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Clinical and Psychological Aspects of Piercing: A Cross-Sectional Study with Special Attention to Body Dysmorphic Disorder Symptoms, Appearance Anxiety, Body Image Perception and Self-Esteem

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Abstract: The aim of this study was to measure the level of self-esteem among individuals with piercings, evaluate body image perception, and screen the study group for body dysmorphic disorder symptoms. Two hundred and six individuals from Poland completed the Appearance Anxiety Inventory (AAI), Body Dysmorphic Disorder Questionnaire-Dermatology Version (BDDQ-DV), Functionality Appreciation Scale (FAS), and Rosenberg Self Esteem Scale (RSES). Differences between groups were determined using a two-sample *t*-test, post-hoc chi-square test with Bonferroni's adjustment, the Kruskal–Wallis test, and the Mann–Whitney test. One hundred ninety-six (95.1%) respondents were females, and 10 (4.9%) were males, aged from 15 to 48 years (mean age ± SD = 23.1 ± 6.4 years). Of the respondents, 25.7% screened positive for BDD symptoms according to the AAI and 29.1% screened positive according to the BDDQ-DV. According to the FAS, significantly lower body image was presented by individuals with psychiatric treatment (3.8 ± 0.9 vs. 4.1 ± 0.7, $p < 0.05$) and by respondents who screened positive for BDD symptoms. Significantly lower self-esteem was reported in individuals with psychiatric comorbidities, psychiatric treatment, and in the BDD-groups according to the RSES (AAI: 24.0 ± 5.6 vs. 30.9 ± 6.0; $p < 0.001$; BDDQ-DV: 24.0 ± 5.8 vs. 31.3 ± 3.7; $p < 0.001$). In conclusion, individuals with piercings should be regarded as a group with an increased risk for BDD symptoms.

Keywords: piercing; body dysmorphic disorder; body image

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1. Introduction

1.1. History and Reasons for Piercing

Piercing is a form of body modification that involves puncturing particular parts of the human body and inserting jewelry or implants. The most widespread types of piercing are ear and nose piercing, which are well documented in historical records. One of the oldest representations of human piercing was the mummified body of the Ötzi the Iceman, discovered in Italy and dated to 3350 BC [1]. Ear, nose, lip, tongue, nipple, or genital piercings are practiced by various cultures around the world, such as African tribes, inhabitants of the Middle East, Ancient Rome, Ancient Egypt, and Ancient India [2,3]. Ear piercing has been practiced all around the world since ancient times. It is worth noting that in Europe, earrings are not popular among women because styles of clothing and hair tend to obscure ears [4]. Moreover, ear piercings were even more common among men [1]. Explorers and sailors in the European Middle Ages tended to pierce their ears according to the superstitious belief that one pierced ear improved long-distance vision [1]. In the 1970s, piercing began to increase in popularity and was popularized by the punk movement.

At the turn of the 20th and 21st centuries, belly button piercing and eyebrow piercings were considered highly fashionable. Overall, in the 21st century, piercing entered the mainstream and was performed mainly because of its fashion and aesthetic aspects [1]. In the past, piercing was used to enhance sexual desirability and experience [5] or to provide exciting sensations [6]. Nowadays, young people mostly conduct piercing as a statement of fashion [7]; however, some meanings ascribed to piercing involve risky behaviors, such as nonsuicidal self-injury [8].

1.2. Complications of Body Piercing

Body piercing jewelry has various shapes and mostly consists of rings, hoops, studs, or barbell-shaped ornaments [9]. They are made of metals such as stainless steel, gold, titanium, or alloys. Allergic skin reactions are mostly caused by the products of nickel.

Surgical stainless steel is mostly nickel-free and, therefore, safe [10]. Piercings made of gold are often combined with nickel and are associated with a high prevalence of reactivity in nickel-sensitive patients [9]. Ear piercing is the most popular location for body piercing. The most common complications are minor infections, allergic reactions, keloid formation, and traumatic tearing [11]. Multiple ear piercings, which are often located in the cartilage of the ear, are associated with poor healing and more serious infections compared to ear lobe piercing due to the avascular nature of the auricular cartilage [9]. Auricular perichondritis presents as erythema, painful swelling, and warmth of the auricle that characteristically spares the lobule and often occurs in the first month after piercing [9]. A perichondrial abscess can be caused by minor infections that progress and can result in inflammation, abscess formation, and necrosis [9]. If an abscess is formed, surgical incision and drainage are often necessary [9]. Piercings can also be the reason for systemic infectious complications. One of the most high-risk cardiac post-piercing complications is endocarditis, which is mainly associated with nipple and navel piercings [12]. Piercing, as with any invasive procedure, could be related to systemic infections, such as hepatitis B or C virus, tetanus, or human immunodeficiency virus [13]. Such incidents could be caused by poor hygiene standards and a lack of sterile tools.

1.3. Body Dysmorphic Disorder

Body dysmorphic disorder (BDD), which is also called dysmorphophobia, is a mental disorder where an individual is aware of some defects in his/her body that are unnoticeable to others. BDD has been consistently described around the world for more than a century; however, this disorder has been researched in a systematic way for less than two decades [14]. The prevalence of BDD is relatively uncommon and varies from 0.7% to 2.4% in the general population [15–17]. BDD is often associated with dermatological conditions. Research papers suggest that the prevalence of BDD in dermatology is around 9% to 12% in cosmetic surgery, and even up to 53% and 26% in trichotillomania [18–23]. It is worth noting that BDD often occurs among psychiatric patients with OCD, social phobia, and atypical major depressive disorder [14,24].

BDD was reported in people of all ages (from 5 years old to more than 80 years old) [25]. In the literature, BDD has been proven to occur more often among women than among men [16,26], but it clearly affects men as well. This preoccupation often causes distress and impairs normal activities, social life, and quality of life [16,27]. BDD may lead to depressive and substance-use disorders, social phobia, or even suicide [28–30]. It is worth noting that people with BDD often seek and receive cosmetic treatment to improve their appearance [31]. They sometimes undergo risky dermatological, surgical, or dental procedures to improve their appearance. However, this treatment rarely yields satisfactory results. Veale et al. [32] found that 81% of 50 BDD patients were dissatisfied with past medical consultation or surgery. In the literature, to the best of our knowledge, there are no papers considering the prevalence and characteristics of BDD among individuals with piercing, and surely piercing, as well as tattoos, are body modifications that can also influence one's appearance. One of the aims of the current study was to characterize the

people with piercings, determine the prevalence of BDD occurring among them, describe the connection between the prevalence of BDD and psychiatric diseases, and check the correlation between BDD and the number of piercings, age, BMI, and other variables.

1.4. Body Image

Body image is a stable, multifaceted mental representation of the body and its emotional experience, which can change over a lifetime [33]. Body image consists of two factors, body dissatisfaction and appreciation [34], and can be influenced by sociocultural contexts, peers, and mass media [35]. A positive body image manifests itself with respect to, appreciation for, and acceptance of one's body [34]. Negative body image demonstrates dissatisfaction with body or body parts, preoccupation with appearance, and engagement in behaviors such as frequent mirror checking, self-weighing, and avoidance of public situations [36]. Poor body image leads to body dissatisfaction, negatively impacts quality of life, and is often related to depression, low self-esteem, and emotional instability [37]. Body image disturbances are highly prevalent in people with other mental or physical health problems, e.g., depression or obesity, eating disorders, body dysmorphic disorder, and in the general population [38]. According to Schnabl et al. [39], multiple-pierced individuals display a significantly lower body image and less self-confidence than people with single piercings. Regarding this fact, one of the goals of our study was to determine the body image, prevalence of BDD, and its correlation with piercing in individuals. We also wanted to find out if the number of piercings influences one's body image and level of self-confidence.

1.5. Aim of the Study

The aim of this study was to provide clinical characteristics to measure the level of self-esteem among individuals with piercings and to evaluate their body image perception. Moreover, the goal was to scrupulously screen the study group for body dysmorphic disorder using two different screening tools. Considering the fact that piercing is a form of self-injury, it was assumed that the prevalence of BDD symptoms and body image disturbances can be higher in individuals with piercing than in the general population. To the best of our knowledge, no study concerning individuals with piercing, body image, and BDD using multiple diverse questionnaires has been published to date.

2. Materials and Methods

2.1. Study Design

This was a cross-sectional Internet-based survey of 206 individuals from Poland. The sample size was calculated to be 97 (10% margin of error, 95% confidence level). The survey was conducted using a self-created questionnaire that was posted on Facebook groups and was dedicated to people interested in piercing.

2.2. Measures

One hundred ninety-six (95.1%) respondents were females, and 10 (4.9%) were males, aged from 15 to 48 years (mean age $\pm$ SD = 23.1 $\pm$ 6.4 years). Respondents self-reported their financial status, level of education, weight, height, and existing comorbidities, reported what medicines they take, how many pieces of piercing they have, when they conducted their first piece of piercing, what were the locations of piercing, why they decided to do them, if they plan to conduct some piercing in the future, and if they are satisfied with their appearance after being pierced. Finally, respondents were asked to say if any defect of their body existed, and this group, which answered positively, was asked if their piercing aimed to cover or draw attention from the defect.

2.3. Procedures

To screen the study group for body dysmorphic disorder, two instruments were used. Firstly, respondents were asked to fill out the Appearance Anxiety Inventory (AAI), which

was developed to measure the outcomes of the therapy in people with BDD [40]. The tool is composed of 10 items that are assessed on a five-point Likert scale: 0 ("not at all"), 1 ("a little"), 2 ("often"), 3 ("a lot"), 4 ("all the time"). The score of all questions is then summed up, creating the total score. A high total score reflects a high likelihood of being diagnosed with BDD. We used the cutoff for the BDD high-risk group of 20 points, which was proposed by Yurtsever et al. [41]. In the current study, the validated Polish language version of the AAI [42] was used.

Secondly, individuals were requested to complete the Polish language version of the Body Dysmorphic Disorder Questionnaire-Dermatology Version (BDDQ-DV), which was created by Katharine Phillips et al. [17] from Brown University School of Medicine, Rhode Island, USA. This instrument is helpful for screening patients with BDD symptoms [17,27]. Respondents were asked if they were very concerned about the appearance of some parts of their body that they considered especially unattractive. This group of individuals who answered "Yes" is then further asked if they think about this problem continuously, what exactly bothers them in their body parts, and what effects their preoccupation with their appearance had on their life. To screen a patient for BDD symptoms, an individual must report the presence of preoccupation as well as at least moderate (score of 3 or higher on a five-level Likert scale) distress or impairment in functioning.

Subsequently, individuals completed the Functionality Appreciation Scale (FAS), which was developed by Alleva et al. in 2017 [43] and assesses body functionality, which involves appreciating and respecting the body for its capability, physical abilities, creativity, and self-care. The FAS consists of 7 questions that score from 0 to 5 points, which provides a global score. The higher the global score, the greater the appreciation of body functionality. In this study, the validated Polish language version of the FAS was used [44].

The last questionnaire applied in our study was the Rosenberg Self Esteem Scale (RSES) developed by Rosenberg and Simmons [45]. It is an instrument used to evaluate individual self-esteem. It includes 10 items that are evaluated using a four-point Likert scale: 1 ("strongly disagree"), 2 ("disagree"), 3 ("agree"), and 4 ("strongly agree"). After summing up the scores of questions 3, 5, 8, 9, and 10, which are negatively valenced, and questions 1, 2, 4, 6, and 7, which are positively valenced, a total score is created. The total score can range from 10 to 40 points, and the higher the total score, the greater the self-esteem. However, a score lower than 15 points indicates poor self-esteem [46].

This project was conducted in accordance with the principles of Good Clinical Practice and the principles of the Helsinki Declaration of the World Medical Association and was approved by the Bioethical Committee of the Medical University of Wroclaw (SUB.C260.21.011).

2.4. Data Analysis

Statistical analysis was performed using software Statistica 13 (Dell, Inc., Tulsa, OK, USA). The mean and SD were calculated. Differences between groups were determined using a two-sample *t*-test, post-hoc chi-square test with Bonferroni's adjustment, the Kruskal-Wallis test, and the Mann-Whitney test. Spearman's rank correlation coefficient (r_s) was used to name the strength of the relationship between variables because the assumption of normality data was not met. Statistical significance was set at $p < 0.05$. Data were collected and analyzed anonymously.

3. Results

This was a cross-sectional Internet-based survey conducted on 206 individuals from Poland. One hundred ninety-six (95.1%) respondents were females, and 10 (4.9%) were males, aged from 15 to 48 years (mean age ± SD = 23.1 ± 6.4 years). One hundred nineteen (57.8%) individuals reported secondary education, 68 (33%) graduated from university, and 19 (9.2%) had primary education. The mean BMI in the whole group was 23.3 ± 6.2. Twenty-three (11.2%) individuals reported low socioeconomic status, 81 (39.3%) average, 82 (39.8%) good, and 20 (9.7%) very good. Seventy-two (35%) respondents suffered from psychiatric comorbidities such as depressive disorders (24.3%, n = 50), anxiety disorders

(18.5%, n = 38), attention deficit hyperactivity disorder (8.3%, n = 17), obsessive-compulsive disorders (4.9%, n = 10), autism spectrum disorders (1.5%, n = 3), borderline personality disorder (1.5%, n = 3), and schizophrenia (0.5%, n = 1). Forty (19.4%) individuals were taking psychiatric pharmacological medications. A history of psychiatric treatment was given as follows: antidepressants 14.1% (n = 29), sleeping drugs 7.3% (n = 15), anxiolytics 6.8% (n = 14), antipsychotics 1.5% (n = 3), and methylphenidate 1.5% (n = 3). The detailed characteristics of the studied group are given in Table 1.

Table 1. The detailed characteristics of the study group. Differences between groups were determined using a two-sample *t*-test and post-hoc chi-square test with Bonferroni's adjustment.

	All Respondents (n = 206)	**Females (n = 196)**	**Males (n = 10)**	***p*-Value**
Age (mean ± SD)	23.1 ± 6.4	22.7 ± 5.9	29.2 ± 11.6	NS
BMI (mean ± SD)	23.3 ± 6.2	23.3 ± 6.2	24.4 ± 5.5	NS
Education level primary education	19 (9.2%)	19 (9.7%)	0 (0%)	NS
secondary education	119 (57.8%)	112 (57.1%)	7 (70%)	
university diploma	68 (33%)	65 (33.2%)	3 (30%)	
Self-reported financial status poor	23 (11.2%)	22 (11.2%)	1 (10%)	NS
average	81 (39.3%)	78 (39.8%)	3 (30%)	
good	82 (39.8%)	77 (39.3%)	5 (50%)	
very good	20 (9.7%)	19 (9.7%)	1 (10%)	
Psychiatric comorbidities depressive disorders	50 (24.3%)	49 (25%)	1 (10%)	NS
anxiety disorders	38 (18.5%)	37 (18.9%)	1 (10%)	NS
attention deficit hyperactivity disorder	17 (8.3%)	17 (8.7%)	0 (0%)	$p < 0.001$
obsessive-compulsive disorders	10 (4.9%)	10 (5.1%)	0 (0%)	NS
autism spectrum disorders	3 (1.5%)	3 (1.5%)	0 (0%)	$p > 0.05$
borderline personality disorder	3 (1.5%)	3 (1.5%)	0 (0%)	NS
schizophrenia	1 (0.5%)	1 (0.5%)	0 (0%)	NS
Psychiatric treatment antidepressants	29 (14.1%)	28 (14.3%)	1 (10%)	NS
sleeping drugs	15 (7.3%)	15 (7.7%)	0 (0%)	$p < 0.001$
anxiolytics	14 (6.8%)	13 (6.6%)	1 (10%)	NS
antipsychotics	3 (1.5%)	3 (1.5%)	0 (0%)	NS
methylphenidate	3 (1.5%)	3 (1.5%)	0 (0%)	NS

BMI—Body Mass Index, SD—standard deviation, NS—not significant.

Five (2.4%) respondents had one piece of piercing, 10 (4.9%) had two pieces of piercing, 141 (68.4%) had three to ten pieces, 37 (18%) had eleven to twenty pieces, and 13 (6.3%) had more than twenty pieces. Sixty-four (31.1%) respondents made their first piece of piercing during childhood, before 12 years of age, 121 (58.7%) during adolescence (i.e., 13 to 18 years of age), and 21 (10.2%) at the age of 19 or older. No differences between sexes were observed.

One hundred and ninety-six (95.1%) individuals reported that their piercing was situated in the ears, 118 (57.3%) in the nose, 64 (31.1%) in the navel, 47 (22.8%) in the nipples, 46 (22.3%) in the tongue, 41 (19.9%) in the lips, 12 (5.8%) in intimate places, 9 (4.7%) in the eyebrows, 5 (2.4%) on the abdomen and chest, 5 (2.4%) on the head and neck, 1 (0.5%)

on the arms, and 1 (0.5%) on the forearms and palms. Females tended to pierce their abdomen or chest (women: 5 (2.6%) vs. 0 men (2.6%); $p < 0.05$) and head or neck (women: 5 (2.6%) vs. 0 men (2.6%); $p < 0.05$) significantly more often than men.

The motivations for being a pierced varied, and volunteers could provide more than one answer. One hundred sixty-six (80.6%) individuals admitted that they pierced for aesthetic reasons, 116 (56.3%) because it gave them strength and improved their self-confidence, 113 (54.9%) to express their personality, 64 (31.1%) said it was a spontaneous decision, 54 (26.2%) to distinguish themselves, 31 (15%) wanted to express their feelings, and 10 (4.9%) pierced because of a fashion trend. Females significantly pierced more often than men to strengthen their self-confidence (women: 115 (58.7%) vs. men: 1 (10%); $p < 0.001$) and because of a fashion trend (women: 10 (5.1%) vs. men: 0 (0%); $p < 0.05$); however, men tended to pierce more often to express their personality (women: 105 (53.6%) vs. men: 8 (80%); $p < 0.001$).

One hundred ninety-one (92.7%) individuals were willing to have a new piece of piercing in the future, and 196 (95.1%) respondents were satisfied with their appearance after their last piercing.

3.1. Body Dysmorphic Disorder

Table 14.0 ± 8.9 points. Fifty-three (25.7%) respondents scored more than 20 points, so they were screened positive for BDD symptoms according to the AAI. Sixty (29.1%) respondents screened positive for BDD symptoms according to the BDDQ-DV. The studied group was divided into BDD and non-BDD subgroups (Table 2). High-risk BDD patients were significantly younger according to the BDDQ-DV (21.7 ± 4.5 vs. 23.7 ± 7.0 years; $p < 0.05$) and AAI (20.6 ± 4.6 vs. 24 ± 6.7 years; $p < 0.001$). The BMI of the individuals was higher in the BDD group according to both questionnaires (BDDQ-DV: 24.4 ± 6.4 vs. 22.9 ± 6.1; $p > 0.05$; AAI: 23.9 ± 5.9 vs. 23.1 ± 6.3; $p > 0.05$, respectively). In the group screened negatively for BDD symptoms, more individuals reported a higher education level than in the non-BDD group (BDDQ-DV: 35.6% vs. 26.7%; $p > 0.05$; AAI: 37.9% vs. 5.7%; $p < 0.05$, respectively). Financial status was higher in the non-BDD group according to both the AAI and BDDQ-DV. Significantly more individuals with BDD symptoms had psychiatric comorbidities (BDDQ-DV: 50% vs. 28.8%; $p < 0.05$; AAI: 60.4% vs. 30.7%; $p < 0.001$) and received psychiatric treatment (BDDQ-DV: 21.7% vs. 18.5%; $p > 0.05$; AAI: 41.5% vs. 16.3%; $p < 0.001$) (Table 2).

Table 2. The detailed characteristics of the BDD and non-BDD-groups. Differences between groups were determined using a two-sample *t*-test.

	AAI			BDDQ-DV		
	BDD (n = 53)	**Non-BDD (n = 153)**	***p*-Value**	**BDD (n = 60)**	**Non-BDD (n = 146)**	***p*-Value**
Females	51 (96.2%)	145 (94.8%)	NS	59 (98.3%)	137 (93.8%)	NS
Males	2 (3.8%)	8 (5.3%)	NS	1 (1.7%)	9 (6.2%)	NS
Age (mean ± SD)	20.6 ± 4.6	24 ± 6.7	$p < 0.001$	21.7 ± 4.5	23.7 ± 7.0	$p < 0.05$
BMI (mean ± SD)	23.9 ± 5.9	23.1 ± 6.3	NS	24.4 ± 6.4	22.9 ± 6.1	NS
Education level primary education	14 (26.4%)	5 (7.9%)	$p < 0.001$	7 (11.6%)	12 (8.2%)	$p > 0.05$
secondary education	36 (67.9%)	83 (54.2%)	NS	37 (61.7%)	82 (56.2%)	NS
university diploma	10 (5.7%)	58 (37.9%)	NS	16 (26.7%)	52 (35.6%)	NS
Financial status poor	7 (13.2%)	16 (10.5%)	NS	9 (15%)	14 (9.6%)	NS
average	23 (43.4%)	58 (37.9%)	NS	27 (45%)	54 (37%)	NS
good	20 (37.7%)	62 (40.5%)	NS	18 (30%)	64 (43.8%)	NS
very good	10 (5.7%)	17 (11.1%)	NS	6 (10%)	14 (9.6%)	$p < 0.001$
Presence of psychiatric comorbidities	32 (60.4%)	47 (30.7%)	$p < 0.001$	30 (50%)	42 (28.8%)	$p < 0.05$
Psychiatric treatment	22 (41.5%)	25 (16.3%)	$p < 0.001$	13 (21.7%)	27 (18.5%)	NS

SD—standard deviation, AAI—the Appearance Anxiety Inventory, BDDQ-DV—the Body Dysmorphic Disorder Questionnaire-Dermatology Version, NS—not significant.

According to the AAI and the BDDQ-DV in the BDD group individuals were younger when they got their first piece of piercing (AAI: 14.6 ± 2.7 vs. 15.4 ± 4.7 years; $p > 0.05$; BDDQ-DV: 15 ± 2.8 vs. 15.3 ± 4.8 years; $p > 0.05$), however they had fewer pieces of piercing compared to the non-BDD group (AAI: 7.9 ± 4.9 vs. 8.1 ± 4.8; $p > 0.05$; BDDQ-DV: 7.6 ± 4.1 vs. 8.2 ± 5.1; $p > 0.05$). The most popular locations for piercing in both groups were the ears, nose, and navel. According to the AAI, significantly more people without a high risk of BDD chose nipples (26.1% vs. 13.2%; $p < 0.05$) and the abdomen (3.3% vs. 0%; $p < 0.05$) for the location of their piercing. Significantly more individuals who screened positive for BDD symptoms got their piercing to distinguish themselves (AAI: 37.7% vs. 22.2%; $p < 0.05$; BDDQ-DV: 33.3% vs. 23.3%; $p > 0.05$, respectively). Both BDD and non-BDD individuals were satisfied with their appearance after obtaining a piercing, and wanted another piercing in the future (Table 3).

Table 3. The detailed characteristics of piercing in the BDD and the non-BDD group. Differences between groups were determined using a two-sample *t*-test.

	AAI			BDDQ-DV		
	BDD (n = 53)	**Non-BDD (n = 153)**	***p*-Value**	**BDD (n = 60)**	**Non-BDD (n = 146)**	***p*-Value**
Age of receiving first piercing (mean ± SD)	14.6 ± 2.7	15.4 ± 4.7	NS	15 ± 2.8	15.3 ± 4.8	NS
Number of pieces of piercing (mean ± SD)	7.9 ± 4.9	8.1 ± 4.8	NS	7.6 ± 4.1	8.2 ± 5.1	NS
Localization of piercing ears	51 (96.2%)	145 (94.8%)	NS	56 (93.3%)	140 (95.9%)	NS
nose	34 (64.2%)	84 (54.9%)	NS	38 (63.3%)	80 (54.8%)	NS
navel	13 (24.5%)	51 (33.3%)	NS	16 (26.7%)	48 (32.9%)	NS
nipples	7 (13.2%)	40 (26.1%)	$p < 0.05$	15 (25%)	32 (21.9%)	NS
tongue	13 (24.5%)	33 (21.6%)	NS	13 (21.7%)	33 (22.6%)	NS
lips	13 (24.5%)	28 (18.3%)	NS	12 (20%)	29 (19.9%)	NS
intimate places	3 (5.7%)	9 (5.9%)	NS	2 (3.3%)	10 (6.8%)	NS
eyebrows	3 (5.7%)	6 (3.9%)	NS	3 (5%)	6 (4.1%)	NS
abdomen/chest	0 (0%)	5 (3.3%)	$p < 0.05$	0 (0%)	5 (3.4%)	$p < 0.05$
head/neck	1 (1.9%)	4 (2.6%)	NS	1 (1.7%)	4 (2.7%)	NS
arms	0 (0%)	1 (0.7%)	$p < 0.05$	0 (0%)	1 (0.7%)	NS
forearms/palms	0 (0%)	1 (0.7%)	$p < 0.05$	0 (0%)	1 (0.7%)	NS
Motivation for receiving piercing	43 (81.1%)	123 (80.4%)	NS	53 (88.3%)	113 (77.4%)	$p < 0.05$
aesthetic reasons						
to strengthen self-confidence	35 (66%)	81 (52.9%)	NS	41 (68.3%)	75 (51.7%)	$p < 0.05$
to express personality	36 (67.9%)	77 (50.3%)	$p < 0.05$	37 (61.7%)	76 (52.1%)	NS
spontaneous decision	19 (35.8%)	45 (29.4%)	NS	20 (33.3%)	44 (30.1%)	NS
to distinguish	20 (37.7%)	34 (22.2%)	$p < 0.05$	20 (33.3%)	34 (23.3%)	NS
to express feelings	7 (13.2%)	24 (15.7%)	NS	10 (16.7%)	21 (14.4%)	NS
fashion trend	5 (9.4%)	5 (3.3%)	$p < 0.05$	3 (5%)	7 (4.8%)	NS
Appearance satisfaction after piercing	50 (83.3%)	146 (95.4%)	NS	57 (95%)	139 (95.2%)	NS
Willing to conduct new piece of piercing	50 (83.3%)	141 (92.2%)	NS	56 (93.3%)	135 (92.5%)	NS

SD—standard deviation, AAI—the Appearance Anxiety Inventory, BDDQ-DV—the Body Dysmorphic Disorder Questionnaire-Dermatology Version, NS—not significant.

3.2. Body Image

To evaluate the body image, the FAS was used. The mean score of FAS in the whole group was 4.0 ± 0.8 points. No correlation was found between FAS and age, BMI, or number of piercings (r_s range: −0.092 to 0.123, $p > 0.05$) (Table 4). The FAS score was strongly correlated with the RSES score ($r_s = 0.699$, $p < 0.05$) and AAI ($r_s = -0.394$, $p < 0.001$). The FAS score increased with both education and financial level; however,

these values were not statistically significant (Table 5). According to the FAS, significantly lower body image was presented by individuals with psychiatric comorbidities (3.8 ± 0.9 vs. 4.1 ± 0.7, $p < 0.001$) and by respondents screened positive for body dysmorphic disorder according to both questionnaires (AAI: 3.6 ± 0.8 vs. 4.2 ± 0.7; $p < 0.001$; BDDQ-DV: 3.5 ± 0.8 vs. 4.2 ± 0.6; $p < 0.001$) (Table 5).

Table 4. Spearman's rank correlation coefficient (r_s) for questionnaires used in the study.

	Age	BMI	Number of Pieces of Piercing	RSES	FAS	AAI
Age	-	0.118 NS	0.018 NS	0.189 ($p < 0.05$)	0.103 NS	−0.200 ($p < 0.05$)
BMI	0.118 NS	-	0.027 NS	−0.053 NS	−0.092 NS	0.096 NS
Number of pieces of piercing	0.018 NS	0.027 NS	-	0.064 NS	0.123 NS	−0.034 NS
RSES	0.189 ($p < 0.05$)	−0.053 NS	0.064 NS	-	0.699 ($p < 0.001$)	−0.516 ($p < 0.001$)
FAS	0.103 NS	−0.092 NS	0.123 NS	0.699 ($p < 0.001$)	-	−0.394 ($p < 0.001$)
AAI	−0.200 ($p < 0.05$)	0.096 NS	−0.034 NS	−0.516 ($p < 0.001$)	−0.394 ($p < 0.001$)	-

BMI—Body Mass Index, RSES—the Rosenberg Self Esteem Scale, FAS—the Functionality Appreciation Scale, AAI—the Appearance Anxiety Inventory, NS—not significant.

Table 5. The FAS scores in particular subgroups. Differences between groups were determined using the Kruskal–Wallis test and the Mann–Whitney test.

	FAS Score	*p*-Value
Education level		
primary education	3.8 ± 1.0	NS
secondary education	4.0 ± 0.8	
university diploma	4.2 ± 0.7	
Financial status		
poor	4.1 ± 0.7	
average	3.8 ± 0.8	NS
good	4.1 ± 0.7	
very good	4.1 ± 0.9	
Presence of psychiatric comorbidities	3.8 ± 0.9	$p < 0.001$
Absence of psychiatric comorbidities	4.1 ± 0.7	
Psychiatric treatment	3.8 ± 0.9	NS
Absence of psychiatric treatment	4.1 ± 0.7	
BDD individuals, according to AAI	3.6 ± 0.8	$p < 0.001$
non-BDD individuals, according to AAI	4.2 ± 0.7	
BDD individuals, according to BDDQ-DV	3.5 ± 0.8	$p < 0.001$
non-BDD individuals, according to BDDQ-DV	4.2 ± 0.6	

FAS—the Functionality Appreciation Scale, AAI—the Appearance Anxiety Inventory, BDDQ-DV—the Body Dysmorphic Disorder Questionnaire-Dermatology Version, NS—not significant.

3.3. Self-Esteem

The RSES was used to assess the level of self-esteem among respondents. The mean score of RSES was 29.2 ± 6.6 points. Four (1.9%) participants reported low self-esteem. No strong correlation was found between the RSES score and BMI and the number of pieces of piercing (r_s range: −0.053 to 0.064, $p > 0.05$) (Table 6). The RSES score was strongly correlated with the FAS score and AAI ($r_s = -0.516$, $p < 0.001$) (Table 4). Of note, higher self-esteem was observed in patients with higher education levels and financial status (Table 5). Significantly lower self-esteem was reported in individuals with psychiatric comorbidities (25.6 ± 6.9 vs. 31.2 ± 5.4, $p < 0.001$) and psychiatric treatment (25.2 ± 6.9 vs. 30.1 ± 6.2, $p < 0.001$) (Table 5). Significantly lower self-esteem was observed in the BDD-groups (AAI: 24.0 ± 5.6 vs. 30.9 ± 6.0; $p < 0.001$; BDDQ-DV: 24.0 ± 5.8 vs. 31.3 ± 3.7; $p < 0.001$) (Table 5).

Table 6. The RSES scores in particular subgroups. Differences between groups were determined using the Kruskal–Wallis test and the Mann–Whitney test.

	RSES Score	*p*-Value
Education level		
primary education	27.5 ± 8.1	$p < 0.05$
secondary education	29.1 ± 6.6	
university diploma	31.1 ± 5.8	
Financial status		
poor	28.3 ± 6.1	
average	27.4 ± 6.3	$p < 0.05$
good	30.3 ± 6.5	
very good	32.6 ± 7.1	
Presence of psychiatric comorbidities	25.6 ± 6.9	$p < 0.001$
Absence of psychiatric comorbidities	31.2 ± 5.4	
Psychiatric treatment	25.2 ± 6.9	$p < 0.001$
Absence of psychiatric treatment	30.1 ± 6.2	
BDD individuals, according to AAI	24.0 ± 5.6	$p < 0.001$
non-BDD individuals, according to AAI	30.9 ± 6.0	
BDD individuals, according to BDDQ-DV	24.0 ± 5.8	$p < 0.001$
non-BDD individuals, according to BDDQ-DV	31.3 ± 3.7	

RSES—the Rosenberg Self Esteem Scale, AAI—the Appearance Anxiety Inventory, BDDQ-DV—the Body Dysmorphic Disorder Questionnaire-Dermatology Version.

4. Discussion

The first archeological findings of piercing as a body modification date back at least 5300 years and refer to the oldest mummified body of Ötzi the Iceman, who had an ear piercing [1]. Initially, piercing was used as an important ritual, holding religious and cultural significance, and nowadays, this body modification is mostly conducted for aesthetic reasons, which was confirmed in our study. However, over half of the respondents said that piercing strengthens their self-confidence and helps them express their personality, indicating that piercing still has a spiritual and deeper meaning in society.

The aim of this study was to determine the prevalence of BDD symptoms among individuals with piercings and to analyze body image perception in this group. BDD affects around 2% of people in a community sample [47]. The prevalence of BDD symptoms among patients ranges from 2.2% among adolescents, 9–12% in dermatology patients, and even up to 53% in general cosmetic surgery [18–23,47]. The prevalence of BDD symptoms in our study ranged from 25.7% according to the BDDQ-DV to 29.1% according to the AAI. To the best of our knowledge, there are not many publications considering piercing and body dysmorphic disorder. In our previous preliminary research [48], the prevalence of body dysmorphic disorder among people with piercings was 21.1%. However, in that research, BDD was screened using only one tool (BDDQ-DV), and no associated psychiatric comorbidities or body appreciation were taken into consideration.

This paper revealed that the tendency toward BDD symptoms is strongly correlated with psychiatric comorbidities, psychiatric treatment, low self-esteem, poor body image, and appreciation, which was also confirmed in other studies [49,50]. Surprisingly, no correlation between high BMI and poor body image or poor self-esteem was found; however, other papers have suggested that excessive weight can be linked to low self-confidence [51]. This could be possibly explained by the fact that currently, body-positive movement is becoming popular, and being overweight is no longer associated with feelings of shame and embarrassment. Similar conclusions were also drawn in the paper by Yurtsever et al. [41], where patients who performed aesthetic procedures and were overweight did not have lower self-esteem compared to a group of patients with normal BMI.

In the literature, many studies can be found that describe differences between sexes in individuals with body dysmorphic disorder [25,26,52–54]. However, in our paper, no similarities or differences were found, supposedly because of the underrepresentation of men in the study.

This study has some limitations that, in our opinion, do not lessen the acquired results. Firstly, the overrepresentation of women can hinder distinguishing differences between sexes. Secondly, this paper was based on online questionnaires, and despite our efforts, some questions could have been misunderstood or misinterpreted. Moreover, using this methodology, we were not able to provide the response rate, which may have created a bias in the final results. Thirdly, no control group was involved; however, there are plenty of studies that consider BDD in the population [55,56]. Finally, it is worth emphasizing that all information was gained anonymously from the respondents, and we could not verify them. Nevertheless, this survey analyzed the correlation between piercing and body dysmorphic disorder, which represents the main strength of this paper.

5. Conclusions

In summary, body dysmorphic disorder is a serious problem, and overlooking this diagnosis can result in undesirable consequences. Individuals with piercings should be regarded as a group with an increased risk for BDD symptoms. Therefore, early detection of the problem and focusing on risk groups, such as patients with piercings, can help clinicians implement the right treatment on time.

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Data Availability Statement: The database will be available after contacting the corresponding author.

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