SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2023
ORGANIZATION AND MANAGEMENT SERIES NO. 188

WOMEN'S EMOTIONS AND FOOD CHOICES – A STUDY OF GDYNIA CITY RESIDENTS, POLAND

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Purpose: The main objective of the research was to assess the impact of emotions on women's eating behaviour and to determine whether women's eating behaviour under the influence of emotions is dependent on education, marital status and professional status.
Design/methodology/approach: The research instrument was a survey questionnaire administered through the computer-assisted web interviewing (CAWI) method using Google Forms. The survey was conducted in spring 2023 among a group of 393 female respondents in Gdynia (northern Poland). The interview questionnaire consisted of thematic blocks including scales concerning the assessment of: the influence of emotions (happiness and sadness) on women's eating behaviour. The chi-square test with Yates' correction and the Mann-Whitney U test were used to determine the relationship between the study variables.
Findings: It was found that the type of emotion influenced eating behaviour in the study group of women. The respondents consumed fruit and vegetables and dairy products when feeling positive emotions (happiness), and consumed sweets, salty snacks and alcohol when feeling negative emotions (sadness). The present study showed that the frequency of eating under the influence of emotion may depend on education, marital status and professional status.
Research limitations/implications: The research has certain limitations. The results obtained are not representative and cannot be generalised to the population of women in Poland. The research is a pilot study.
Practical implications: Knowledge in this area is valuable in developing nutrition education programmes. In order to improve women's health, interventions must focus on increasing their self-efficacy in consciously regulating their emotions and the type of food they consume in emotionally aroused states.
Social implications: The research is part of health risk management and health promotion in the Polish population.
Originality/value: The research adds to the knowledge of human behaviour in the nutritional sphere by taking into account psychological factors.

Keywords: emotional food consumption, happiness, sadness, eating habits, health-related quality of life, female consumers.

Category of the paper: Research paper.

1. Introduction

The importance of emotions in human nutrition

Emotions play a significant role in everyday human life, affecting how we feel and respond to different experiences (Adolphs, Mlodinow, Barrett, 2019; Dziewicki, 2018; Izard, 2009; Šimić et al. 2021). Human beings experience many different emotional states at every stage of their lives. However, we are often unable to name them and thus are unaware of their impact on our behaviour. In order to modify the emotions we feel, we generally attempt to regulate them, either automatically or intentionally, being at different levels of consciousness. However, it can be seen that each individual shows an individual approach to recognising his or her own emotional state. Conscious emotion regulation becomes a strategy to even out the emotional state, while at the same time the actions associated with it turn into a habit in the long term (Brytek-Matera, 2020).

Research by Bui et al. (2021) and Devonport, Nicholls and Fullerton (2019) showed that positive emotions can influence food consumption in the same way as negative emotions. Due to the variability of emotions, it is therefore difficult to predict how a particular emotion will affect the diet of a particular group of people. According to research, positive emotions increase the motivation to eat when they are felt, whereas when negative emotions are felt, the desire to eat decreases. When feeling positive emotions, people often give up self-imposed restrictions, such as restrictive diets, in order to maintain the effect of happiness and the emotional state felt (Brytek-Matera, 2020). Women experiencing positive emotions eat more compared to those in a neutral mood; moreover they increase their snack intake in response to positive emotions compared to negative ones (https://www.wspolczesnadietetyka.pl). Students also show more emotional eating behaviour compared to older people. Moreover, the literature reports that older people following a Mediterranean diet show more restrained, emotionless eating behaviour (Ferreira-Pêgo et al., 2020).

The effect of ‘comfort eating’ can often be encountered, where a person wants to induce a positive mood or maintain it. ‘Comfort eating’ in the context of feeling negative emotions more often applies to women who want to improve their mood, while men use this principle when they want to sustain positive emotions. When feeling positive emotions, people are more likely to reach for savoury and salty snacks, such as pizza. The opposite is true when feeling negative emotions. This is when sweets are consumed, being associated with childhood or good memories when cakes and ice cream were consumed (Brytek-Matera, 2020; Finch, Cummings, Tomiyama, 2019; McKay et al., 2021).

Eating is the most popular method of regulating emotions, primarily negative ones. Eating then acts as a mood regulator, a mood enhancer. Evidence indicates that emotional eating is mainly influenced by emotions related to depressive states, anxiety or anger. Not only negative emotions affect emotional eating, but also positive emotions. Episodes of

overeating are observed as a reaction to the food-related element of the environment. However, the strongest episodes occur when experiencing negative emotions such as stress, fear and depressive states (Różycka, 2020). The frequent occurrence of an emotional eating episode can cause negative effects on the human body. The foods consumed are often high in energy and low in nutritional value, such as chocolate, finger foods, crisps, snacks of other types, and fast food (Pano et al., 2022).

Stress and difficulties in coping with emotions, experiencing them and low levels of personal resources are important psychological factors contributing to the development of overweight. Uncontrolled eating, especially if it is compulsive in nature, is a risk factor for food addiction. People who react in this way may consume increasing amounts of their chosen food in the future to cope with a negative mood, and this can lead to emotional eating disorders. Emotional eating is a phenomenon in which a person is unable to distinguish between the basic feeling of hunger and the emotional arousal felt when experiencing negative emotions, which promotes food cravings in stressful situations (Paans et al., 2018; Różycka, 2020).

When emotional eating is not dealt with for a long time and the cause is not known and not worked on, it can develop into compulsive overeating. It is a mental illness that causes bouts of excessive eating. Compulsive overeating resembles bulimia, but is not accompanied by laxative treatments. Overeating is a reaction to sadness, fear, and anger, and is intended to fill a void (Pilska, Jeżewska-Zychowicz, 2008). Women are more likely than men to develop eating disorders (Su et al., 2016).

The consumption of foods high in total fats and sugars was justified during a stage of evolutionary environmental change when energy-rich foods were rare. Therefore, by nature, humans prefer high-calorie foods that are characterised by high palatability. Nowadays, the desire to consume fat- and sugar-rich food (when it has become generally available) is an important factor in the development of diet-related diseases affecting quality of life (Carfora, Catellani, 2020; Czepczor-Bernat, Brytek-Matera, 2020; Ljubičić et al., 2022). Emotional eating can lead to the development of obesity and consequent diseases such as insulin resistance, type 2 diabetes, hypercholesterolaemia, atherosclerosis, hypertension or ischaemic heart disease (Żak-Gołąb et al., 2012). The ability to regulate food consumption cravings is therefore important (Brytek-Matera, 2022).

Influence of emotions on nutrition

Emotions have a significant impact on the food choices people make. Specific emotions, such as anger, fear, sadness, and happiness, affect the quality and quantity of food consumed, as well as metabolism and digestion (Betancourt-Núñez et al., 2022; Jasielska, 2011; Lange, 2021; Match, 2008). Moreover, the emotions felt influence the food (taste) preferences that the organism is requesting at any given time.

Diet has a fundamental impact on the regulation of negative emotions, under the influence of which a person becomes more prone to emotional eating (Bárbara, Ferreira-Pêgo, 2020). López-Moreno et al. (2021) classified approximately 38.6% of university students in Madrid as very emotional eaters or emotional eaters, and 37.2% as low emotional eaters. They also observed a weak positive correlation between emotional eating and BMI in female students. Increasingly, it can be seen that when a person's mental state deteriorates, it is accompanied by a consistent pattern of eating excessive amounts of high-energy foods. This is associated with a misperception of the feeling of hunger, which in reality is just emotional arousal. There is a correlation between emotional feeding and alexithymia. Alexithymia is defined as 'an inability to understand, identify and name emotions, and its characteristic symptom is difficulty distinguishing between emotional and physiological arousal'. In the literature, an alternative relationship can be observed between the desire to cancel out negative emotions and the effect of eating on mood. The behaviour in question is seen as an escape from the discomfort caused by experiencing negative emotions. The premise of the behaviour captured is to block awareness by focusing on a nearby available stimulus from the environment. This results in a 'state of cognitive deconstruction' that disrupts spatio-temporal perception and analysis of the consequences of such behaviour (Żak-Gołąb et al., 2012).

There is also a mechanism responsible for consuming large amounts of foods rich in simple carbohydrates. The individual believes that it is due to the consumption of these foods that a surge of positive emotions occurs, which in the short term improves mood (Żak-Gołąb et al., 2012). Negative emotions prompt people to reach for sweet-tasting products to reduce the unpleasant state. When experiencing negative emotions and reaching for snacks, we do not control the amount of food we consume. Normal-weight individuals do not feel the need to eat large amounts of sugary snacks when experiencing negative emotions, in contrast to obese individuals. This is because the mechanism responsible for the release of serotonin in response to high-sugar foods does not work properly in overweight individuals (Czepczor, Brytek-Matera, 2017). When feeling sad, the brain demands more dopamine, the happiness hormone. Happiness is felt when we eat something sweet, so feelings of sadness can lead to increased cravings for sweet products to make us feel better, if only for a moment (Lange, 2021). Given that both positive and negative emotions influence the food choices made by different generations of consumers, an exploration in this area is warranted.

The aim of this study was to assess the impact of emotions on women's eating behaviour and to determine whether women's eating behaviour undertaken under the influence of emotions is dependent on education, marital status and professional status.

2. Research methodology

The empirical research was carried out using indirect survey measurement. The research tool was a survey questionnaire. The survey was conducted in indirect form using the CAWI method (Google Forms). The survey was conducted in spring 2023 among 393 female respondents in Gdynia, Pomeranian Voivodeship (Table 1). The snowball sampling technique was used to select female respondents for the study sample. The respondents gave informed and voluntary consent to participate in the study. They also confirmed that they were aware of the risk factors associated with interviewing using the CAWI method. The study group was dominated by female students (56.49%), single women (60.30%) with higher education (Bachelor's degree and above) (57.25%).

Table 1.
Study sample characteristics

Parameters	n	[%]
Marital status		
Single women	237	60.30
Women in a relationship	156	39.70
Occupational status		
Working	171	43.51
Studying	222	56.49
Education		
Secondary education	168	42.75
Higher education	225	57.25

Source: own elaboration based on survey results.

The interview questionnaire consisted of thematic blocks including scales on the assessment of: 1. the impact of emotions (happiness and sadness) on women's eating behaviour, 2. the impact of emotions (happiness and sadness) on the frequency of food intake.

Respondents answering the questions 'how would you describe your eating behaviour accompanying the emotion of feeling happiness?' and 'how would you describe your eating behaviour accompanying the emotion of feeling sad?' could indicate 1 of 6 answers: I eat what I usually eat, I eat what I like, I eat nothing, I eat more, I eat less and I do not pay attention to what I eat. With the intention of assessing the frequency of food intake when feeling extreme emotions such as happiness and sadness, 4 categories of food intake frequency were used, to which points were assigned: always (4 points), often/mostly (3 points), rarely (2 points), never (0 points). Based on the sum of the points, a division into 3 levels of food consumption was adopted. 1/3 and 2/3 of their point range (scale from 0 points to 4 points) was used as a criterion for division: low consumption level (<1/3 of the range: 0-1.32 points), moderate consumption level (1/3 to 2/3 of the range: 1.33-2.66 points), high consumption level (> 2/ range: 2.67-4 points).

A reliability test was carried out using Cronbach's alpha coefficient and the α value obtained was 0.902, indicating high reliability. The results were presented by means of the percentage distribution of the individual responses (% indicated). A chi-square test with Yates' correction was conducted to determine the relationship between marital status, occupational status and education and statements regarding the consumption of specific food groups in a state of happiness or sadness in the study groups. The Mann-Whitney U test was used to assess the effects of marital, occupational and educational status on the consumption of products for the emotional states of happiness and sadness. A significance level of $p < 0.05$ was assumed for all statistical analyses. Calculations were performed using Excel 2000 and Statistica 13.3 (Tibco Software, Palo Alto, USA).

3. Results and discussion

Emotions as a reaction to the cognitive evaluation of environmental stimuli are an integral part of human existence, behaviour and functioning (Adolphs et al., 2019; Šimić et al., 2021; Izard, 2009). As it turns out, emotions are also closely related to food choice and feeding rituals as a social activity, but they are also related to mood, which is stronger and lasts longer (Chávez-Servín et al., 2022). Previous research has confirmed the link between mood or emotional states and food choice and various eating disorders, as well as the perception that eating can be a way to fill the void that can arise from conditions such as loneliness, sadness, depression, social isolation and other emotional moods caused by stress, excitement and tension, conflicting social relationships, and other stressful life events (Devonport et al., 2019). It is important to note that women are more likely to develop eating disorders than men (Su et al., 2016). Tables 2 and 3 show the impact of emotions of happiness and sadness on women's eating behaviour. There was a significant difference in reported eating behaviour when experiencing happiness between those with different marital status and occupational status ($p < 0.01$). Single women (58.02%) ($\chi2 = 11.13$; $df = 1$; $p < 0.01$) and female students (54.20%) ($\chi2 = .14$; $df = 1$; $p < 0.01$) were significantly more likely than married or partnered persons (34.35%) and professionally active persons (38.17%) to state that they eat whatever they like when feeling happy (Table 2). In contrast, in the group in which education was the dividing criterion, significant differences were observed for the responses 'I eat nothing' ($\chi2 = 4.65$; $df = 1$; $p = 0.03$) and 'I eat more' ($\chi2=6.15$; $df=1$; $p=0.01$). Those with higher education, compared to those with secondary education, were significantly more likely to state that they both eat nothing in moments of happiness (8.40% and 3.05% respectively) and that they eat more (19.08 and 9.16% respectively) (Table 2).

Table 2.
Influence of emotion (happiness) on women's eating behaviour

Statements	Marital status [%]		Occupational status [%]		Education [%]	
	Single women	Women in a relationship	Working	Studying	Secondary education	Higher education
I eat what I usually eat	53.44	34.35	37.40	50.38	38.17	49.62
I eat what I like	58.02	34.35	38.17	54.20	40.46	51.91
I don't eat anything	6.87	4.58	5.34	6.11	3.05	8.40
I eat more	15.27	12.98	12.08	16.07	9.16	19.08

Source: own elaboration based on survey results.

In contrast, when experiencing sadness, people with different marital status varied significantly for the response: 'I eat what I like' ($\chi 2 = 11.84$; df = 1; $p < 0.01$) (Table 3). Single women (41.98%) were significantly more likely than married or partnered women (20.61%) to state that, when feeling sad, they chose to consume those foods that they liked. In contrast, in the group in which occupational status was the dividing criterion, a significant difference was observed for the response: 'I do not pay attention to what I eat' ($\chi 2 = 6.89$; df = 1; $p = 0.01$). Those who were studying were significantly more likely than those who were professionally active to state that sadness did not influence their food choices (33.59 19.85% respectively) (Table 3).

Table 3.
Influence of emotion (sadness) on women's eating behaviour

Statements	Marital status [%]		Occupational status [%]		Education [%]	
	Single women	Women in a relationship	Working	Studying	Secondary education	Higher education
I eat what I usually eat	23.66	19.85	20.61	22.90	17.56	25.95
I eat what I like	41.98	20.61	26.72	35.88	27.48	35.11
I don't eat anything	27.48	15.27	16.03	26.72	18.32	24.43
I eat more	23.66	18.32	16.79	25.19	17.56	24.43
I don't pay attention to what I eat	31.30	22.14	19.85	33.59	22.90	30.53

Source: own elaboration based on survey results.

The relationships between emotional reasons or states such as mood, loneliness, boredom or mood enhancement as reasons for food consumption, and predictors of food intake, such as age, gender, marital status, occupation or physical activity, among others, confirm the complexity of factors influencing eating behaviour (Guiné et al., 2020; Ljubičić et al., 2022; Ljubičić et al., 2023. Levine (2013) in his study confirmed the link between loneliness and eating disorders. St John et al. (2021) found that for women, place of residence is a factor in loneliness or social isolation. Emotions, especially those caused by stress, can contribute to apathy, social isolation, fatigue or less physical activity. Stress activates 'reward pathways' in

the brain and increases appetite for palatable foods. This combination of neuronal adaptations often leads to an increase in the consumption of palatable foods, such as foods high in fat and/or sugar (Klatzkin, Nolan, Kissileff, 2022). Additionally, loss of appetite is also a typical adaptive response to negative emotions (van Strien et al., 2019). Stress can particularly affect appetite through hormonal regulation. For example, in acute stress, norepinephrine inhibits appetite, whereas in chronic stress, cortisol stimulates appetite (Torres, Nowson, 2007). Ljubičić et al. (2023) observed in their study that stress contributed to increased consumption of energy-dense foods.

When analysing the frequency of consumption of selected products during feelings of happiness, significant differences were observed for most products in the group of respondents taking into account the division by marital status and occupational status (Table 4). When analysing bread and cereal and flour products, the answer 'mostly' prevailed in all the groups studied. Singles were significantly more likely to choose this answer than couples and those with higher than secondary education (24.43 and 19.08% each, respectively), and those studying were significantly more likely to choose this answer than those who were economically active (25.19 and 18.32%, respectively). In the case of milk and milk products, as well as yellow and blue cheese, the most frequent answer given regarding consumption in a state of enjoyment was also 'mostly'. It was significantly more often indicated by singles than by those in relationships (30.53 and 16.79% and 28.24 and 13.74% respectively), by those in education than by those in employment (28.24 and 19.08% and 25.19 and 16.79% respectively), and by those with higher than secondary education (25.19 and 22.14% and 25.19 and 16.79% respectively). When reporting the consumption of fast food in all groups, the predominant response of frequency of consumption was 'rarely'. This response was indicated significantly more often by singles than by those in relationships (29.01 and 19.08% respectively), by those in education than by those in employment (31.30 and 16.79% respectively), and by those with secondary education compared to those with higher education (25.19 and 22.90% respectively). For the frequency of nut and seed consumption, considering the marital status of women, the predominant response was 'mostly'. Single women (20.61%) were significantly more likely to indicate this answer than those in a relationship (18.31%). On the other hand, in terms of occupational status, the answer 'rarely' predominated. Those who were studying, compared to those who were working, were significantly more likely to indicate it (20.61 and 9.92% respectively). For dried fruit, the predominant response indicated that it was rarely consumed in states of enjoyment. Single women and people in education were significantly more likely to report infrequent consumption of dried fruit than people in relationships and those in employment (25.19 and 23.66% and 15.27 and 16.79% respectively). In the case of consumption of chocolate and chocolate products, significant differences were observed only in the group divided by education. The most frequently indicated answer for frequency of consumption was 'mostly' and it was those with higher education, compared to those with secondary education, who indicated it significantly more often (22.14 and 19.08% respectively).

Table 4.
Feeling of happiness and frequency of food consumption

Statements	Marital status			Occupational status			Education			Mean score (rank) ±SD
	Chi2	df	p*	Chi2	df	p	Chi2	df	p	
Bread, cereal and cereal preparations	9.45	3	**0.02**	8.33	3	**0.04**	9.09	3	**0.03**	2.43±1.18
Milk and milk products	15.75	3	**<0.01**	11.99	3	**0.01**	12.15	3	**0.01**	2.44±1.12
Yellow cheese. Blue cheese	16.47	3	**<0.01**	20.26	3	**<0.01**	16.51	3	**<0.01**	2.37±1.19
Meat, sausages, cold cuts	6.96	3	0.07	12.22	3	**0.01**	5.92	3	0.12	2.24±1.28
Fast food. e.g. pizza, hot dogs, hamburger	14.39	3	**<0.01**	37.72	3	**<0.01**	17.08	3	**<0.01**	2.32±1.14
Salty snacks, e.g. chips, finger foods	5.20	3	0.16	9.89	3	**0.02**	5.93	3	0.12	2.49±1.01
Vegetables and fruit	12.43	3	**0.01**	6.33	3	0.09	0.49	3	0.92	3.04±0.89
Nuts, seeds, e.g. sunflower, pumpkin, etc.	9.25	3	**0.03**	11.97	3	**0.01**	2.24	3	0.52	2.51±1.16
Dried fruit	57.45	3	**<0.01**	28.76	3	**<0.01**	4.43	3	0.22	1.82±1.28
Fruit and vegetable juices	6.91	3	0.08	5.27	3	0.15	4.82	3	0.19	2.53±1.17
Sweetened fizzy drinks	5.50	3	0.14	4.72	3	0.19	1.68	3	0.64	1.93±1.41
Sweets, e.g. cakes, biscuits, bars, sweets	6.43	3	0.09	1.86	3	0.61	4.22	3	0.24	2.61±1.14
Chocolate and chocolate products	0.94	3	0.82	3.17	3	0.37	12.21	3	**0.01**	2.70±1.14
Ice cream	2.07	3	0.56	2.38	3	0.49	4.09	3	0.25	2.49±1.14

Source: own elaboration based on survey results.

When analysing the frequency of consumption of the same food items in the state of feeling sadness as reported by the female respondents, it can be observed that a higher mean value for the consumption of selected products was observed only for the consumption of sweet fizzy drinks, sweets, chocolate and chocolate products and ice cream (Tables 4 and 5). In contrast to the frequency of consumption of products during feelings of happiness, for sadness, significant differences were observed in the frequency of consumption of most of the analysed product groups (Table 5). The frequency of consumption of bread and processed cereals and fast food was dominated by the two responses 'rarely' and 'mostly'. Single women were significantly more likely to indicate that they rarely and mostly reach for bread and cereal products when feeling sad (21.37 and 12.98% and 19.85 and 11.45%, respectively), compared to women in relationships. The economically active compared to the learners for this group of products reported that they consumed them significantly less often (17.56 and 15.79% respectively). In contrast, students were significantly more likely to state that they usually eat bread and cereal products when feeling sad (17.56 and 13.74% respectively). Those with a higher education were significantly more likely to respond 'rarely' (19.85 and 14.50 % respectively) and 'mostly' (19.08 and 12.21 % respectively) compared to those with a secondary education. Single women were significantly more likely than those in relationships to report that when feeling sad, they usually reach for fast food (21.37 and 10.69% respectively). In contrast, women in relationships

consumed them significantly less often (16.03 and 12.21% respectively). Students were significantly more likely to indicate the frequency of fast food consumption by choosing the answer ‘usually’ (21.37 and 10.69% respectively), while economically active persons were significantly more likely to indicate the answer ‘rarely’ (15.27 and 12.98% respectively). Those with higher education were significantly more likely than those with secondary education to indicate that they consumed fast food infrequently (17.56 and 10.69% respectively). On the other hand, for the answer ‘mostly’, these people (in the question concerning the frequency of fast food consumption) did not differ significantly (16.03% each). For milk and milk products, yellow and blue cheeses, meat and meat products, vegetables and fruit, nuts and seeds, dried fruit and fruit and vegetable juices, the predominant responses regarding the frequency of their consumption when feeling sad were ‘rarely’ and ‘never’. Salty snacks were significantly more frequently ‘mostly’ and ‘always’ consumed by single women, compared to women in relationships (24.43 and 9.92% and 16.79 and 9.16% respectively). For products that are a rich source of sugar, such as sweets and chocolate and chocolate confectionery, the predominant answers in all the groups analysed were ‘mostly’ and ‘always’, indicating the frequency of their consumption. Single women were significantly more likely to say they consumed sweets (23.66 and 12.98% for ‘mostly’ and 21.37 and 10.69% for ‘always’, respectively) and chocolate and chocolate confectionery (24.43 and 11.45% for ‘mostly’ and 19.85 and 12.98% for ‘always’, respectively) compared to women in relationships. Students were significantly more likely than the economically active to report consumption of sweets (25.95 and 10.69% respectively for the response ‘mostly’ and 16.79 and 14.27% respectively for the response ‘always’) and chocolate and chocolate products (25.95 and 9.92% respectively for the response ‘mostly’ and 16.85 and 15.38% respectively for the response ‘always’). In contrast, people with a secondary education were significantly more likely to state that they 'usually' eat sweets and chocolate and chocolate products when feeling sad, compared to people with a higher education (20.61 and 16.03% and 19.08 and 16.79% respectively). In addition, those with a higher education were significantly more likely to state that they ‘always’ eat sweets and chocolate and chocolate products when feeling sad (19.85 and 12 21% and 20.61 and 12.21% respectively). Ice cream, when feeling sad, is significantly more often consumed by students, compared to the economically active (18.32 and 10.69% respectively for the answer ‘usually’ and 14.50 and 11.45% respectively for the answer ‘always’). In contrast, an interesting situation was observed in the breakdown by education. Women with a higher education most often chose two opposite statements. Compared to those with a secondary education, they were significantly more likely to answer ‘rarely’ (21.37 and 12.21% respectively) and at the same time significantly more likely to answer ‘always’ (16.79 and 9.16% respectively), while no significant differences were observed for the answer ‘mostly’ (14.50% each).

Table 5.
Feeling of sadness and frequency of food consumption

Statements	Marital status			Occupational status			Education			Mean score (rank) ±SD
	Chi2	df	p*	Chi2	df	p	Chi2	df	p	
Bread, cereal and cereal preparations	12.16	3	**0.01**	22.41	3	<**0.01**	14.80	3	<**0.01**	2.18±1.28
Milk and milk products	8.48	3	**0.04**	25.26	3	<**0.01**	9.20	3	**0.03**	2.00±1.21
Yellow cheese. Blue cheese	28.22	3	<**0.01**	26.57	3	<**0.01**	14.65	3	<**0.01**	1.88±1.33
Meat, sausages, cold cuts	28.69	3	<**0.01**	36.64	3	<**0.01**	35.69	3	<**0.01**	1.91±1.35
Fast food. e.g. pizza, hot dogs, hamburger	18.63	3	<**0.01**	10.80	3	**0.01**	4.61	3	0.20	2.53±1.28
Salty snacks, e.g. chips, finger foods	19.10	3	<**0.01**	4.71	3	0.19	7.04	3	0.07	2.65±1.18
Vegetables and fruit	20.02	3	<**0.01**	28.44	3	<**0.01**	9.22	3	**0.03**	1.15±1.18
Nuts, seeds, e.g. sunflower, pumpkin, etc.	5.41	3	0.14	19.37	3	<**0.01**	9.56	3	**0.02**	1.89±1.22
Dried fruit	23.99	3	<**0.01**	26.46	3	<**0.01**	6.26	3	0.10	1.68±1.37
Fruit and vegetable juices	14.61	3	<**0.01**	16.99	3	<**0.01**	4.85	3	0.18	2.13±1.25
Sweetened fizzy drinks	4.73	3	0.19	2.46	3	0.48	4.96	3	0.17	2.18±1.43
Sweets, e.g. cakes, biscuits, bars, sweets	26.23	3	<**0.01**	32.32	3	<**0.01**	19.25	3	<**0.01**	2.85±1.08
Chocolate and chocolate products	18.08	3	<**0.01**	29.06	3	<**0.01**	9.94	3	**0.02**	2.87±1.08
Ice cream	5.82	3	0.12	14.05	3	<**0.01**	12.41	3	**0.01**	2.58±1.21

Source: own elaboration based on survey results.

Eating under the influence of emotion is an important part of perpetuating poor eating behaviour. The strongest motivation to eat occurs when experiencing negative emotions (Devonport et al., 2019). Under the influence of anger, women are able to eat more than when feeling sadness or fear, in order to reduce uncomfortable sensations. Emotions of high intensity trigger the consumption of less food, while slight intensity of feeling depressed or bored stimulates reaching for larger amounts of food. The desire to consume more food is found in both people with eating disorders or obesity and healthy individuals (Konttinen, 2020; McKay et al., 2021; Macht, 2008). Eating restrictions result in frequent overeating as a reaction to depressed mood. In order to temporarily mask negative emotions, people often reach for their favourite foods to improve their mood (Finch, Cummings, Tomiyama, 2019). When negative emotions are experienced, the consumption of foods high in sugars and perceived to be palatable helps to reduce the emotions felt (e.g. stress), especially by those characterised by an emotional eating style. One of the most popular and best-associated foods consumed to regulate emotions is chocolate. For normal-weight individuals, eating chocolate reduces the time to experience negative emotions to 3 minutes (Szczygieł, Kadzikowska-Wrzosek, 2014). Standen et al. (2022) suggested that high fat or sugar content is not necessary for food to be pleasurable and protective against stress. Although it is assumed that food intake is abundant in these states, especially foods rich in energy, fat and sugar, it is worth asking whether all food consumed in the states mentioned is unhealthy. For example, fruits and vegetables, including dried ones, also contain significant amounts of sugar and thus, in addition to relieving stress, may have positive effects due to their

content of dietary fibre and other antioxidant substances and may have a strong preventive effect (Pano et al., 2022).

After dividing the female respondents into groups of low, medium and high consumption of products when feeling emotions such as happiness and sadness, it was observed that in the group in which marital status was the criterion for dividing women, single women reported moderate consumption of the food groups indicated in the survey questionnaire. Among women who were in relationships, those who had a high intake of food groups when feeling happiness and a moderate intake when feeling sad predominated (Table 6). The group of female respondents, divided by occupational status and education, was dominated by those with moderate food intake when feeling emotions such as happiness and sadness (Table 6). Based on the results obtained from the Mann-Whitney U test, no significant differences were observed for the level of food intake accompanying feelings of happiness due to education and accompanying feelings of sadness due to the marital status of the respondents (Table 7).

Table 6.
Level of food intake when feeling emotions: happiness and sadness

Dividing criteria	Level of intake	[%] women for level of intake for emotion happiness	[%] women for level of intake for emotion sadness
Single women	Low	3.80	18.99
	Moderate	70.89	53.16
	High	25.31	27.85
Women in a relationship	Low	9.62	11.54
	Moderate	42.31	59.61
	High	48.07	28.85
Professionally active	Low	8.77	8.78
	Moderate	47.37	57.89
	High	43.86	33.33
Studying	Low	4.05	21.62
	Moderate	68.92	54.05
	High	27.03	24.33
Secondary education	Low	3.57	21.43
	Moderate	69.64	57.14
	High	26.79	21.43
With higher education	Low	8.00	12.00
	Moderate	52.00	54.67
	High	40.00	33.33

Source: own elaboration based on survey results.

Table 7.
Influence of marital status, professional activity and education on the level of food intake when experiencing emotions: happiness and sadness

	Level of intake for emotion happiness		Level of intake for emotion sadness	
Single women	33976.50[1]	15241.50[3]; 2.944[4]; **0.003**[5]	45546.00	17343.00; 1.037; 0.299
Women in a relationship	43444.50[2]		31875.00	
Professionally active	36099.00	16956.00; 2.160; **0.030**	36873.00	15795.00; 2.853; **0.004**
Studying	41322.00		40548.00	
Secondary education	31300.50	17104.50; 1.611; 0.107	29928.00	15732.00; 2.843; **0.004**
With higher education	46120.50		47493.00	

Explanatory notes: Mann-Whitney U-test; [1,2] sum of the ranks; [3] U; [4] Z; [5] *p*.

Source: own elaboration based on survey results.

4. Conclusions and future perspectives

Please put here the acknowledgements for private individuals or institutions that contributed significantly to the publication, as well as information about the projects, in which the article was created. This section is optional and can be omitted by the author

Emotions are a normal human experience and everyone can learn to manage them. Emotions affect consumers' food preferences at a given time, and when replicated over the long term, they develop into a habit. The present study showed that the type of emotion had an impact on eating behaviour in the group of women studied. Respondents consumed fruits and vegetables and dairy products when feeling positive emotions (happiness), and consumed sweets, salty snacks and alcohol when feeling negative emotions (sadness). When feeling extreme emotions (happiness and sadness), the surveyed group of women, regardless of marital status, occupational activity and education level, when feeling happiness preferred healthy snacks in the form of fruits and vegetables, and when feeling sadness consumed snacks containing a significant amount of added sugars: candy, ice cream, chocolate and chocolate products. Our study showed that the frequency of food consumption under the influence of emotion may depend on education, marital status and professional status. In addition, it was found that women who were in relationships and women with a higher education status consumed foods at high and then moderate levels when feeling happiness and sadness. Cereal products and sweets dominated among the foods consumed. Single women, regardless of the emotions felt (happiness and sadness), consumed food at a low level, followed by moderate levels.

In addition to physiological, economic and socio-cultural factors, psychological factors also have an important influence on the formation of eating behaviour. The conducted research adds to the knowledge of human eating behaviour by taking into account psychological factors. The phenomenon of uncontrolled/emotional consumption of food can turn into compulsive eating, and this in turn can lead to food addiction and directly affect the development of metabolic diseases of nutritional origin: overweight, obesity, insulin resistance, type 2 diabetes, hypercholesterolaemia, atherosclerosis, hypertension or ischaemic heart disease. Long-term exposure to stress factors can affect not only growth, but also inhibition of appetite, which also leads to eating disorders.

Acknowledgements

The publication was co-financed from a subsidy granted to the Maritime University of Gdynia - Project number: WZNJ/2023/PZ/1.

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