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PRACA ORYGINALNA
ORIGINAL PAPER

Assessment of the frequency of eating disorders among adolescents aged 13–19 residing in the Silesian Voivodeship

Ocena częstości występowania zaburzeń odżywiania u nastolatków w wieku 13–19 lat zamieszkujących województwo śląskie

Bartłomiej Palmowski, Piotr Romaniuk, Wiktoria Ficoń

Department of Health Policy, Faculty of Public Health in Bytom, Medical University of Silesia, Katowice, Poland

ABSTRACT

INTRODUCTION: Today's food products undergo continual technological progress in their production and processing. The development of knowledge about food – which should be healthy, varied, and able to be prepared quickly – it can be constantly improved upon and developed. However, this development also brings about eating disorders (EDs). One's social environment can also lead to the occurrence of EDs and the perception of one's figure. One of the greatest impacts comes from social media and the so-called influencers who shape people's body image. The aim of the study was to assess the frequency of EDs and knowledge about the type of EDs among adolescents aged 13–19 living in the Silesian Voivodeship. The research hypotheses were that the frequency of EDs is low and knowledge about them is high.
MATERIAL AND METHODS: A study of the frequency of EDs and knowledge about EDs among the 13–19-year-old population living in the Silesian Voivodeship was conducted between May and June 2023 on a representative group of 400 people. The sample included both males and females. The study used an original online survey.
RESULTS: Among the respondents who declared having knowledge of EDs, the highest number reported familiarity with anorexia. Only 4% stated that they were currently experiencing an ED for the first time, while 16% had struggled with an ED for the second time. Among individuals with EDs, as many as 79% did not consult a dietician; the remainder did not follow the prescribed diet plan.
CONCLUSIONS: The results of the research show that the hypotheses of a low incidence of EDs and a high level of knowledge about EDs was correct. In order to reduce the incidence of EDs and increase knowledge about them, nutritional education and information campaigns on EDs and their treatment should be introduced.

KEYWORDS

adolescents, eating disorders, frequency, knowledge, environmental influence

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Address for correspondence: Bartłomiej Palmowski, Zakład Polityki Zdrowotnej, Wydział Zdrowia Publicznego w Bytomiu ŚUM, ul. Piekarska 18, 41-902 Bytom, tel. +48 32 397 65 21, e-mail: s83734@365.sum.edu.pl

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STRESZCZENIE

WSTĘP: Współczesne produkty spożywcze podlegają ciągłemu postępowi technologicznemu w zakresie produkcji i przetwarzania. Rozwój wiedzy o żywności – która powinna być zdrowa, urozmaicona i łatwa w przygotowaniu – pozwala na jej ciągłe doskonalenie. Jednak rozwój ten prowadzi także do zaburzeń odżywiania (*eating disorders* – EDs). Również środowisko społeczne może wpływać na występowanie EDs i postrzeganie własnej sylwetki. Jednym z największych źródeł wpływu są media społecznościowe i tzw. influencerzy, którzy kształtują obraz ciała. Celem badania była ocena częstości występowania EDs oraz wiedzy na temat rodzajów EDs u młodzieży w wieku 13–19 lat zamieszkującej województwo śląskie. Hipotezy badawcze zakładały niską częstość występowania EDs i wysoki poziom wiedzy na ich temat.

MATERIAŁ I METODY: Badanie częstości występowania EDs oraz wiedzy na temat EDs w grupie wiekowej 13–19 lat prowadzono w okresie od maja do czerwca 2023 r. na reprezentatywnej grupie 400 osób zamieszkujących województwo śląskie. Próba obejmowała zarówno mężczyzn, jak i kobiety. W badaniu wykorzystano autorską ankietę internetową.

WYNIKI: Wśród respondentów, którzy zadeklarowali znajomość EDs, najwięcej zgłosiło znajomość anoreksji. Tylko 4% zadeklarowało, że po raz pierwszy doświadcza ED, natomiast 16% zmagało się z ED po raz drugi. Wśród osób z EDs aż 79% nie konsultowało się z dietetykiem; pozostałe nie stosowały się do zaleconej diety.

WNIOSKI: Wyniki badań potwierdzają prawdziwość hipotez o niskiej częstości występowania EDs i wysokiej wiedzy na ich temat. W celu zmniejszenia częstości występowania EDs i zwiększenia wiedzy na ich temat należy wprowadzić edukację żywieniową oraz kampanie informacyjne dotyczące EDs i ich leczenia.

SŁOWA KLUCZOWE

młodzież, zaburzenia odżywiania, częstość występowania, wiedza, wpływ środowiska

INTRODUCTION

Today's food products enjoy continual technological progress in their production and processing. With the development of knowledge about food, it can be constantly improved upon and developed. In fact, all methods used today serve to improve the sensory characteristics, nutritional values, and shelf life of food products, and even allow for so-called "modified food." As a result, food should be healthy, varied, and able to be prepared quickly. However, there is a problem here, in that the limitations in available time and willingness brings about the increasingly frequent use of fast-food chains or restaurants. One social group is people who want to improve their image by eating properly selected and modified foods [1] as well as by eating precisely defined amounts, which does not always meet the nutritional requirements of the body. Such a model of food consumption can lead to pathological consumption.

Eating disorders (EDs) of various types are also a contemporary phenomenon posing a challenge to public health care systems. According to Nelson's research, bulimia affects 0.1–1.4% of men and 0.3–9.4% of women [2]. Other studies from the 1980s show that, even then, the incidence of anorexia was 0.1–5.7% among teenage girls in Western countries [3]. Numerous studies show that there are many factors behind EDs. They may be caused by biological, psychological, behavioral, and even social and cultural phenomena [1]. In the youngest group, the most important role is played by the family and social environment, while in adolescence it is the changes occurring in the hormonal system and the influence of peers [4,5].

Social media platforms such as Instagram, Facebook, and others also have a very clear impact on one's perception of oneself and one's body image. As Suma [6] writes, "[s]ocial media portals have begun to act as transmitters of information, and have undoubtedly also begun to create certain trends and fashions. They have become an entertainment tool in themselves, offering interesting ways of spending free time." There is a kind of body cult among today's youth. Currently, what counts is one's figure, degree of muscle tone, and amount of body fat. Although the above-mentioned determinants can be considered positive, some people (especially sensitive ones) may take these determinants too seriously, and as a result, they may take radical steps to "finally please others," which can result in the emergence of eating behaviors that bear signs of pathology. This risk is even greater because "the so-called influencers play a very important role in creating an online image," as noted by Andrzejewski [7]. It is also worth mentioning that these influencers are often sponsored by corporations that benefit from the dissemination of specific behavioral patterns among the consumers of their products [7]. It is also common practice to use special computer-applied filters to make their photos or videos look perfect and to emphasize or create a perfect figure. Thus, striving to imitate unrealistic patterns leads to pathologized behavior of the recipients of online content. EDs are thereby becoming a serious health problem, especially among young people, which requires attention and action from public policies.

Eating disorders

EDs are disease entities most often characterized by appetite and food intake disorders. In this way, they can

be defined as pathological behaviors that focus on increasing or decreasing one's body weight. According to the World Health Organization (WHO) and the Tenth Revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10), they are classified as mental disorders.

Types of eating disorders

The ICD-10 distinguishes nine disorders: F50 – anorexia nervosa, F50.1 – atypical anorexia nervosa, F50.2 – bulimia nervosa, F50.3 – atypical bulimia nervosa, F50.4 – overeating associated with other psychological factors, F50.5 – vomiting associated with other psychological factors, F50.8 – other eating disorders, and F50.9 – eating disorders, unspecified. However, the most socially recognizable eating disorders are anorexia, bulimia, orthorexia, and compulsive overeating.

Anorexia

Anorexia is defined as anorexia nervosa, a chronic disorder characterized by intentional weight loss, which is maintained by the person [8]. This disease is also manifested by a fear of gaining weight and the consequent emergence of obsessive thoughts about reducing body weight, basically without limit [8]. Emotional factors are dominant in this disease. They can arise through excessive demands from one's social environment [9]. According to ICD-10, the criteria for anorexia are intentional weight loss, a reluctance to gain weight during development, a refusal to maintain the lowest body weight for one's age, a strong fear of gaining weight, and disturbance in body perception [10]. Complications of anorexia nervosa include emaciation, undesirable changes in the central nervous system (difficulty concentrating, epilepsy, and cortical atrophy), disorders in the cardiovascular system, loss of muscle strength, and inhibition of the development of the reproductive system [11].

Bulimia

Bulimia, also known as bulimia nervosa, is characterized by the consumption of a large amount of food (and therefore calories) in one sitting and then taking action to reduce weight by, for example, inducing vomiting [9]. Risk factors for this disease may include both stress and one's social environment. These patients care about being attractive in terms of their figure, which is why they reach for methods to get rid of fat tissue. There are two types of bulimia. The first is the purging type, using laxatives or inducing vomiting. The second is the non-purging type, using fasting or very intensive physical exercise [9,12]. Complications of bulimia may include circulatory system disorders, electrolyte deficiencies, low levels of micro- and macroelements, disorders in the reproductive system, and disorders in the nervous system [13,14].

Orthorexia

Orthorexia, also known as orthorexia nervosa, is a term that was introduced by Sven Bratman relatively recently – in 1997 in the magazine *Yoga Journal* [15]. It involves following a diet that is very rigorous in terms of health. Such people give up "new food" and food containing preservatives or dyes, instead choosing purely organic products and food that is not genetically modified [16]. In addition to choosing healthy, natural products, these people often choose healthy methods of preparing meals, plan their diet in advance [17], and eat at strictly defined times [18]. In addition, there is frustration and a sense of guilt when these activities are disrupted or unfulfilled [19,20].

Compulsive overeating

Compulsive overeating is a disease characterized by the uncontrolled consumption of large amounts of food. The aim is to satisfy one's emotions, alleviate stress, or even cut oneself off from the problems of the outside world [21]. In the ICD-10, it is marked as "F50.4 – overeating associated with other psychological factors" [22]. The etiology of the disease is given as the lack of an appropriate "ability to cope with one's own problems and experiences" [21]. Observations have also confirmed that compulsive overeating runs in families andthat this is based on so-called imitation [23]. Looking closely at the classification of this condition in the ICD-10, it should be noted that in order to diagnose compulsive overeating, all of the following symptoms must appear:

– episodes of overeating that are not the result of hunger, combined with a lack of compensatory behaviors
– a strong urge to eat (especially during stress, sadness, and bad mood)
– a lack of inhibition and self-control over consumption in terms of quantity and quality
– difficulty interrupting an ongoing attack [22].

The most noticeable differences between compulsive overeating and bulimia are the initiating factor (in the case of compulsive overeating, it is often emotional arousal) and the use of tools for inducing vomiting (only in the case of bulimia) [21].

Body image and its determinants

Self-esteem about one's own body is one of a person's most important characteristics. Polish researcher Kulas [24] defined self-esteem as "a set of various judgments and opinions that an individual applies to himself. These judgments and opinions may concern both the current characteristics of the

individual and his potential capabilities." Body image is particularly important among adolescents. It is at this time that the greatest importance is attached to appearance [25]. The environment in which one finds oneself has a significant impact on one's body image. It is influenced by family, cultural considerations, peer group, traditional and social media, and psychological conditions.

Family

The attitudes that are emphasized, especially by parents when raising a child, form patterns of behavior that will be used by the child later in their lives [26]. In addition, the family shapes various health attitudes, informs children about health and diseases, and teaches hygiene and pro-health attitudes, as well as, unfortunately, anti--health attitudes [27]. Using their health competences, parents also shape the child's body image by creating opinions [28].

Culture

Different countries are characterized by their own culture. Following this line of reasoning, it can be observed that in Western countries, the emphasis on a slim figure dominates, while in countries in the east of Europe, being overweight is preferable to being slim; in these countries obesity is more accepted in society [29,30]. African American women also accept their bodies more, and even prefer a larger mass than Caucasians of the same age [30]. However, this is not a permanent element of culture and is constantly changing.

Peer group

Among young people, peers also play a significant role in shaping a person's body image. While some peers will not pay much attention to other people, others will either support or ridicule the other person. An obese person is often exposed to stigmatization and humiliation. For a child's mental health, this is a very difficult experience often associated with negative stereotypes [31].

Social media

In the modern world, almost everyone has contact with social media such as Facebook, Instagram, Snapchat, or TikTok. On these platforms, a lot of content promotes a perfect appearance and ideal body weight. Children and adolescents who visit these sites may come across such content. By absorbing it, a person may start to believe in the message and to treat what they have seen as the truth. Influencers, who are to a large extent celebrities or athletes, are very active on Instagram and, thanks to their fame, they are seen as idols and role models and their fans start to take their message seriously. Lesser-known or even completely unknown people also publish content on their profiles, in which they encourage people to change their figure or even their overall image and behavior. To build recognition, often all that is needed is a catchy name and appearance. "Idealized, often excessively slim women, beautified by plastic surgeons, are considered the queens of Instagram," notes Andrzejewski [7].

Treatment of eating disorders

EDs are most often psychological diseases and they have negative health consequences. They should be treated by doctors, psychotherapists, and experts in nutrition. Dieticians play a major role in this, not only to guide the patient in proper nutrition, but also to help them overcome inappropriate weight and improper nutritional status and to maintain proper condition after therapy. Treatment of these disorders is time--consuming and long-term [32].

Treating anorexia

In the treatment of anorexia, the main role is played by nutritional and psychological treatment. The patient should be brought to a body weight that is appropriate to the age and anthropometric characteristics of the person. One of the formulas that can be used to calculate the correct body weight is Broca's formula, which assumes that the ideal body weight in kilograms is a person's height in centimeters minus 100. In some cases of extreme malnutrition, nasogastric feeding is necessary [32]. If the malnutrition is not yet extreme, some recommendations for natural nutrition suggest using an individual plan based on three main meals and three snacks [33]. Psychotherapeutic treatment is also an important part of hospitalization. This method uses both individual and group therapy methods, e.g., with the person's family [34]. Special medications are also often used, both those that stimulate appetite and antipsychotics, such as olanzepin [32]. Appetite stimulants include cannabinoids, opiates, and tetrahydroxycannabinol, but different studies have reported different effects of these agents [35]. Another important step is to correct water and electrolyte imbalances that accompany this disease [36].

Treating bulimia

The treatment of EDs such as bulimia is difficult and long-term. It must be coordinated between a doctor, a psychologist, and a dietician and should consist of psychological, nutritional, and pharmacological treatment [36]. The initial stage should be to compensate for electrolyte imbalances and to protect against dehydration. Psychotherapy plays an important role here [37]. It should be a psycho-behavioral therapy [38], which allows the therapist to get to know the

patient and create an individual approach to them. It is also important because it allows for work on the patient's emotions and can significantly reduce those that lead to bulimia [39]. In this disorder, pharmacotherapy should also be used, with the aim of reducing the psychological aspect of bulimia. For this purpose, antipsychotic and antidepressant drugs are used [36]. On the other hand, the task of the dietician is to restore an appropriate body mass index (BMI), compensate for any nutritional deficiencies – including macro- and microelements [36] – and to normalize body weight and discontinue the patient's current activities [40].

Treating orthorexia

The treatment of orthorexia is primarily based on a diet that is properly composed by a dietician and aims to supplement all deficiencies [16]. In this ED, as in others, diet therapy is not sufficient. Therefore, psychological treatment and/or pharmacological treatment should also be used. Pharmacological treatment includes selective serotonin reuptake inhibitors; "however, there is a certain dissonance in the pharmacological treatment of patients with orthorexia: if a given person has an obsession with the purity and naturalness of the diet, they may be terrified by the need to introduce artificial substances, such as drugs, into the body," as noted by Dittfeld et al. [18].

Treating compulsive overeating

The treatment of compulsive overeating is based on diet therapy, psychotherapy, and pharmacotherapy. Psychological treatment plays a huge role here, aiming to reduce the psychological factor of this disease, thus reducing the psychopathological ED [41]. Self--treatment, i.e., self-medication using educational materials, also plays an important role here [42]. Pharmacotherapy involves the use of drugs that can reduce or even completely eliminate the psychological causes of the disease. The basic drug classes are antidepressants, antiepileptics, and anticonvulsants.

Assumptions and goals of the work

The aim of the study was to assess the frequency of EDs and the knowledge about types of EDs among adolescents aged 13–19 living in the Silesian Voivodeship.

This objective was supplemented by the following specific objectives:

– Obtaining information on the occurrence of EDs among respondents
– Determining the knowledge about types of EDs among respondents
– Determining whether there have been any changes in body image
– Determining whether one's BMI value can contribute to one's body image
– Determining whether changes in body image may be conditioned by one's social environment.

The following null hypotheses were adopted in the study:

– The frequency of EDs does not exceed 25% of the study group.
– Knowledge about EDs is at a high level, above the established threshold of 1.5 points.

MATERIAL AND METHODS

This study to assess the frequency of EDs and the knowledge about EDs among the 13–19-year-old population living in the Silesian Voivodeship was conducted in May–June 2023 on a group of 400 people. The sample consisted of both males and females. Silesian Voivodeship – a unit of local government and an administrative division of Poland – has an area of 12,333.09 km². According to data from Statistics Poland for 2022, it is inhabited by approximately 4,346,702 inhabitants, of which 429,949 (220,007 boys and 209,942 girls) fall within the range of the study population.

All respondents completed a survey consisting of six demographic questions and 24 main questions:

– about the respondent's perception of their figure
– about their intention to change their body weight
– to check whether this goal has been achieved
– to determine whether their social environment can influence their perception of their body
– to verify their knowledge of EDs
– to determine whether they are currently struggling with any EDs.

A convenience sample was used. Respondents were recruited through a link to the survey distributed on the social networking platform Facebook among youth groups living in the Silesian Voivodeship and through a circle of friends who had family members meeting the criteria. The data were analyzed using Microsoft Excel, using the following statistical methods: sum, average, minimum, maximum, Cramer's V contingency coefficient (used to determine the strength of the relationship between qualitative variables), the coefficient Chi-square, and the p-value for the Chi--square test.

In order to determine the respondents' knowledge about EDs, the following score thresholds were used:

– Low level of knowledge: less than 0.5 points
– Average level of knowledge: 0.6–1.5 points
– High level of knowledge: over 1.5 points
– Incorrect definition: N% * 1
– Correct definition: N% * 2.

RESULTS

The largest percentage were females (77%; n = 309), while 2% of the respondents did not want to provide their gender (Figure 1).
The largest age group was 19-year-olds (26%; n = 102) and the second largest group was people aged 16 (23%; n = 93; Table I).

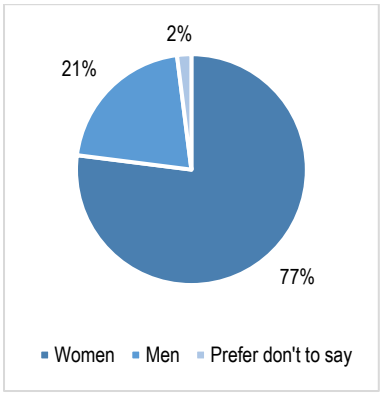

Fig. 1. Gender of respondents.

Table I. Age of respondents

Age of respondents (years)	Number of people	N (%)	Min/Max	Mean
13	3	1%		
14	19	5%		
15	65	16%		
16	93	23%	13 years/ 19 years	16.94 years
17	51	13%		
18	67	17%		
19	102	26%		

The height of the respondents was in the range of 135 cm to 200 cm. Only 1% (n = 4) of the study group was taller than 191 cm, while 78% (n = 312) were between 161 and 191 cm tall (Figure 2).

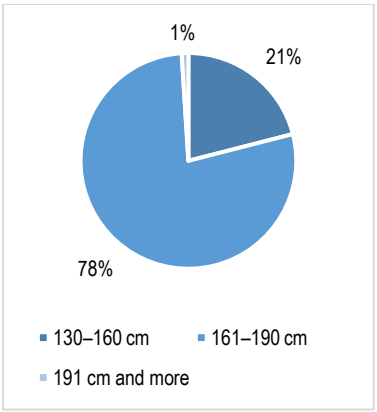

Fig. 2. Respondents' growth.

The body weight of the respondents ranged from 34.5 to 120.4 kg. The largest number of people (55%) weighed between 34 kg and 60 kg. Only 3% (n = 10) had a body weight greater than 91 kg (Figure 3).

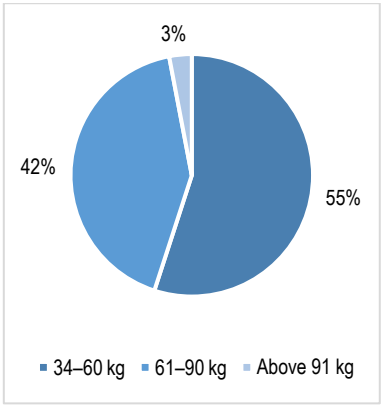

Fig. 3. Body weight of respondents.

The BMI and percentile index among the respondents varied. There were people with a normal BMI/percentile (64%), as well as those below the 10th percentile and with BMI below 18.4 kg/m^2 and those above the 90th percentile and a BMI above 25 kg/m^2 (Figure 4).

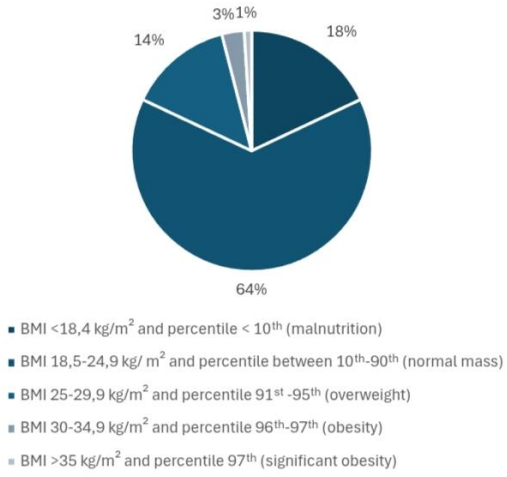

Fig. 4. Body mass index (BMI) and percentile of respondents.

The most common place of residence for respondents (41%; n = 165) was a city with more than 100,000 inhabitants. The smallest percentage (13%) of respondents came from towns with 50,000 to 100,000 inhabitants (Figure 5).
Seventy-one percent (n = 286) of the respondents indicated high school as their level of education. The smallest number (2%; n = 6) attended a vocational/trade school (Figure 6).

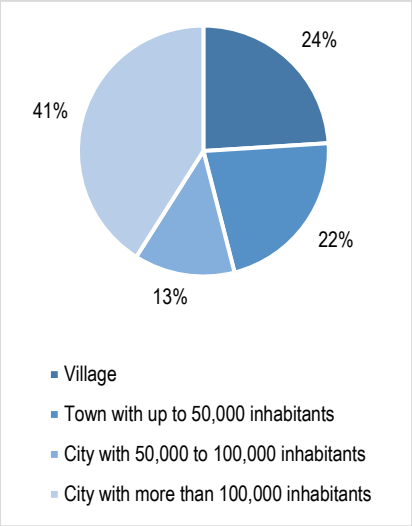

Fig. 5. Respondents' place of residence.

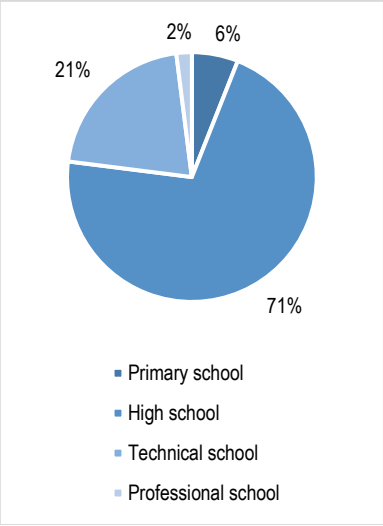

Fig. 6. Respondents' place of study.

Among all respondents with a normal BMI between 18.5 kg/m^2 and 24.9 kg/m^2 and between the 10th and the 90th percentiles, as many as 140 respondents (54%) considered their body shape to be appropriate. However, among the other respondents, only 30 (21%) considered their body shape appropriate (Table II).

Among the 140 respondents with a normal BMI who were positioned between the 10th and 90th percentiles and considered their body shape to be inappropriate, 66% (n = 92) considered themselves overweight, while only one person considered themselves underweight (Table III).

Table II. Respondents' perception of their body shape in relation to body mass index (BMI)/percentile

Figure based on BMI, WHO percentile charts, and OLA and OLAF studies	Number of people	N (%)	Respondent's perception of body shape	Number of people	N (%)
Appropriate	256	64%	appropriate	116	46%
			inappropriate	140	54%
Inappropriate	144	36%	appropriate	30	21%
			inappropriate	114	79%

WHO – World Health Organization; OLA – percentile grids for girls; OLAF – percentile grids for boys.

Table III. Perception of body shape by respondents with a normal body mass index (BMI)/percentile

Perception of body shape by respondents with a normal BMI who were between the 10th and 90th percentiles and considered their body shape to be inappropriate	Number of people	N (%)
Underweight	1	1%
Skinny	40	29%
Overweight	92	66%
Obese	7	5%

Of the 114 respondents who were aware that their body shape was abnormal based on BMI, the WHO percentile charts, and the percentile grids for girls (OLA) and for boys (OLAF) studies, 38 people indicated their body shape as thin, while the actual BMI and percentile indicated underweight. However, one person indicated their body shape as underweight, with the BMI/percentile indicating significant obesity. In the analysis of the relationship between the actual abnormal BMI/percentile and the perception of one's body shape, the p-value for Chi-square (105.4) was -0.000, which means that the relationship was statistically significant. The contingency coefficient was strong (Table IV).

Among the respondents with a BMI/percentile indicating a normal body mass, 98 perceived their figure as good (on a five-point scale) and 13 respondents as bad. Among the respondents with significant obesity, only one person perceived their figure as very good. The p-value for Chi-square (42.2584) was 0.0004, which means that the relationship was statistically significant; however, the strength of the relationship was weak, as indicated by the value of Cramer's V (Table V).

Table IV. Perception of body shape among respondents with abnormal body mass index (BMI)/percentile who considered their body shape inappropriate

Body shape according to BMI and percentile charts	Perception of body shape by respondents with abnormal BMI/percentile who considered their body shape to be inappropriate				Cramer's V	Correlation coefficient
	underweight	skinny	overweight	obese		
	number of people					
Underweight	2	38	12	2	0.56	strong
Overweight	0	1	42	4		
Obesity	0	0	4	6		
Severe obesity	1	0	0	2		

Table V. Perception of body shape by respondents on a five-point scale

Figure according to BMI and percentile charts	Perception of body shape					Cramer's V	Correlation coefficient
	1 (very bad)	2 (bad)	3 (neither bad nor good)	4 (good)	5 (very good)		
	Number of people						
Underweight	4	14	32	22	3	0.16	poor
Normal weight	13	41	81	98	23		
Overweight	5	20	19	9	2		
Obesity	3	3	4	1	0		
Severe obesity	1	1	0	0	1		

BMI – body mass index.

Among all respondents, 77% (n = 307) had intended to change their body weight in the past. Only 8% (n = 33) had no opinion (Figure 7).

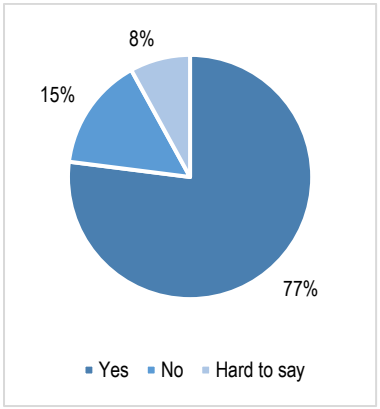

Fig. 7. Respondents' willingness to change body weight.

Of the 307 respondents who declared a desire to change their body weight, 86% (n = 264) wanted to lose weight, while only 43 people wanted to gain weight (Figure 8).

Among the respondents declaring the desire to change their body weight, only 36% (n = 112) achieved their intended goal (Figure 9).

Among the 64% of respondents who declared that they had not achieved their goal, the most common reason given was a lack of perseverance (n = 89), while the least common reason was a change of mind, which was declared by 19 respondents (Figure 10).

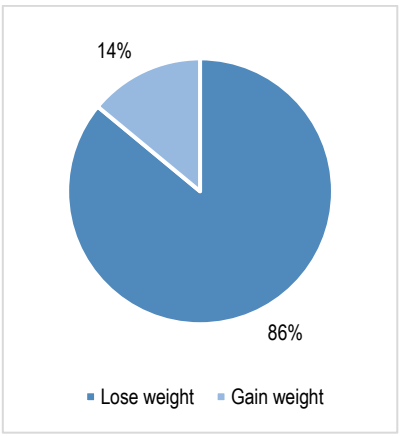

Fig. 8. Respondents' declaration regarding body weight change.

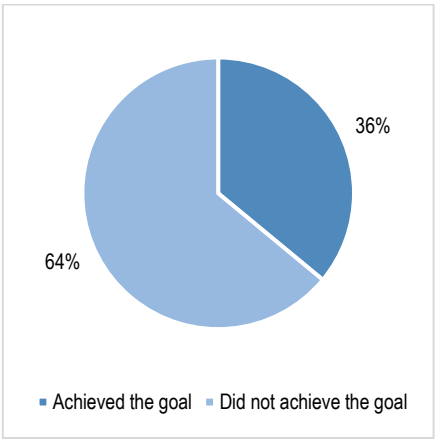

Fig. 9. Achievement of the respondents' goal to change body weight.

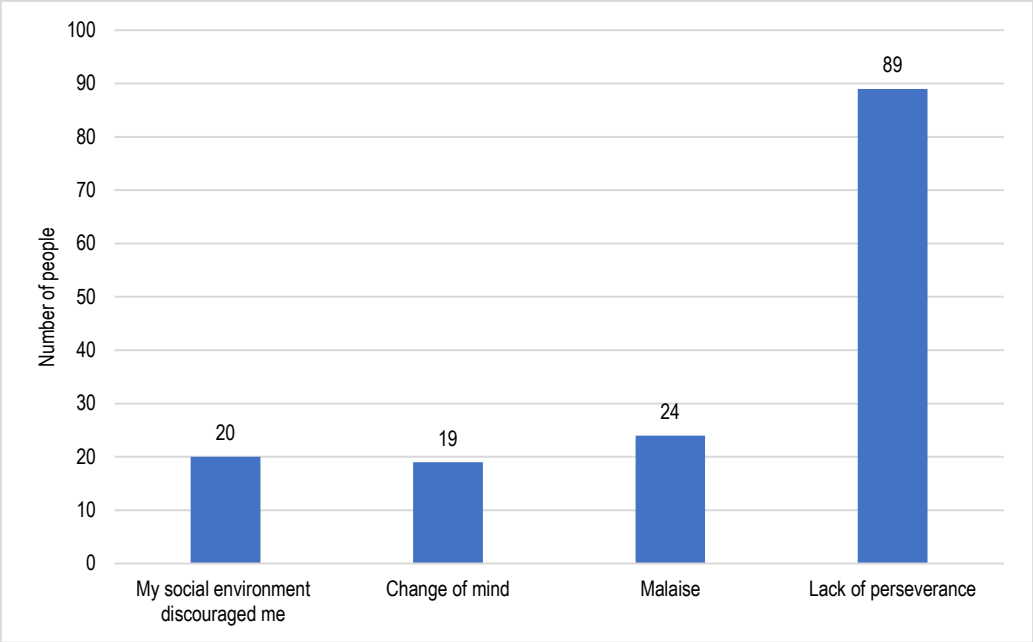

Fig. 10. Reasons for not achieving the goal.

Of all respondents, 94% (n = 378) declared that a person's social environment may influence their perception of their body shape (Figure 11).

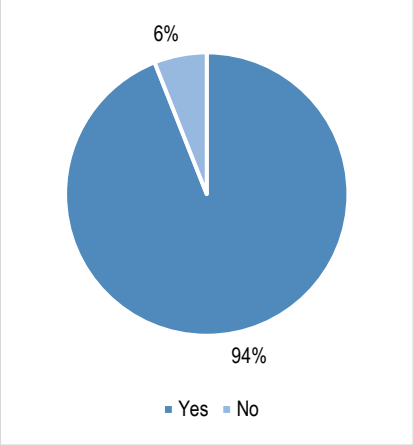

Fig. 11. Can one's social environment influence the perception of one's body shape?

Among the 378 respondents who claimed that a person's social environment has an impact on their perceived body shape, 40% (n = 152) claimed that the social environment has a positive impact to an average extent. On the other hand, a negative impact from the social environment was most commonly declared as very high (48%; n = 182; Table VI).

Table VI. Influence of one's social environment on the perception of one's body shape

Influence of one's social environment on the perception of one's body shape	Scale of influence	Number of people	N (%)
Positive	very low	34	9%
	low	76	20%
	medium	152	40%
	large	72	19%
	very large	44	12%
Negative	very low	9	2%
	low	11	3%
	medium	45	12%
	large	131	35%
	very large	182	48%

Among the 378 respondents who claimed that a person's social environment has an influence on their perceived body shape, 73% (n = 276) declared that they were subject to such influence, while 27% (n = 102) did not (Figure 12).

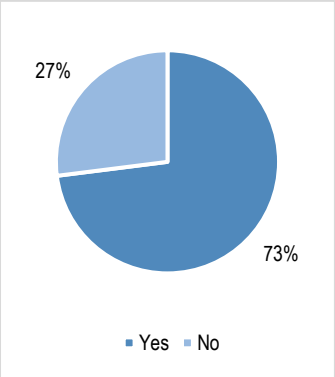

Fig. 12. Respondents influenced by their social environment.

Of the 276 respondents who reported being influenced by their social environment, 30% (n = 84) were influenced by social media. The second most common source of influence was family and friends (25% of responses for each option). Only one respondent (1.5%) experienced influence from traditional media (Table VII).

Table VII. Who or what influenced the respondents' body image

Who or what influenced the respondents' body image	Number of people	N (%)
Family	69	25%
Friends	70	25%
Social media	84	30%
Traditional media	1	1.5%
Pop culture	7	2.5%
Crush (girl/boy)	20	7%
Other	25	9%

Among all respondents, 84% (n = 337) were familiar with EDs. Only 16% (n = 63) declared that they were not familiar with EDs (Figure 13).

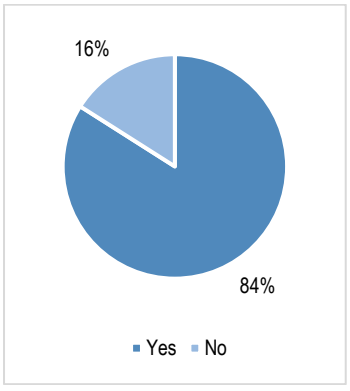

Fig. 13. Knowledge of eating disorders among respondents.

Among the respondents who declared having knowledge of EDs, the largest number (81.5%; n = 326) declared knowing about anorexia, followed by bulimia, which was declared by 318 respondents. The disorder least known among the respondents was orthorexia, which was declared by 95 respondents (Figure 14).

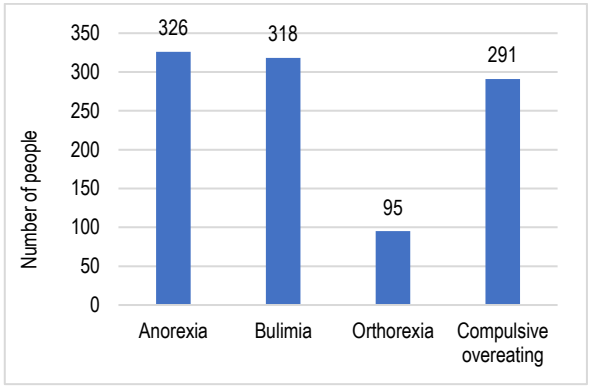

Fig. 14. Respondents' knowledge of individual eating disorders.

Among the 326 respondents who declared knowledge of anorexia, 54% (n = 177) provided the correct definition (Figure 15). The threshold score was 1.54 points.

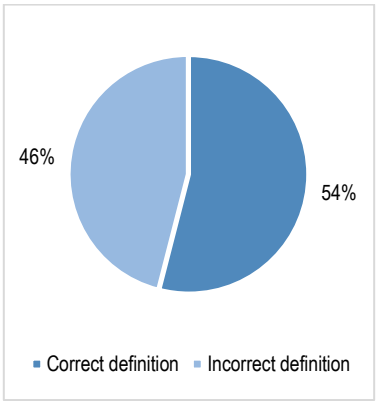

Fig. 15. Respondents correctly defining anorexia.

Of the 318 respondents who declared knowledge of bulimia, 85% (n = 269) provided the correct definition (Figure 16). The threshold score was 1.85 points.

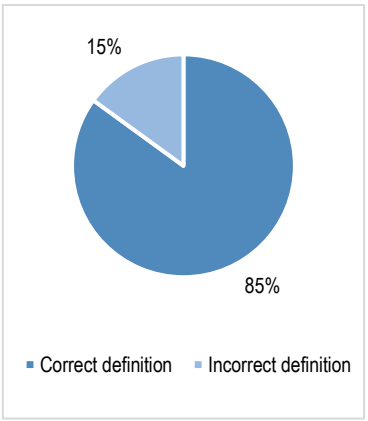

Fig. 16. Respondents correctly defining bulimia.

Among the 95 respondents who declared having knowledge of orthorexia, 96% (n = 91) provided a correct definition (Figure 17). The score threshold was 1.96 points.

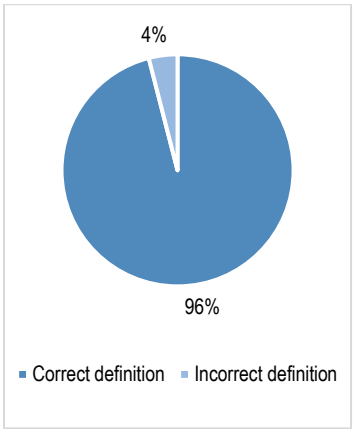

Fig. 17. Respondents correctly defining orthorexia.

Of the 291 respondents who declared having knowledge of compulsive overeating, 84% (n = 244) provided the correct definition (Figure 18). The score threshold was 1.84 points.

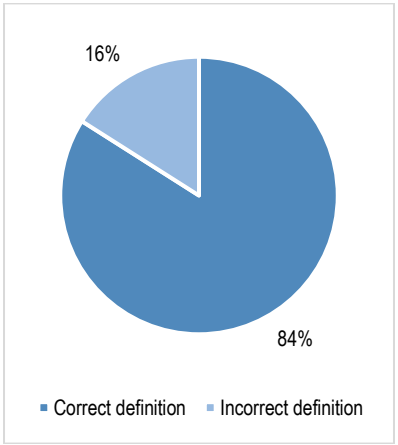

Fig. 18. Respondents correctly defining compulsive overeating.

Of all 400 respondents, 46% (n = 183) reported having never struggled with an ED. Only 4% (n = 15) reported that they were currently struggling with an ED for the first time, while 16% (n = 63) were doing so for the second time. In contrast, 21% (n = 86) did not know whether they were currently struggling with an ED (Figure 19).

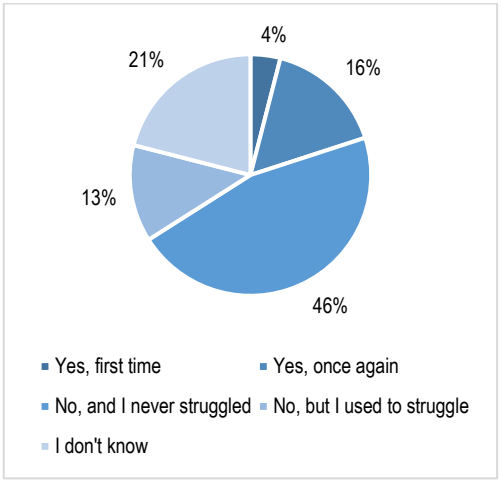

Fig. 19. Current eating disorders among respondents.

Among the respondents who currently had an ED, 44% (n = 34) suffered from compulsive overeating. The fewest (9%; n = 7) suffered from orthorexia (Figure 20).

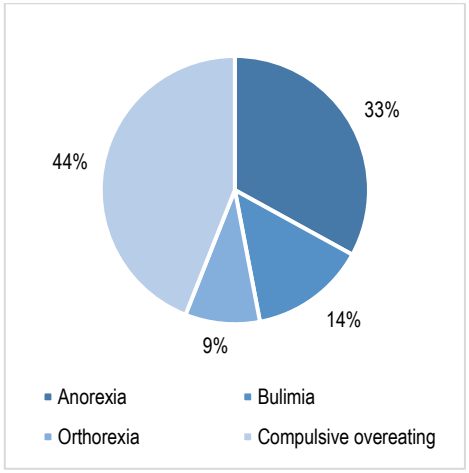

Fig. 20. Individual eating disorders among respondents.

Among the respondents currently with an ED, 77% (n = 60) had been struggling with it for more than one year. Only 9% (n = 7) had been struggling for less than six months (Figure 21).

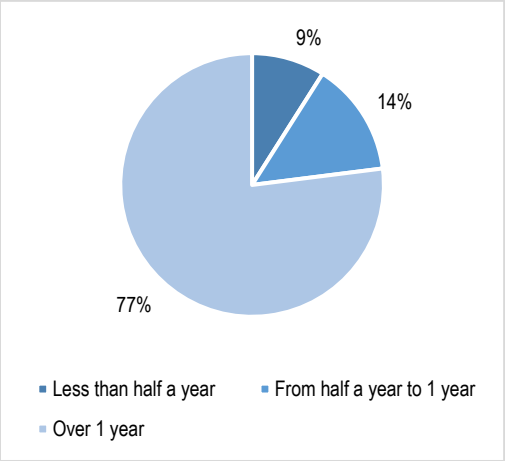

Fig. 21. Duration of eating disorders.

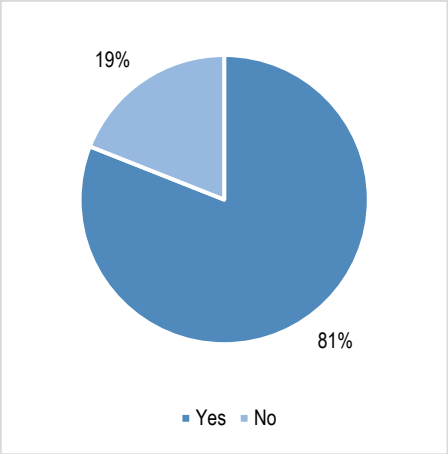

Fig. 23. Nutritional plans among respondents who consulted a dietician.

Among the respondents with EDs, 79% (n = 62) did not consult a dietitian (Figure 22).

Among those who received a nutritional plan from a dietitian, none followed it (Figure 24).

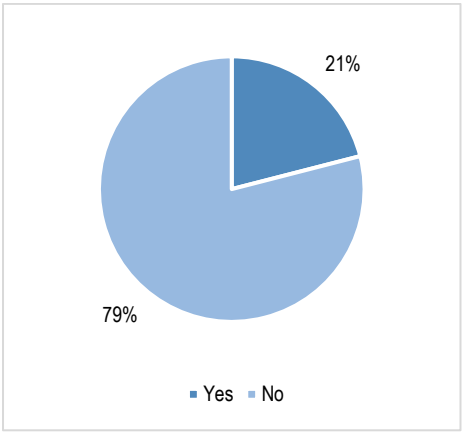

Fig. 22. Consultation with a dietician among respondents.

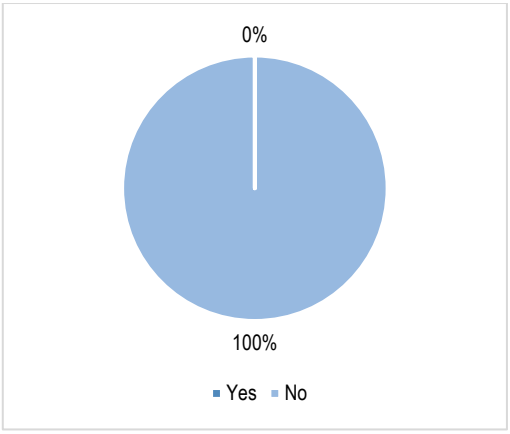

Fig. 24. Adherence to the assigned nutritional plan.

Of the 16 people who consulted a dietitian about their EDs, 81% (n = 13) received a nutritional plan (Figure 23).

The most common reason for not following the nutritional plans was the decision to quit, which was declared by seven people. The second reason (n = 6) was lack of motivation. Only two people declared that they had quit because the nutritional plan was too difficult (Figure 25).

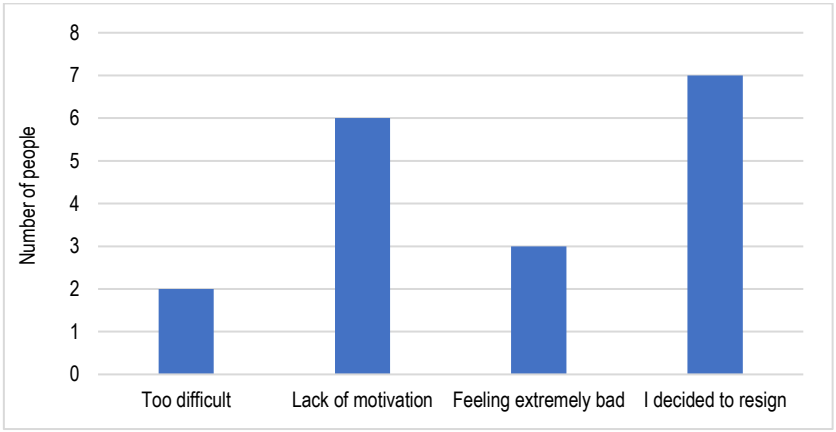

Fig. 25. Reasons for not following the nutritional plan.

DISCUSSION

EDs are a major problem today, affecting more and more people in society. Teenagers are particularly susceptible to them. These disorders have a negative impact on a person's health and functioning.

The study examined the frequency of EDs, the respondents' knowledge of ED terminology, and their perception of their body shape.

The research shows that regardless of gender, 20% of the adolescents were currently suffering from an ED. Similar results were obtained by Grajek et al. [43] in their work, in which they examined the frequency of EDs in a similar age range as that adopted in this study. The study involved 284 respondents (26% male and 74% female). They reported that 27% of the study group had an ED at the time, which is slightly above the adopted threshold of 25%. These differences are small, which may be related to the number of respondents or the period when surveys were distributed.

The problem of EDs is not limited to Poland, but also concerns other countries. Also, research conducted in Czechia by Duháčková [44] showed that of the total 82 respondents, EDs or their symptoms occurred in 18.4% of girls and 4.5% of boys, which is also a similar result to that of this study. During the COVID-19 pandemic, many people were forced to adopt a sedentary lifestyle due to lockdowns and the closure of many fitness clubs, gyms, and swimming pools, which could have contributed to the development of EDs or a greater tendency to suffer from them. The problem of restrictions was noticeable not only in Poland, but everywhere where the SARS-CoV-2 virus reached. A study by Napp et al. [45] showed that during the COVID-19 pandemic, the prevalence of ED symptoms in the study group was 17.12% among people aged 14–17, including 20.21% of girls and 13.7% of boys. The higher result among girls may be due to the desire to maintain or improve their pre--pandemic body weight despite not having access to the activities they took part in before the pandemic. Also, the lockdowns during COVID-19 brought a lot of uncertainty, stress, and social isolation, which could lead to an increased risk of EDs in women who are more sensitive.

Our research has shown that the majority of respondents perceive their body shape as very good or good – a positive finding in today's society, which is often bombarded with various insults and the trend of fitting in with others. Similar results were reported by Dymkowska-Malesa [46], in which 36.3% of the 56 respondents were satisfied with their figure. Such results may be related to puberty, when we want to please others at all costs and to be appreciated by our peers. Also, the research by Wojtyła-Buciora et al. [47] showed that out of 17,397 respondents, "22% of junior high school students, 27% of high school students and 33% of [university] students doubted their external assets". The differences may result from the experience and greater awareness of the respondents, which develop as they move from secondary school to higher education. It is also possible that university students are more inclined to compare themselves with others, which may affect the perception of their external assets. In a study by Wang et al. [48] showed that among 1,455 respondents over a period of 15 years (measured at four time-points, 5 years apart), body dissatisfaction was reported on average by 30% of women and 25% of men. In the cited study, it can be seen that the level of satisfaction with one's body shape is quite high. It should also be noted that the data was not collected once, but over a period of several years, and that the level of body shape satisfaction exceeded the level of dissatisfaction.

The current study shows that the vast majority of respondents know about EDs and can provide correct definitions of them, which is a very positive finding. Similar results were obtained by Żwirkowska et al. [49], which revealed that knowledge of EDs was declared by about 70% of the respondents. Widespread knowledge of EDs was also reported by Góral et al. [50], as knowledge about bulimia and anorexia was declared by 96% of the respondents. Also, the research of Myszkowska-Ryciak et al. [51] showed that "84% of girls in the youngest group, 94% in the group of 15–16-year-olds and all girls from the oldest group" knew the concept of anorexia and the vast majority also knew about the ED bulimia. Such a high proportion of adolescents with knowledge of EDs may be due to society's increasing awareness of complications and the introduction of information campaigns about them. Studies checking knowledge about EDs were conducted outside of Poland as well. A Czech study by Chadimová [52] showed that out of 103 respondents, over 46% indicated orthorexia as a "pathological necessity to remove unhealthy food from the menu". In a study by Hicks et al. [53] found that 63% of respondents correctly identified the definition of anorexia and 72% correctly indicated the definition of bulimia.

Based on our research and several other cited works and studies, it can be stated that the frequency of EDs among young people is 20% on average. EDs occur in both males and females, regardless of age or the time of the research. Our research and the cited studies show that the respondents' satisfaction with their figure varies and depends on their age and the time of the research. At the same time, the results of both our study and those cited above reveal a large percentage of respondents who have knowledge and familiarity with EDs.

CONCLUSIONS

1. The results of the research confirmed the hypothesis that the frequency of EDs among the respondents would not exceed 25%.
2. The hypothesis that the respondents would have a high level of knowledge about EDs was correct.
3. There were changes in body image among the respondents.
4. The respondents' BMI and percentile according to the WHO percentile charts and the OLA and OLAF studies may have contributed to the perception of their body shape.
5. Changes in body image may be conditioned by the influence of one's social environment.

In order for the frequency of EDs to be lower than the observed 20%, or at least maintained at a similar level and for knowledge about them to be equally high, information campaigns on EDs and their treatment should be introduced. Educating society on this subject would also help in identifying EDs in the early stages of their development and would encourage a conscious approach to healthy eating.

Authors' contribution

Study design – B. Palmowski, P. Romaniuk
Data collection – B. Palmowski
Data interpretation – B. Palmowski
Statistical analysis – B. Palmowski
Manuscript preparation – B. Palmowski, P. Romaniuk, W. Ficoń
Literature research – B. Palmowski, W. Ficoń

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