Short Communication

Self-reported dental anxiety and injection phobia among individuals with tattoos and piercings

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Abstract: Injection phobia and dental anxiety can, in severe cases, lead to avoidance of necessary treatment. The aim of this pilot study was to investigate self-reported injection phobia and dental anxiety among individuals with tattoos and/or piercings. The Injection Phobia Scale-Anxiety (IPSA) short form and the Modified Dental Anxiety Scale (MDAS) questionnaires were applied. Both the total IPSA and MDAS scores were significantly higher for individuals with tattoos in comparison with a control group (P < 0.001), suggesting a need for anxiety-reducing measures and facilitated treatment for this group of patients.

Keywords: dental anxiety, injection phobia, odontophobia, piercing, tattoo

Introduction

The etiology behind dental anxiety is complex and multifactorial, and can be associated with both direct and vicarious learning, as well as endogenous factors [1]. Trauma from past experiences is a predictor for increased risk of dental anxiety [2]. Oral injection phobia overlaps with dental fear and anxiety, and a fear of intraoral anesthesia is frequently reported as the main reason for being afraid of dental treatment. In addition to its negative impact on oral health with an increased risk of pain and infections, dental anxiety may also influence self-confidence and reduce social interactions due to embarrassment related to poor dental status. In order to facilitate dental care, better knowledge about the prevalence and distribution of dental anxiety and injection phobias in the population is needed. Individuals with tattoos and/or piercings report higher incidences of risk taking, drug abuse, violence, avoidance behavior, anxiety and depression [3]. Similar psychological characteristics have also been associated with dental anxiety and avoidance of dental care [4]. Overall, a higher prevalence of general anxiety has been reported among tattooed individuals — a predictor for irregular dental care [4-6]. Currently, as the prevalence of injection phobia and dental anxiety among individuals with tattoos and piercings is unknown, the aim of this pilot study was to investigate self-reported anxiety scores related to anesthesia injections and dental treatment among individuals with tattoos and/or piercings in comparison with a control group.

Study population

Recruitment for the study took place in Bergen, Norway, at 10 tattoo and piercing studios for the study group, and at a hairdressing studio for the controls. Questionnaires were randomly distributed by the first author of the study (JB). Forty-six individuals were recruited to the control group. Forty-six individuals were recruited to the control group, as well as between the subgroups. Neither the tattoo/piercing group nor the control group (Table 2). Neither the number of tattoos nor that of piercings was significantly associated with any time. None of the participants withdrew. Data from the questionnaire on paper. The Injection Phobia Scale-Anxiety (IPSA) short form [7] and the Modified Dental Anxiety Scale (MDAS) [8] were applied. The IPSA and MDAS are validated questionnaires used in fear and anxiety investigations published under the creative commons attribution licence, creating a score related to anesthesia injections and dental treatment. The IPSA short form has eight questions concerning injections. The response options range from 0 to 4, where 0 represents no anxiety and 4 represents maximum anxiety. The total score from the eight questions ranges from a minimum of 0 to a maximum of 32. The MDAS consists of five questions about how anxious the participant feels before and during a dental visit. The response options range from 0 to 4, where 0 represents no anxiety and 4 represents extreme anxiety. The total score from the five questions varies from 0 to a maximum of 20.

Ethical considerations

The study was approved by a regional ethics committee (REK vest), local approval number: 2018/2522-5. The study was conducted in accordance with the Declaration of Helsinki. All individuals recruited to the study gave their written consent to participate and had the opportunity to withdraw at any time. None of the participants withdrew. Data from the questionnaire were anonymized and if the participants had chosen to withdraw, the data for that individual were to be deleted. All recorded information was stored on a password-protected computer, accessible to only the co-authors of the study. All questionnaires were shredded after registration.

Statistical analysis

All statistical calculations were performed using STATA version 16 (Statacorp, College Station, TX, USA). Mean, median, range and standard deviation were calculated for all variables. A Wilcoxon rank-sum (Mann-Whitney) test was performed to calculate P-values between the tattoo/piercing group and the control group, as well as between the subgroups. Results with a P-value of <0.05 were considered statistically significant.

Results

Injection phobia

Individuals with tattoos had significantly higher self-reported injection phobia than the control group (P < 0.001). The mean IPSA score in the tattoo group was 12.1, as compared with 5.4 for the controls (Table 1). Question no.3, “Having an anesthetic injection at the dentist”, had the highest score, followed by question no.4, “having a venipuncture (needle inserted into vein)” and question no.7, “getting a vaccination”. No significant differences in IPSA score were observed between men and women in either the tattoo/piercing group or the control group (Table 2). Neither the number of tattoos nor that of piercings was significantly associated with
the IPSA score (Tables 3 and 4). The age of control group participants was significantly higher than that of tattoo/piercing group participants (\( P = 0.0016 \)).

**Dental anxiety**

Individuals with tattoos also reported a significantly higher dental anxiety score than the control group (\( P < 0.001 \)). The mean MDAS score in the tattoo group was 7.8, as compared to 3.0 among the controls (Table 1). Question no.5, “If you were about to have a local anesthetic injection in your gum, above an upper back tooth, how would you feel?” had a particularly high score compared to the other questions. For either experimental group, no significant differences in MDAS score between women and men were noted (Table 2). There were also no significant differences in MDAS score between individuals with one tattoo and individuals with several tattoos (Table 3), nor between individuals with piercings and individuals with no piercings (Table 4).

**Discussion**

No previous report has indicated a higher degree of injection phobia and dental anxiety among tattooed and/or pierced individuals. It might be considered contradictory that individuals who voluntarily undergo body modifications that involve needles would have higher injection phobia than the general population. Having an anesthetic injection at the dentist can be compared to getting a tattoo or piercing in the sense that pain is experienced differently at a tattoo studio as compared to a dental clinic. Participants in the latter. Although no differences were found between male and female participants, the majority of participants were male in both experimental groups, thus indicating a potential selection bias.

The present work was a pilot study with a relatively small sample size. When comparing reported dental anxiety and injection phobia in relation to the number of tattoos or piercings, a larger sample size would be needed in order to detect statistically significant differences. Overall, the higher self-reported injection phobia and dental anxiety found among individuals with tattoos should alert clinicians to a potential avoidance of necessary care in this group. However, as body modifications have become more main-
stream, studies evaluating personality traits, behavior and mental health should be interpreted with caution when assessing individual patients. Tattoo culture also differs around the world, and our findings will not necessarily be valid in other countries. Efforts should be made to ensure that all patients, including tattooed and/or pierced individuals, are treated professionally and without judgment by health care providers.

The higher degree of self-reported injection phobia and dental anxiety evident among individuals with tattoos suggests a need for anxiety reducing measures and facilitated treatment for this group of patients.

Conflict of interest
The authors have no conflicts of interest to declare.

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