Psychiatr. Pol. 2015; 49(3): 559–573
PL ISSN 0033-2674 (PRINT), ISSN 2391-5854 (ONLINE)
www.psychiatriapolska.pl
DOI: http://dx.doi.org/10.12740/PP/27266

Satisfaction with life, self-esteem and evaluation of mental health in people with tattoos or piercings

Anna J. Pajor[1], Grażyna Broniarczyk-Dyła[2], Julita Świtalska[3]

[1]Faculty of Health Sciences, Medical University of Lodz
Head: prof. dr hab. n. med. T. Kostka

[2]Private Medical Practice "Dermalar"
[3]Chair of Psychopathology and Clinical Psychology, Institute of Psychology, University of Lodz
Head: dr hab. E. Bielawska-Batorowicz

Summary

Aim. The aim of the study was to determine the level of life satisfaction and the various dimensions of self-esteem of pierced or tattooed people, and evaluate their mental health, compared to those without similar body modifications.

Method. The study was conducted on a sample of 449 people aged 16–58 years (mean age 26.7 ± 6.35), of whom 308 had body modifications: tattoo (n = 90), body piercings in places other than the ear lobe (n = 53), or both tattoos and piercings (n = 165). The control group consisted of 141 people without such modifications. The participants completed a questionnaire concerning their socio-demographic status, as well as the following psychological tests: The Satisfaction with Life Scale (SWLS), Multidimensional Self-Esteem Inventory (MSEI) and General Health Questionnaire (GHQ-28).

Results. Our findings show no significant differences in terms of life satisfaction between the group with tattoos or piercings and the control group. People with body modifications were characterized by higher self-esteem, with regard to their competence and leadership abilities. They also display fewer symptoms of social impairment and sleep disorders than the control group.

Conclusions. Tattoos and piercings should not be considered as indicators of psychopathology.

Key words: self-assessment, tattoo, body piercing

The study was financed only by the Medical University of Lodz, the research task No. 502-03/7-126-01/502-54-100.

Introduction

Tattoos, body piercing and other forms of body modification (BM) are becoming increasingly popular, especially among young people. A tattoo is a graphic symbol visible on the skin created by the introduction of ink into the dermis with a special needle [1]. Body piercing, or simply *piercing*, is the practice of puncturing or cutting a part of a bodysuch as skin, subcutaneous tissue or cartilage, to create an opening in which jewelry may be worn [2]. Earrings, worn by women in the ear lobes, represent one of the most popular varieties of piercing, and because of the traditional nature and social approval of this form of BM, it is often overlooked in studies devoted to body modification [e.g. 2–4].

Body modifications have been known since ancient times, in almost all cultures of the world, and to understand the popularity of tattoos and piercings, it is necessary to recognize the motivation to undergo these, often painful, procedures. Besides adorning the human body, tattoos or piercings serve other functions. In prehistoric times, tattoos and body piercing are thought to have fulfilled, among others, a healing function similar to acupuncture. A good example is the collection of tattoos found on Ötzi the Iceman, the mummy of a man who lived 3300 years BC. Nowadays, tattoos are recognized as having autotherapeutical power, for example, in the case of psychological trauma [5]. Body modifications are also a healthier alternative to attempts of self-mutilation [6]. Emphasis is given to three groups of factors determining the acquisition of a tattoo or piercing [7]: having the desire to stand out, a wish to emphasize one's individuality and desiring motifs associated with group membership.

Much of the literature regarding tattoos and piercing addresses the supposed differences in mental health between people with a tattoo or piercing, and the rest of the population. Many researchers [4, 8, 9] show a positive correlation between body modification and risk-taking behaviours, and others based on questionnaires [10, 11] confirm that people with tattoos or piercings have a higher demand for stimulation, i.e. sensation seeking. Due to the increased engagement in risky activities in this group, it is even believed that tattoos may be markers of mortality due to suicide or as a result of accidents among young adults [12].

Studies of people with tattoos and piercings are also often focused on other mental health disorders and personality disorders. The results, however, are often ambiguous, even within individual studies. Although Stirn [10], for example, shows no relationship between having body modification and increased level of anxiety or depression, the same study notes that people with BM often evaluate their mental health as poorer than people without modifications. Frederick [13], on the other hand, reports that people with tattoos obtain even lower scores on the depression scale, although this has yet to be confirmed by other studies [14]. The results of studies on the relationship between body modifications and personality disorders are also contradictory. For example, Romance and Martin [15] suggest that women with tattoos are more likely to exhibit symptoms of mental disorders, including borderline personality traits, however, no such relationship was found between personality disorders and having a tattoo or piercing in another study conducted on a sample of psychiatric patients [16].

Studies are also inconclusive as to differences between people with and without BM, regarding the five broad dimensions of personality defined by the Costa and McCrae Five Factor Model [17]: neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. No such difference were noted by Forbes [18], while Tate and Shelton report only minimal differences [19]. In turn, Claes [20] confirmed that tattooed subjects demonstrated no differences in the main personality traits, but pierced subjects showed greater extroversion and openness to experience, but less conscientiousness than people without BM.

It is supposed sometimes that having a tattoo or piercing is an expression of low self-esteem, however, no such indication was observed in patients with body modifications [13, 21]. One study [22] in fact revealed an increase in self-esteem after tattooing or piercing, the author explaining this result as the enhanced acceptance of one's body gained through BM. It is also possible that this increase in self-esteem stems from a feeling of being unique, and the presence of an exceptional pattern on the body could be regarded as an emphasis of individuality.

The foregoing considerations suggest that the motivation to undergo body modification is a complex issue. However, the increasing interest in this field, which is reflected in the number of publications on the subject, gives hope for a better understanding of the phenomenon of tattoos, piercings and other body modifications in the future.

Aim

The aim of the study was to examine the level of satisfaction with life, various dimensions of self-esteem and the state of mental health in people with body modification. For this purpose, tattooed or pierced subjects were compared to those without such modifications. A distinction is made between those with tattoos and those with piercings, and also these two groups were compared to each other. Based on the available literature data, the following general hypotheses were formulated:

1. People with body modification (tattoos and/or piercing) have a lower degree of satisfaction with life compared to the control group;
2. Having body modification, in form of tattoo or piercing, is associated with reduced self-esteem;
3. Subjects with body modification (tattoos and/or piercings) have a higher likelihood of mental health problems than those in the control group.

Material

The study was conducted from July 2012 to September 2013. It included 449 people aged 16–58 years (mean age 26.7 ± 6.35): the customers of a tattoo studio in Lodz and the people accompanying them, participants of festivals and conventions devoted to body modification and the outpatients of a General and Aesthetic Dermatology and Dermatosurgery Clinic in Lodz, who came to remove minor skin lesions. The study group consisted of 308 persons with body modification: tattoo (n = 90), body piercing in places other than the ear lobe (n = 53), or both tattoos and piercings (n = 165).

The control group consisted of 141 people who did not have similar body modifications and did not wish to have them in the future. Participation in the survey was voluntary and anonymous. Before the start, the subjects were given accurate spoken information about the study and they expressed consent. The study design was approved by the Bioethics Committee of the Medical University of Lodz on 22-05-2012, consent number RNN/410/12/KB .

Method

Researched variables and how they were measured

Demographic data was collected by a questionnaire developed for the purposes of this study. The following tools were also used:

1. The Satisfaction with Life Scale (SWLS)

To assess life satisfaction the authors employed SWLS created by E. Diener, R.A. Emmons, R.J. Larson and S. Griffin. The present study used a Polish version of the scale, as adapted by Juczyński. SWLS consists of five statements to be graded on seven-point scale. The range of possible results vary from 5 to 35 points. Higher scores imply greater satisfaction with life [23];

2. Multidimensional Self-Esteem Inventory (MSEI)

A Polish version of the MSEI (E.J. O'Brien and S. Epstein), as adapted by D. Fecenec, was used to evaluate self-esteem. The questionnaire contains 116 test items to be graded on a five-point scale. It consists of 11 scales, 9 of which directly concern global self-esteem, as well as components of its detailed function: competence, lovability, likability, personal power, self-control, moral self-approval, body appearance and body functioning. Two remaining scales are identity integration scale to measure global self-concept cohesion, and a defensive self-enhancement scale used to determine the level of need for social approval [24];

3. General Health Questionnaire (GHQ-28)

The General Health Questionnaire by David Goldberg was used to assess mental health in participants. This questionnaire helps to identify persons whose mental condition has undergone a temporary or long-term breakdown due to either experienced difficulties, problems or mental illness and also persons at risk of mental health disorders.The present study uses a 28-item version of the questionnaire, to be graded on a four-point scale. It yields both a total score and four sub-scores: somatic symptoms, anxiety/insomnia, dysfunction, and depression [25].

Statistical methods

Due to the nature of the analyzed data, as well as its non-normal distribution, non-parametric tests were used. The Mann-Whitney U test was used for the comparison of two independent samples (those with modifications and control group). The Kruskal-Wallis one-way analysis of variance was used to compare several independent groups, i.e. subjects with tattoos, subjects with piercings and subjects

with both. The Mann-Whitney U test was used as a post-hoc test when significant differences were obtained.

Results

Socio-demographic data

The subjects were aged 16–58 years. Subjects with body modification: tattoo or piercing, were significantly younger (mean age 25.9 ± 5.96 years) than those from the control group (28.3 ± 6.87 years old) ($p < 0.001$). Subjects with tattoos (27.8 ± 7.27 years) were on average, significantly older than those with piercing only (24.2 ± 6.84 years) ($p < 0.01$). The results are shown in Table 1.

Table 1. **Comparison of groups by age**

Group	Age			
	Min.	Max.	x	SD
With any BM	16	58	25.9	5.96
Tattoo	17	58	27.8	7.27
Piercing	16	53	24.2	6.84
Tattoo and piercing	17	40	25.4	4.46
Control	18	55	28.3	6.87
Comparison	H = 30.031; p < 0.001 Group with BM – control group: z= 4.401; p < 0.001 Piercing – control: z = 4.695; p < 0.001 Piercing and tattoo – control: z = 4.189; p < 0.001 Tattoo – piercing: z = 3.184; p < 0.01			

x – mean; SD – standard deviation

In both groups, there were more women: 75.6% in the study group and 59.6% in the control group. There was a statistically significant difference between the two groups in term of gender ($p < 0.001$). The percentage of men in the study group was significantly smaller than in the control group (24.4% vs. 40.4%). The results are shown in Table 2.

Table 2.**Comparison of groups by sex**

Group	Sex				Together		Chi-square test value	p-value
	Women		Men					
	n	%	n	%	n	%		
With BM	233	75.6	75	24.4	308	100.0	12.041	p < 0.001
Control	84	59.6	57	40.4	141	100.0		
Together	317	70.6	132	29.4	449	100.0		

In the study group, most people were both tattooed and pierced (53.6%), while 29.2% had only tattoos (either one or more), and 17.2% of participants were pierced but not tattooed. Women often had only piercings, but this was much less common in men, who had mainly tattoos ($p < 0.001$). The results are presented in Table 3.

Table 3. **Relationship between the type of body modification and sex of the respondents**

Type of BM	Sex				Together		Chi-square test value	p-value
	Women		Men					
	n	%	n	%	n	%		
Tattoo	41	17.6	49	65.4	90	29.2	67.579	p < 0.001
Piercing	46	19.7	7	9.3	53	17.2		
Tattoo and piercing	146	62.7	19	25.3	165	53.6		
Together	233	100.0	75	100.0	308	100.0		

People with tattoo or piercing showed a lower level of education compared to the control group ($p < 0.001$). In the study group more common was having secondary education (38%) or Bachelor's degree (29.2%). People from the control group were more likely to have Master's degree (44.6%), Bachelor's degree was as common as secondary education (24.8%). 4.6% of the study group had only primary education, compared to 1.4% in the control group. However, no statistically significant difference was observed between the educational level obtained by respondents based on subgroup: tattooed, pierced, and both pierced and tattooed ($p > 0.05$). Results are shown in Table 4.

Table 4. **Comparison of groups by educational level**

Educational level	Group with BM		Control group		Chi-square test value	p-value
	n	%	n	%		
Primary education	14	4.6	2	1.4	18.789	p < 0.001
Vocational education	4	1.3	2	1.4		
Secondary education	116	38.0	35	24.8		
Bachelor's degree	89	29.2	35	24.8		
Master's degree or PhD	82	26.9	67	44.6		
Together	305	100.0	141	100.0		

(Missing data: 3 cases)

Satisfaction with life

The results of the Satisfaction with Life Scale survey revealed no statistically significant difference between the group with BM and the control group ($p > 0.05$). The mean values were similar. Results are shown in table 5.

Table 5. **Mean results of the Satisfaction With Life Scale in the BM and control groups**

	Parameters calculated in the groups						Z-test value	p-value
	With BM			Control				
	x	Me	SD	x	Me	SD		
SWLS results	21.33	21	5.87	20.57	21	6.10	1.161	p > 0.05

x – mean; Me – median; SD – standard deviation

No statistically significant difference was observed between the results obtained by respondents based on subgroup: tattooed, pierced, and both pierced and tattooed ($p > 0.05$): Table 6.

Table 6. **Mean results of SWLS in the subgroups with different types of Body Modification**

	Parameters calculated in the groups						H-test value	p-value
	Tattoo		Tattoo and piercing		Piercing			
	x	SD	x	SD	x	SD		
SWLS results	20.86	5.88	21.43	5.90	21.83	5.79	1.050	p > 0.05

x – mean; SD – standard deviation

Self-esteem

Only two statistically significant differences were revealed between the study group and control group by the MSEI test of self-esteem: Competence ($p < 0.001$) and Personal Power ($p < 0.01$). The BM group scored significantly higher on both of these scales, implying they had better self-esteem than the control group. For Competence, the BM group scored 37.2 ± 6.48, while the control group scored 33.6 ± 6.14. Similarly, Personal Power scores were 35.6 ± 6.98 for the BM group and 33.5 ± 7.02 for the control group. Results of the other MSEI scales did not differ significantly between the two groups ($p > 0.05$). The results are presented in Table 7.

Table 7. **Mean results of the Multidimensional Self-Esteem Inventory in the body modification group and the control group**

MSEI results	Parameters calculated in the groups						Z-test value	p-value
	With BM			Control				
	x	Me	SD	x	Me	SD		
Global Self-Esteem	31.1	31.0	8.48	30.6	30.0	8.20	0.646	p > 0.05
Competence	37.2	37.0	6.48	33.6	30.0	6.14	5.978	p < 0.001
Lovability	34.4	35.0	8.55	34.6	36.0	7.98	0.141	p > 0.05
Likability	34.4	35.0	6.80	33. 2	33.0	6.83	1.905	p > 0.05
Personal Power	35.6	35.0	6.98	33.5	34.0	7.02	2.712	p < 0.01
Self-Control	32.0	32.0	6.86	30.9	31.0	6.44	1.385	p > 0.05
MoralSelf-Approval	39.0	39.5	6.69	38.7	40.0	6.34	0.402	p > 0.05
Body Appearance	31.2	32.0	8.74	30.5	31.0	8.18	0.963	p > 0.05
Body Functioning	32.6	33.5	9.07	32.1	32.0	9.00	0.461	p > 0.05
Identity Integration	31.8	32.0	7.40	31.3	32.0	8.17	0.339	p > 0.05
DefensiveSelf-Enhancement	47.5	48.0	9.25	47.0	46.0	8.97	0.703	p > 0.05

x – mean; Me – median; SD – standard deviation

Within the study group, statistically significant differences were noted in the Competence ($p < 0.05$), Likability ($p < 0.05$), Self-control ($p < 0.05$) and Body Functioning scales ($p < 0.05$). In the case of Competence, respondents with both tattoo and piercing obtained significantly higher results than people having only piercing (38 ± 6.06 vs. 34.9 ± 7.86). Similar results were observed for Likability scale, where significantly higher mean was observed in the group with both forms of BM than in people with piercing (35.3 ± 6.48 vs. 32.8 ± 8.01). Tattooed subjects achieved significantly higher scores on both Self-control and Body Functioning than pierced subjects: the Self Control scores were 33.3 ± 6.14 vs. 30.5 ± 6.92 and Body Functioning scores were 34.7 ± 8.34 vs. 30.6 ± 9.34 for tattooed and pierced subjects, respectively. The results are illustrated in Table 8.

Table 8. **Results of MSEI in the subgroups with different types of Body Modification**

MSEI results	Parameters calculated in the groups						H-test value p-value	
	Tattoo		Tattoo and piercing		Piercing			
	x	SD	x	SD	x	SD		
Global Self-Esteem	30.9	8.49	31.7	8.16	29.9	9.41	1.814	p > 0.05
Competence	37.1	6.05	38.0	6.06	34.9	7.86	8.389	p < 0.05
Lovability	34.8	7.71	34.7	8.57	33.1	9.82	0.942	p > 0.05
Likability	33.7	6.41	35.3	6.48	32.8	8.01	8.078	p < 0.05
Personal Power	34.8	7.13	36.5	6.56	34.1	7.68	5.971	p > 0.05
Self-Control	33.3	6.14	31.7	7.13	30.5	6.92	8.965	p < 0.05
MoralSelf-Approval	39.1	6.22	39.1	6.85	38.3	7.06	0.694	p > 0.05
Body Appearance	30.5	8.57	31.5	8.64	31.1	9.42	0.856	p > 0.05
Body Functioning	34.7	8.34	32.1	9.21	30.6	9.34	7.561	p < 0.05
Identity Integration	32.7	6.86	31.5	7.64	31.4	7.54	1.999	p > 0.05
DefensiveSelf-Enhancement	49.3	9.37	47.0	9.11	46.0	9.14	4.662	p > 0.05

x – mean; SD – standard deviation

General health

The analysis of the GHQ-28 results revealed statistically significant differences between the BM and control groups regarding Anxiety and Insomnia ($p < 0.05$) and Dysfunction ($p < 0.05$) scales. The control group scored significantly higher on both scales, which indicates that its members are more likely to develop a disturbance than those in the BM group: the Anxiety and Insomnia scores were 1.75 ± 1.84 vs. 1.50 ± 2.01 and Dysfunction scores were 1.41 ± 2.0 vs. 0.85 ± 1.46 for the control and BM groups respectively. No significant differences were noted for the other GHQ-28 scales ($p > 0.05$). The results are illustrated in Table 9. In contrast, no statistically significant difference was found between the BM and control groups regarding the distribution of scores within each group ($p > 0.05$). Although the total score of the respondents was most often less than 5 in both groups, this result was observed a little more frequently in the BM group (62.7%) than in control group (54.6%).

There was no statistically significant difference between participants with different types of body modification with regard to total GHQ-28 score ($p > 0.05$), as shown in Table 10.

Table 9. **Mean results of the General Health Questionnaire in people with body modification and in control group**

GHQ-28 results	Parameters calculated in the groups						Z-test value p-value	
	With BM			Control				
	x	Me	SD	x	Me	SD		
Somatic Symptoms	1.47	1	1.71	1.69	1	1.81	1.037	p > 0.05
Anxiety and Insomnia	1.50	1	2.01	1.75	1	1.84	1.997	p < 0.05
Dysfunction	0.85	0	1.46	1.41	0	2.0	2.293	p < 0.05
Depression	0.73	0	1.61	0.94	0	1.83	1.178	p > 0.05
Total	4.54	2	5.48	5.77	4	6.24	1.931	p > 0.05

Table 10. **Results of General Health Questionnaire in the subgroups with different types of Body Modification**

GHQ-28 results	Calculated parameters in the groups						H-test value p-value	
	Tattoo		Tattoo and piercing		Piercing			
	x	SD	x	SD	x	SD		
Somatic Symptoms	1.32	1.63	1.56	1.81	1.45	1.53	0.953	p > 0.05
Anxiety and Insomnia	1.29	1.78	1.66	2.20	1.36	1.76	0.941	p > 0.05
Dysfunction	0.77	1.30	0.87	1.54	0.94	1.45	0.647	p > 0.05
Depression	0.76	1.66	0.71	1.58	0.75	1.63	0.569	p > 0.05
Total	4.12	5.18	4.79	5.81	4.51	4.95	1.1.77	p > 0.05

Discussion

Results of the study did not confirm the assumed hypotheses. No statistically significant differences regarding Satisfaction with Life were revealed between the BM group and the control group, and no such differences were seen between people with different types of BM. Hence, the tattooed or pierced subjects declare a similar degree of satisfaction with their own lives as the control subjects. The results did not confirm opinions that BM is supposed to be a sign of dissatisfaction with one's own life. The authors of the studies are not aware of any other study which compares the satisfaction with life, happiness or well-being in people with tattoos or piercing and without them.

Therefore, further research is needed to determine whether a similar level of life satisfaction in people with and without body modifications represents the actual lack of differences between these groups, or whether different, mediating variables are involved. Nevertheless, the tool used in the present study, the Satisfaction with Life Scale, obtains reliable results and is not affected by other factors. Arrindell, Meeuwesen and Huys [26] in their studies demonstrated that results obtained by the SWLS

were not influenced by age, sex, level of education or the tendency to give socially approved answers. Other studies [27] demonstrate that the results of the SWLS were not dependent on poor impulse control (disinhibition) or sensation seeking, which are features often connected to the possession of body modification [*cf.* 9–11, 21, 28, 29]. On the other hand, a positive correlation has been previously noted between SWLS results and general state of health [26, 27] and self-esteem [23, 27]. The results of the present study confirm that tattooed and pierced subjects are no worse than rest of the population with regard to these points, which indicates, to some extent, the consistency of the results.

Significant differences were observed between the BM group and the control group in only two out of nine aspects of self-esteem, Competence and Personal Power, and higher scores on both scales were obtained by people with body modifications. Further analysis of the results suggests that having a tattoo correlates more positively with self-esteem than a piercing. It was revealed that the subjects with a tattoo, or both a tattoo and piercings, rate better than those with only piercing in terms of Competence, Likability, Self – Control, and Body Functioning.

Results of other studies on the self-esteem of people with body modifications are equivocal. Some authors [30, 31] believe that tattoo and body piercing are an expression of reduced self-esteem. However, the hypothesis is not confirmed in our study, as well as in the studies of other authors. For example, Frederick and Bradley [13] and Deschesnes [32] found no differences in self-esteem between people with body modifications and those without such modifications. Other studies [21] report that although BM is not associated with any loss of self-esteem, it does note an association between having a tattoo or piercing and displaying a negative attitude to one's own body. In this regard, the results differ from those of the present study, according to which self-evaluation of Body Appearance does not differentiate people with BM and the control group. The discrepancy can be explained by the different methodology of the two studies – in the present study, Body Appearance was measured as an aspect of self-esteem, while Carroll and Anderson measured it as an independent aspect, using the Body Investment Scale. However, an interesting dependency was noted in studies conducted by Drews et al. [29], but only in men: those having a tattoo considered themselves as more attractive than others.

Based on these results it is not possible to assess the direction of relationship between self-esteem and possession of BM. It is therefore not clear whether people who decide to have a tattoo or piercing have a priori a high level of self-esteem, or whether tattooing or body piercing has the capability to raise self-esteem, at least in terms of some of its aspects. However, longitudinal studies conducted by Swami [22] tend to favour this second explanation. The study investigates the impact of the acquisition of the first tattoo on selected aspects of mental functioning, and notes that after 3 weeks of the procedure, subjects perform better in many aspects: for example, they declare a higher self-esteem than before getting their tattoo.

In addition, on the basis of own research it can be concluded that a positive self-image in people with tattoos and piercings is real and this is not a form of defense mechanisms. In addition to other scales measuring components of self-esteem, the

MSEI questionnaire used in the present study includes a Defensive Self-Enhancement Scale. It enables people with high and "real" self-esteem to be distinguished, and identifies those whose high scores are the result of defense mechanisms and a strong need for social approval [24]. The Defensive Self-Enhancement Scale can therefore be considered as a control scale. The BM group were not found to differ in this regard from the control group, implying that the results obtained in other scales are true and adequate to the self-knowledge of respondents.

The results of our work also showed no increase in symptoms of psychopathology in respondents having a tattoo or piercing. GHQ-28 results show that people without body modification were significantly more likely to experience sleep disorders and other dysfunctions. Our findings support those of previous studies, which note that people with tattoos have a lower risk of developing depressive disorders than those without [13]. In contrast, slightly different results were obtained by Stirn [10] in a study based on a shortened version of the questionnaire, the GHQ-12, who notes that although tattooed respondents felt significantly worse in terms of mental health, this was not recorded by pierced respondents, which may be explained by their younger age and consequently less awareness of their own mental health problems. Our findings, indicating a lower risk of developing mental health problems in people with tattoos and piercings, may seem contrary to the reports of increased involvement in risky activities, including frequent use of psychoactive drugs in this group [4, 8, 10, 11, 29]. Other researchers often search a link between mental health problems and sensation seeking or drug use [33–35]. The results of studies on this topic are not conclusive, varying largely based on the choice of theoretical approach and research tools. The discrepancies between the results obtained in the present study and works of other authors can be also explained by the use of different methodologies. The present study uses the GHQ-28 questionnaire, which examines merely subjective psychological well-being. It does not include questions about sensation seeking or use of drugs and alcohol.

From the results of the present study emerges a picture of people with tattoos and piercings as devoid of symptoms of mental illness, showing a positive attitude toward themselves and being satisfied with life. However, due to contradictory literature data concerning psychological traits of people with body modification (and also due to the fact that methods used in the present study measure only the overall level of functioning in terms of the analyzed variables), the results of the study should be interpreted cautiously. There are also not many Polish studies of the subject, which makes a discussion of the obtained results more difficult. For study limitations can be considered the fact, that the subjects were volunteers, moreover, the control group shows a slightly different socio-demographic characteristics than the study group. For instance, tattooed or pierced subjects were younger and had lower educational level than those without such modifications. A thorough analysis of these differences, as well as a more detailed description of the amount of body modification, motivational factors to undergo the tattooing or piercing procedure and discussion on complications after these procedures, are the subject of another work [36].

In addition, it should be noted that the present study included only people with a relatively common form of body modification, such as tattoo and body piercing.

The study did not include people with more extreme body modification forms, such as, for example, scarification (intentionally made scars), split tongue, subdermal or transdermal implants, eye tattoos, ear or teeth shaping. These modifications are still quite rare in Poland, although recently they gain popularity also in our country. It can be assumed that people who decide to undergo such extreme practices have different psychological traits, than people having only tattoo and piercing. It is possible that the reason for the decision to have extreme body modification is certain psychopathology of the individual. This issue requires further study. Such research, however, is difficult. Experience of the authors shows, that individuals with extreme body modifications do not agree to participate in psychological studies.

Conclusions

1. There were no statistically significant differences in terms of life satisfaction among tattooed or pierced people and the control group;
2. Tattooed or pierced people were characterized by slightly higher self-esteem concerning the assessment of their Competence and Personal Power compared to those without such body modifications;
3. No statistically significant difference was noted between people with a tattoo or piercing and the control group with regard to Identity Integration, Defensive Self-Enhancement, Global Self-Esteem and its aspects, such as: Lovability, Likability, Self-Control, Moral Self-Approval, Body Appearance and Body Functioning;
4. People with BM showed fewer signs of sleep disorders and other dysfunctions than the control group;
5. The frequency of depressive or somatic symptoms did not differentiate people with and without body modifications;
6. The issue requires further study, including a larger number of variables and biographical data of the respondents.

References

1. Kilmer SL. *Laser treatment of tattoos.* Dermatol. Clin. 1997; 15(3): 409–417.
2. Stirn A. *Body piercing: medical consequences and psychological motivations*. Lancet 2003; 361(9364): 1205–1215.
3. Bone A, Ncube F, Nichols T, Noah ND. *Body piercing in England: a survey of piercing at sites other than earlobe.* BMJ 2008; 336(7658): 1426–1428.
4. Ostaszewski K, Kocoń K. *Tatuaż i kolczykowanie ciała a używanie substancji psychoaktywnych i inne zachowania ryzykowne wśród gimnazjalistów.* Alkohol. Narkom. 2007; 20(3): 247–266.
5. Sarnecki JH. *Trauma and tattoo.* AOC 2001; 12(2): 35–42.
6. Kasten E. *Body modification – psychologische und medizinische aspekte von piercing, tattoo, selbstverletzung und anderen körperveränderungen.* München: Ernst Reinhardt Verlag; 2006.
7. Nowak R. *Psychologiczne aspekty tatuowania się.* Rocz. Psychol. 2012; 15(2): 87–104.

8. Greif J, Hewitt W, Armstrong ML. *Tattooing and body piercing body art practices among college students.* Clin. Nurs. Res. 1999; 8(4): 368–385.
9. Roberts TA, Auinger P, Ryan SA. *Body piercing and high-risk behavior in adolescents.* J. Adolesc. Health 2004; 34(3): 224–229.
10. Stirn A, Hinz A, Brähler E. *Prevalence of tattooing and body piercing in Germany and perception of health, mental disorders, and sensation seeking among tattooed and body-pierced individuals.* J. Psychosom. Res. 2006; 60(5): 531–534.
11. Roberti JW, Storch EA, Bravata EA. *Sensation seeking, exposure to psychosocial stressors, and body modifications in a college population.* Pers. Indiv. Differ. 2004; 37(6): 1167–1177.
12. Dhossche D, Snell KS, Larder S. *A case-control study of tattoos in young suicide victims as a possible marker of risk.* J. Affect. Disord. 2000; 59(2): 165–168.
13. Frederick CM, Bradley KA. *A different kind of normal? Psychological and motivational characteristics of young adult tattooers and body piercers.* NAJP 2000; 2(2): 380–394.
14. Roberti JW, Storch EA. *Psychosocial adjustment of college students with tattoos and piercings.* JCC 2005; 8(1): 14–19.
15. Romans SE, Martin JL, Morris EM, Harrison K. *Tattoos, childhood sexual abuse and adult psychiatric disorder in women.* Arch. Womens Ment. Health 1998; 1(3): 137–141.
16. Williams K. *Tattoos, scars, body adornment and dishevelment in an acute psychiatric population.* Psychiatr. Bull. 1998; 22(2): 94–96.
17. Costa PT, McCrae RR. *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) manual.* Odessa, Floryda: Psychological Assessment Resources; 1992.
18. Forbes GB. *College students with tattoos and piercings: Motives, family experiences, personality factors, and perception by others.* Psychol. Rep. 2001; 89(3): 774–786.
19. Tate JC, Shelton BL. *Personality correlates of tattooing and body piercing in a college sample: The kids are alright.* Pers. Individ. Dif. 2008; 45(4): 281–285.
20. Claes L, Vandereycken W, Vertommen H. *Self-care versus self-harm: piercing, tattooing, and self-injuring in eating disorders.* Eur. Eat. Disord. Rev. 2005; 13(1): 11–18.
21. Carroll L, Anderson R. *Body piercing, tattooing, self-esteem, and body investment in adolescent girls.* Adolescence 2002; 37(147): 627–637.
22. Swami V. *Marked for life? A prospective study of tattoos on appearance anxiety and dissatisfaction, perceptions of uniqueness, and self-esteem.* Body Image 2011; 8(3): 237–244.
23. Juczyński Z. *Narzędzia pomiaru w promocji psychologii zdrowia*. Warsaw: Psychological Test Laboratory of the PPA; 2001.
24. Fecenec D. *Wielowymiarowy Kwestionariusz Samooceny MSEI. Podręcznik.* Warsaw: Psychological Test Laboratory of the PPA; 2008.
25. Makowska Z, Merecz D. *Ocena zdrowia psychicznego na podstawie badania Kwestionariuszami Davida Goldberga. Podręcznik dla użytkowników kwestionariuszy GHQ-12 i GHQ-28.* Łodz: Nofer Institute of Occupational Medicine Publishing House; 2001.
26. Arrindell WA, Meeuwesen L, Huyse FJ. *The Satisfaction With Life Scale (SWLS): Psychometric properties in a non-psychiatric medical outpatients sample.* Pers. Individ. Dif. 1991; 12(2): 117–123.
27. Arrindell WA, Heesink J, Feij JA. *The satisfaction with life scale (SWLS): Appraisal with 1700 healthy young adults in The Netherlands.* Pers. Individ. Dif. 1999; 26(5): 815–826.
28. Krasic DB, Mitic ML, Kostic JS, Ilic NM, Rankovic MZ. *The psychological profile of young people and tattoo changes.* Eur. Psychiatry 2011; 26(1): 315.

29. Drews DR, Allison CK, Probst JR. *Behavioral and self-concept differences in tattooed and nontattooed college students.* Psychol. Rep. 2000; 86(2): 475–481.
30. Farrow JA, Schwartz RH, Vanderleeuw J. *Tattooing behavior in adolescence: A comparison study.* Arch. Pediatr. Adolesc. Med. 1991; 145(2): 184.
31. Raspa RF, Cusack J. *Psychiatric implications of tattoos.* Am. Fam. Physician 1990; 41(5): 1481–1486.
32. Deschesnes M, Fines P, Demers S. *Are tattooing and body piercing indicators of risk-taking behaviours among high school students?* J. Adolesc. 2006; 29(3): 379–393.
33. Regier DA, Farmer ME, Rae DS, Locke BZ, Keith SJ, Judd LL. et al. *Comorbidity of mental disorders with alcohol and other drug abuse.* JAMA 1990; 264(19): 2511–2518.
34. Zuckerman M, Neeb M. *Sensation seeking and psychopathology.* Psychiatry Res. 1979; 1(3): 255–264.
35. Pedersen W. *Mental health, sensation seeking and drug use patterns: a longitudinal study.* Br. J. Addict. 1991; 86(2): 195–204.
36. Pajor A, Broniarczyk-Dyła G. *Charakterystyka osób z tatuażem i piercingiem, motywacje do zdobienia ciała oraz ocena częstości powikłań.* Dermatol. Klin. 2014; 16(1): 9–13.

Address: Anna J. Pajor
Faculty of Health Sciences
Medical University of Lodz
90-647 Łódź, Pl. gen. J. Hallera Street 1