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Prevalence of tattooing and body piercing in Germany and perception of health, mental disorders, and sensation seeking among tattooed and body-pierced individuals

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Abstract

Objective: The objective of this study was to obtain data on the incidence and relationship of psychological factors to tattooing and body piercing from a large and representative sample of German citizens ($N=2043$). **Methodology:** Representative data (sample age range=14–93 years) were evaluated with respect to health-related quality of life (SF-36), mental health (General Health Questionnaire), mental disorders (Patient Health Questionnaire), and sensation seeking (Arnett Inventory of Sensation Seeking). **Results:** The prevalence of tattooing and that of body piercing in the general German population are 8.5% and 6.5%, respectively. Individuals aged between 14 and 24 years display the highest rate of body piercings or tattoos (females, 41%; males, 27%). Within the group of individuals aged between 14 and 44 years, unemployment and nonaffiliation to a church are positively correlated, tattooing is significantly correlated with the perception of reduced mental health, and both tattooing and body piercing are correlated with significantly increased sensation-seeking behavior. **Conclusions:** Next to being motivated by fashion and the urge to fit in with one's peers, the major reasons for body modification practices in the German population appear to be negatively perceived conditions of life, reduced social integration, and increased sensation-seeking behavior.

Keywords: Body modifications; Tattoo; Body piercing; Prevalence; Health perception; Sensation seeking

Introduction: surveys on tattooing and body piercing

Body piercing is defined as "a penetration of jewelry into openings made in such body areas as eyebrows, ears, lips, tongue, nose, navel, nipples, and genitals" [1,2]; piercing of the earlobes is deliberately excluded from this definition. Tattooing, on the other hand, is defined as "an invasive procedure in which pigment is introduced into the skin by multiple punctures to produce an indelible decorative design" [3]. Both are contemporary practices intended to create a lasting body modification (BM), which counters, generally speaking, the established social norms of beauty. They are occurring across the social spectrum and over a wide range of ages. In recent years, they have increased tremendously in popularity [4]. The roots of these practices can be traced back to ancient cultures and tribal societies from all over the world [5,6]. However, only in Australia has a representative survey been undertaken ($N=10{,}030$). It revealed a prevalence of 10% for tattooing and of 8% for body piercing [7].

The few studies that have analyzed relations between BMs and certain psychological characteristics [8–11] revealed increased risk-taking behavior among the surveyed group. Body piercings and tattoos are significantly correlated with the trait anger [12] and positively correlated with sensation seeking as well as psychosocial stressors among college students [13]. Various articles suggest a correlation

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between BM and substance abuse [14,15]. Tattoos have been found to be possible markers for both suicide and accidental death, presumably because of their shared risk factors such as substance abuse and personality disorder [16] as well as their association with predictable adverse health risk behaviors among military recruits [17]. Having a tattoo has been found to be weakly and negatively correlated with the strength of religious faith [18].

Despite the high risks involved in BM practices and their potential repercussions on the health system [5], there have been few attempts to obtain representative data on practitioners' social backgrounds. There are also limited data on the psychological characteristics associated with BM. The purpose of the present investigation was to close some of those gaps by obtaining data on the incidence and relationship of psychological factors to tattooing and body piercing from a large and representative sample of German citizens ($N=2043$).

Methods

Study participants

This study is based on a representative survey of the German population recruiting a total of 2043 respondents aged between 14 and 93 years. Data were collected during the annual survey of the University of Leipzig Department of Medical Psychology and Medical Sociology on health behavior and health perception by the USUMA-Berlin (Independent Service for Surveys, Methods, and Analyses) based on 210 sample points in Germany. Households and the target person in each household were selected with the random route procedure. Participants were questioned face to face in their homes by lay interviewers trained by the USUMA. The response rate of those contacted was 64%. Details of the sample are shown in Table 1.

Table 1
Study participants

	Total sample ($N=2043$)	Subsample of 14- to 44-year olds ($n=864$)
Mean age (years)	48.9	31.1
Age (years; %)		
<25	11.8	27.9
25–34	12.9	30.6
35–44	17.6	41.6
45–54	16.4	–
55–64	18	–
65–74	15	–
>74	8.3	–
Sex (%)		
Male	47	49.4
Female	53	50.6
Marital status (%)		
Married (living together)	49.6	37.2
Married (separated)	1.2	1.5
Single	24.5	51.6
Divorced	10.8	9.4
Widowed	14.1	0.3
Partnership (%)		
Living with partner	56.2	49.0
Not living with partner	43.8	51.0
Education (%)		
Lower than high school	48.2	27.7
High school	35.3	50.5
College or university degree	10.7	16.8
University studies	5.8	5.1
Profession (%)		
Never been working	2.2	1.9
Worker	13.8	10.3
Skilled worker	29.6	27.5
Farmer	0.4	0.0
Freelancer	1.1	1.6
Independent	4.6	5.0
Employee	45.7	51.7
Civil servant	2.7	2.1
Employment (%)		
Full time (≥35 h)	36.1	51.9
Part time (34 h)	7.4	11.3
Unemployed	8.9	10.9
Pension	31.7	0.3
Not employed (e.g., homemaker)	7.1	6.9
Schooling	7.9	18.6
Religious affiliation (%)		
Yes	62.2	56. 2
No	37.8	43.8

Questionnaires

In addition to sociodemographic data, a number of health-related and psychological variables were assessed with validated and standardized self-report inventories. Participants filled up the questionnaires by themselves during the interview. The quality of life questionnaire SF-36 was used [19,20]. Positive and negative aspects of mental health within the last weeks were assessed with the 12-item short version of the General Health Questionnaire (GHQ) [21]. In addition, we applied the brief version of the Patient Health Questionnaire (Brief PHQ) [22]. The trait sensation seeking [23] was assessed with the Arnett Inventory of Sensation Seeking (AISS) [24,25]. At the end of the interview, the respondents were asked whether they were wearing one or more tattoos, one or more body piercings, or both. Earlobe piercings were excluded from the survey as nonrelevant.

Statistics

Statistical analysis was performed with the SPSS. To test the influence of BMs on mental health variables, we calculated three-way analyses of variance (ANOVAs) with the following three factors: BM (tattoo or body piercing vs. no tattoo or body piercing), sex, and age group (14–24, 25–34, and 35–44 years). Because of the possible confounding effects of age, the sample was restricted to the age group of 14–44 years. The remaining age effects were accounted for by the inclusion of the age group factor.

The F values of the other factors and the interaction components are not given here.

Results

Prevalence of tattooing and body piercing in the German population

Of the 2043 sampled subjects, 8.5% were tattooed and 6.8% were body pierced. Looking into the relevant sample of respondents aged between 14 and 44 years, the prevalence of tattooing was 15% and that of body piercing was 14%. There was no significant difference in mean age between the tattooed and nontattooed respondents (32 vs. 30 years). Both groups were roughly as often in a partnership (51% vs. 48%). Body-pierced respondents, however, were significantly younger in mean age (26 years) and less often in a partnership (35%) than the non-body-modified respondents. In comparison with the control subjects, the tattooed and body-pierced respondents were more often found in urban rather than rural settings (81% and 79%, respectively, as compared with 70% of the control subjects) and were less often affiliated with religious communities (54% and 44%, respectively, compared with 58% of the control subjects). Unemployment (excluding students and homemakers) occurred significantly more often among tattooed and body-pierced respondents (17%) as compared with the control subjects (10%). The highest rate of body piercing was found among women aged between 14 and 24 years (38%), and the highest rate of tattooing was found among men aged between 25 and 34 years (22%). If tattoos and body piercings are summarized under the term "body modification," then the highest results are again within the group of those aged between 14 and 24 years (41% of the women and 27% of the men). By contrast, in the older age groups, more men than women were body modified (predominantly tattooed).

Table 2
The influence of tattoos and body piercings on health-oriented and psychological variables (ANOVA F values) for the subgroup of 14- to 44-year olds

	Tattoo ($n=130$)	Piercing ($n=119$)
GHQ-12 mental health	8.5**	2.2
PHQ depression	3.5	0.8
BDI depression	3.6	0.8
SF-36		
Physical functioning	1.2	0.0
Role–physical limitations	0.1	0.2
Bodily pain	1.3	1.8
Health perceptions	3.3	3.3
Vitality	0.8	0.9
Social functioning	3.1	3.5
Role–emotional functioning	0.0	0.1
Mental health	20.5***	6.1*
AISS		
Intensity	23.7***	12.4***
Novelty	33.3***	18.6***
Total	37.9***	25.4***

Figures are expressed as F values and significance levels of the main factor BM in a three-factorial ANOVA, with the factors BM, sex, and age group.
* $P<.05$.
** $P<.01$.
*** $P<.001$.

Psychological and health-related results

There was no significant difference between body-modified and non-body-modified respondents regarding depression or anxiety (PHQ $P>.05$; Table 2). However, the rating of personal state of mental health in both the GHQ and Subscale 8 of the SF-36 revealed that tattooed respondents felt significantly worse in terms of mental health ($P<.01$). In sensation-seeking behavior (AISS), both tattooed and body-pierced respondents showed significant differences ($P<.001$) on all three scales (total, novelty, and intensity).

Discussion

Prevalence

The prevalence of tattooing and especially body piercing is particularly pronounced in individuals aged between 14 and 24 years (38% of the female respondents were body pierced; 22% of the male respondents were tattooed). One reason for this is the recency of the fashion-motivated phenomenon that may be triggered by the urge to fit in with one's peers.

Sensation-seeking behavior

The "recency factor" could also account for the finding that sensation-seeking behavior is significantly higher among the body-modified subjects aged between 14 and 24 years. This speaks of the idea that BM practices are another way of attaining varied, novel, and complex situations and experiences, which imply physical and social risks, a disposition for which the term "sensation seeking" has been coined and which is particularly pronounced among the young [23]. This goes well with the idea that BMs are used as a means to compensate for the lack of physical challenges in Western civilizations [26].

Unemployment and religious affiliation

It was striking that there was a correlation between the incidence of BM practices and unemployment. This could suggest that the susceptibility to perform a BM is negatively correlated with the degree of social integration, which is supported by the finding that tattooed and especially body-pierced subjects are less religiously affiliated than non-body-modified subjects. This may support the interpretation

that BMs in the contemporary Western social setting fulfill, at least in part, symbolic functions and serve as surrogates of stabilizing rituals [6]. Together, these results suggest that a major motive for BMs could be uneasiness resulting from fragile social bonding.

Mental health

In view of the many side effects and the painful nature of BM practices [5,6,26], we hypothesized that subjects practicing BM might have a reduced health-related quality of life. Only in the case of tattooing was the discomfort derived from fragile social bonding reflected in the assessments of mental health. It is unclear why those who opted for the practice of body piercing did not differ in these tests from the control population. One possibility could be that the prevalence of body piercing was particularly high in the young, in whom awareness of mental problems may not yet be fully developed.

In conclusion, the results of this study provide statistically reliable data on the high prevalence of BMs in the adolescent age group of the German population. Because there can be severe complications involved in BM practices, especially body piercing [5], the high incidence speaks of the need for preventive measures and information for adolescents to reduce repercussions on the general health system. However, our data also show that BMs are mainly associated with reduced social bonding and sensation seeking, which in turn may enhance susceptibility to fashion and peer group pressure. In a clinical context, however, scrutiny is warranted because motives for BMs arise also from psychological conditions that may reflect fragility of social integration.

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