály, Z. (2016): A viselkedésváltozás szintjein a testtömeg-menedzselés folyamatában – élelmiszerfogyasztás és fizikai aktivitás. *Táplálkozásmarketing* **3** (2) pp. 19-28. DOI: https://doi.org/10.20494/TM/3/2/2

[27] Sproles, G. B., Kendall, E. L. (1986): A methodology for profiling consumers' decision making styles. *The Journal of Consumer Affairs* **20** (2) pp. 267–279.

[28] Sam, K. M., Chatwin, C. (2015): Online consumer decision-making styles for enhanced understanding of Macau online consumer behavior. *Asia Pacific Management Review* **20** (2) pp. 100–107. DOI: https://doi.org/10.1016/j.apmrv.2014.12.005

[29] Nayeem, T., Casidy, R. (2015): Australian consumers' decision-making styles for everyday products. *Australian Marketing Journal* 23 pp. 67-74. DOI: https://doi.org/10.1016/j.ausmj.2015.01.001

[30] Lysonski, S., - Durvasula, S. (2013): Consumer decision making styles in retailing: Evolution of mindsets and psychological impacts. *Journal of Consumer Marketing* **30** (1) pp. 75–87 DOI: https://doi.org/10.1108/07363761311290858

[31] Eun Park, J., Yu, J., Xin Zhou, J. (2010): Consumer innovativeness and shopping styles. *Journal of Consumer Marketing* **27** (5) pp. 437–446. DOI: https://doi.org/10.1108/07363761011063330

[32] Parakash, G., Pankaj, K. S., Rambalak, Y. (2018): Application of consumer style inventory (CSI) to predict young Indian consumer's intention to purchase organic food products. *Food Quality and Preference* **68** pp. 90–97. DOI: https://doi.org/10.1016/j.foodqual.2018.01.015

[33] Internet World Stats (2021): World Internet Usage and Population Statistics 2021 Year-Q1 Estimates https://www.internetworldstats.com/stats.htm (Hozzáférés: 2021.03.12.)

[34] Datareportal (2021): Global Media Stats https://datareportal.com/social-media-users

[35] Farmer, A. N. D., Bruckner Holt Cem, Cook M.J., Hearing S. D. (2009): Social networking sites: a novel portal for communication. *Postgraduate Medical Journale* **85** (1007) pp. 455–459. DOI: https://doi.org/10.1136/pgmj.2008.074674

[36] Benetoli A., Chen T. F., Aslani P. (2019): Consumer perceptions of using social media for health purposes: Benefits and drawbacks. *Health Informatics Journal* **25** (4) pp. 1661–1674 DOI: https://doi.org/10.1177/1460458218796664

[37] Johns, D. J., Langley, T. E., & Lewis, S. (2017): Use of social media for the delivery of health promotion on smoking, nutrition, and physical activity: a systematic review. *The Lancet* 390. DOI: https://doi.org/10.1016/S0140-6736(17)32984-7

[38] Kozinets, R. V. (2002): The Field Behind the Screen: Using Netnography for Marketing Research in Online Communities. *Journal of Marketing Research* 39 pp. 61-72. DOI: https://doi.org/10.1509/jmkr.39.1.61.18935

[39] Dörnyei, K. (2008): Bioélelmiszer fogyasztási szokások. *Marketing & Menedzsment* **42** (4) pp. 34-42.

[40] Dörnyei, K., Mitev, A. (2010): Netnográfia, avagy on-line karosszék-etnográfia a marketingkutatásban. *Vezetéstudomány* **41** (4) pp. 55-68.

[41] Szabó, S. (2016): Egészségorientált táplálkozási szokások és a fogyasztói magatartás kapcsolata. Doktori (PhD) értekezés. Kaposvári Egyetem Gazdaságtudományi Kar

[42] Gál, T., Soós, M., Szakály, Z. (2017): Egészségtudatos táplálkozással kapcsolatos fogyasztói insight-ok feltárása netnográfiával – esettanulmány. *Vezetéstudomány* **48** (4) pp. 46-54. DOI: https://doi.org/10.14267/VEZTUD.2017.04.07

[43] Szakály, Z., Nábrádi, Zs. (2021): Az egészségtudatosság és a fogyasztók ismeretei. In: Kukovics, S. (szerk.): A hús szerepe a humán táplálkozásban (megjelenés alatt)