Prevalence and Characteristics of Body Piercing and Tattooing Among High School Students

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ABSTRACT

Background: Although body piercing and tattooing seem to be gaining popularity among a diversity of social and age groups, studies of these practices in general adolescent populations are scarce. This study establishes the prevalence of body modification (tattooing and body piercing) among high school students in grades 7-11 (aged 12 to 18).

Methods: Data come from a 2002 in-school survey conducted among a representative sample of 2,180 students (81% response rate) enrolled in the 23 high schools of the Outaouais region in Quebec. Systematic sampling was performed. Specific data on tattooing and body piercing are available for 2,145 students (1% non-response rate).

Results: A prevalence of 27% for body piercing and 8% for tattooing is observed among high school students. Differences between girls and boys are observed in many ways: i.e., frequency and number of tattoos or piercings; aftercare practices. While most teens say that a “professional” in a studio performed their body modification and that they received aftercare instruction, a high percentage of students report health complications following the procedure.

Conclusion: Results show that tattooing and body piercing are common among adolescents and may involve health risks. Consequently, appropriate preventive measures should be adopted by professionals such as school counsellors, nurses, physicians and others who are in contact with teenagers to help them make informed choices.

MeSH terms: Tattooing; body piercing; adolescents; survey

METHODS

Data come from a 2002 in-school survey conducted among a representative sample...
TATTOOING AND BODY PIERCING AMONG HS STUDENTS

Of students grades 7-11 (aged 12 to 18) enrolled in all high schools (N=23) of the Outaouais region in Quebec (located in proximity to Canada’s national capital). A systematic sampling was used from the complete list of students (N=20,700) from each school and across each grade. Of the 2,700 students selected, 2,180 participated in the survey (81% response rate). Twelve percent were lost due to their being absent on the day of the survey (absences were justified by parents) or because they had moved. Questions pertaining to body modification represent one of the many dimensions of the survey, which included an array of health-related issues. Data on tattooing and body piercing were available for 2,145 students (1% non-response rate). Participants’ socio-demographic characteristics reflect those observed in the general high school student population of the region. Most participants (73%) live in an urban area. Their average age is 14.7 years (SD=1.51), with girls making up 52% of the sample. Three quarters (74%) of students spoke French as their first language, 19% spoke English, and 7% spoke another language.

Selected students who completed the anonymous self-administered questionnaire were assured of the confidentiality of responses. All of the questions relating to tattooing (n=9) and body piercing (n=10) are from the «Body Art Survey» designed by Armstrong for high schools students.11 Face and content validity of the instrument were confirmed by an expert panel of physicians, nurses, and counsellors in a study among college students.12 The questionnaire was pre-tested in one class each of grade 7 and 8 students (N=50; not included in the study) in order to ensure that the vocabulary level was relevant and the questions were understood by the students. See the Appendix for a sample of questions retained for the study. Approval from the Ethics Committee of the University of Quebec in the Outaouais was obtained before conducting the survey.

Comparisons of variables relating to body piercing or tattooing by sex and by age were tested using Pearson Chi-Square, at a level of significance of 0.05. Analyses were performed using SPSS 9.0 for Windows.

TABLE I
Prevalence of Tattooing and Body Piercing, by Gender and by Age Groups

<table>
<thead>
<tr>
<th>Gender</th>
<th>12 to 13 (n=557)</th>
<th>14 to 15 (n=876)</th>
<th>16 to 18 (n=712)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girls</td>
<td>9.8%</td>
<td>3.8%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Boys</td>
<td>5.6%</td>
<td>6.1%</td>
<td>12.9%</td>
</tr>
<tr>
<td>Total</td>
<td>7.7%</td>
<td>6.1%</td>
<td>9.3%</td>
</tr>
</tbody>
</table>

* p-values are shown for the comparison between girls and boys.
† p-values are shown for the comparison between age groups.

RESULTS

Overall, 7.7% of students reported having a tattoo while 27.3% of them reported a body piercing other than on their earlobe. Girls are more likely than boys to indicate that they have a tattoo and both forms of body modification increase with age (Table I). Most (79%) tattooed students only have one tattoo and the majority (62.1%) of those with a body piercing only have one. Among tattooed students, 7% have more than one tattoo, while 16.8% of pierced youth have three or more piercings. While boys are three times more likely than girls to have three or more tattoos (11.9% vs. 4.1%, n.s.), girls are twice as likely to have three or more piercings (18.8% vs. 7.8%, p<0.01).

Age at first tattoo or piercing
Both practices begin at an early age: 32.1% of tattooed students and 52.7% of pierced students got their first tattoo or piercing, respectively, before age 15. Boys are proportionally more likely than girls to have been tattooed (16.9% vs. 1.0%, p<0.001) or pierced before age 12 (29.4% vs. 13.1%, p<0.001).

Body piercing sites
Sites most frequently chosen for a body piercing vary greatly according to gender. For example, while boys most often opt to have their eyebrow pierced (46.4%), only 9% of girls choose this site (p<0.001); conversely, girls prefer to have their navel pierced (61.8%) while very few boys choose this site (0.9%)(p<0.001). On the whole, girls prefer to have their navel pierced (61.8%), upper ear (43%) or nose (16.5%) pierced, while boys most often opt to have their eyebrow (46.4%), nipple (19.1%) or lip (10.9%) pierced. Genital site is rarely chosen among students of both genders (G: 1.5%, B: 3.6%). Analysis by age shows that tongue is the only site that becomes increasingly popular with age: 6.6% of 12 and 13 year-olds; 13.5% of 14 and 15 year-olds; and 17.0% of 16 to 18 year-olds (p<0.05).

Medical complications
Table III shows that skin irritation is the most frequent health complication reported (19%) among tattooed teens, followed by unusual bleeding (10.1%). In the case of body piercing, infection at the site is the most prevalent complication (45.8%) and the second one is skin irritation (32%). Boys are more likely than girls to report complications in most documented categories.

Aftercare instructions
Most tattooed (92.9%) or pierced (95.0%) students indicate that they received some aftercare instructions following the procedure. More specifically, 56.6% of those with tattoos and 46.2% of those with body piercing received both verbal and written instructions concerning the care of their tattoo or piercing. These proportions are higher among girls than among boys (tattoo: 64.2% vs. 43.3%, p<0.01; body piercing: 48.3% vs. 37.8%, p<0.05).
Body modification practices are frequent in the general high school population of Eastern Quebec. To our knowledge, these are the first data available in Canada for a general adolescent population. They are identical to the results obtained by Armstrong et al. in 1993 (9%) and 1995 (10%) for high school students, using the same instrument. It does differ markedly, however, from the prevalence found by Carroll et al. for older youth aged 12 to 22 who attended a military clinic in California. Prevalence of tattooing in our study is slightly lower than that obtained by Armstrong et al. in 1993 (9%) and 1995 (10%) for high school students, using the same instrument. It does differ markedly, however, from the prevalence found by Roberts and Ryan (4.5%) and Houghton et al. (13.6%) among high school students.

Our results confirm higher prevalence rates for tattoos and body piercing among young women and a greater frequency of multiple tattoos among men. Results also show that tattoos and body piercing increase with age, as was the case in other studies. Overall, the sites most often chosen by adolescents for body piercing (excluding the earlobes) are the navel and upper ear, and some sites seem gender-specific. The reasons for getting body modification are mostly aesthetic and identity-related in nature. This confirms results from previous studies.

Most students with body modification indicate that they used the services of a “professional”. This result is similar to that observed by Carroll et al. but differs greatly from the results obtained by Houghton et al. from a sample of high school students in Australia, which revealed that the majority of the tattooed participants had self-administered tattoos. The main complications associated with tattooing and piercing were similar to results obtained by Greif et al. for American college students. In our study, boys were more likely than girls to resort to services at other locations, which may lead to a slight underestimation of the practices as dropouts and street youth are proportionately more likely to have undergone some body modification. Because results of the present study rely on self-reports, some information pertaining to medical complications or aftercare instructions may suffer from a lack of precision. For example, as suggested by Marcoux, in many cases, tattoos and body piercing are done at tattoo parlors, by so-called “professionals” (i.e., tattoo artists working in custom shops), who may have limited knowledge about sanitation standards, infection control and skin care procedures. Concomitant to research data, information about studios and parlors warrants further study (artist qualifications, type of procedures used, type of aftercare instructions given, etc.), as do cases where health services were sought out following body modification procedures. Moreover, the choices presented to participants about their motivation for getting a tattoo or a body piercing do not allow us to ascertain their true meaning. It may be possible that “to be different” refers to a form of aesthetic expression for one respondent and a mark of rebellion against authority for another. As a structured survey does not allow for the probing of deep information, qualitative data would be necessary in the future to better interpret these results. Nevertheless, results show the diversity of reasons that lead adolescents to desire body modification and they most probably represent a quest for individuality within a framework of conformity for some, and of revolt for others.

**DISCUSSION**

**CONCLUSION**

The popularity of tattooing and piercing warrants a more systematic documentation of physical and psychosocial risks that may be associated with them. The potential health risks involved with skin piercing procedures suggests the importance of set-

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**TABLE II**

Frequencies (%) of Reasons Given by Tattooed or Pierced Students for Body Modification, by Gender

<table>
<thead>
<tr>
<th>Reasons</th>
<th>Tattooing</th>
<th>Body Piercing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls (n=98)</td>
<td>Boys (n=37)</td>
</tr>
<tr>
<td></td>
<td>33.3</td>
<td>35.1</td>
</tr>
<tr>
<td>Beauty mark</td>
<td>27.3</td>
<td>35.1</td>
</tr>
<tr>
<td>To remember an event in my life</td>
<td>13.6</td>
<td>24.4</td>
</tr>
<tr>
<td>To be different</td>
<td>12.0</td>
<td>22.1</td>
</tr>
<tr>
<td>“Femininity/Masculinity”</td>
<td>9.5</td>
<td>10.8</td>
</tr>
<tr>
<td>To feel independent</td>
<td>16.3</td>
<td>30.4</td>
</tr>
<tr>
<td>For luck</td>
<td>14.1</td>
<td>28.1</td>
</tr>
<tr>
<td>“Someone forced me”</td>
<td>4.1</td>
<td>8.9</td>
</tr>
<tr>
<td>To be part of the group</td>
<td>1.0</td>
<td>8.8</td>
</tr>
<tr>
<td>Sexual enhancement</td>
<td>1.0</td>
<td>8.8</td>
</tr>
<tr>
<td>Other (“for the heck of it”, “I just wanted one”)</td>
<td>28.3</td>
<td>14.3</td>
</tr>
</tbody>
</table>

* p-values are shown for the comparison between girls and boys.

**TABLE III**

Frequencies (%) of Complications Following a Tattoo or Body Piercing, by Gender

<table>
<thead>
<tr>
<th>Complications</th>
<th>Tattooing</th>
<th>Body Piercing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Girls (n=94)</td>
<td>Boys (n=64)</td>
</tr>
<tr>
<td>Unusual bleeding</td>
<td>4.3</td>
<td>18.8</td>
</tr>
<tr>
<td>Skin irritation at the site</td>
<td>16.0</td>
<td>21.9</td>
</tr>
<tr>
<td>Infection at the site</td>
<td>3.2</td>
<td>12.5</td>
</tr>
<tr>
<td>Allergy to the dye or metal</td>
<td>2.1</td>
<td>10.9</td>
</tr>
<tr>
<td>Swollen glands several times close to the site</td>
<td>1.1</td>
<td>9.4</td>
</tr>
<tr>
<td></td>
<td>Girls (n=846)</td>
<td>Boys (n=542)</td>
</tr>
<tr>
<td></td>
<td>39.6</td>
<td>34.4</td>
</tr>
<tr>
<td></td>
<td>28.2</td>
<td>21.9</td>
</tr>
<tr>
<td></td>
<td>15.4</td>
<td>26.8</td>
</tr>
<tr>
<td></td>
<td>20.0</td>
<td>7.3</td>
</tr>
<tr>
<td></td>
<td>11.9</td>
<td>23.7</td>
</tr>
<tr>
<td></td>
<td>8.3</td>
<td>10.4</td>
</tr>
<tr>
<td></td>
<td>0.7</td>
<td>9.3</td>
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<tr>
<td></td>
<td>3.8</td>
<td>7.2</td>
</tr>
<tr>
<td></td>
<td>5.6</td>
<td>17.7</td>
</tr>
<tr>
<td></td>
<td>3.0</td>
<td>13.3</td>
</tr>
</tbody>
</table>

* p-values are shown for the comparison between girls and boys.
Tattooing and body piercing among HS students

Health education measures aimed at adolescents also need to be put in place in order to prevent undesired consequences among those wishing to experience body modification. These measures should inform youth about potential health risks associated with body modification and about precautions that should be taken in order to make an informed and safe decision (i.e., avoiding impulsive choices, clandestine studios, etc.). Education originating from well-informed health care professionals, free of prejudice towards tattooed or pierced individuals, is essential to ensure that these measures are appropriate for youth.

REFERENCES


Appendix
Examples of questions on tattooing and body piercing

**Tattooing and Body Piercing**

1. Did you ever get a tattoo?
   - Yes
   - No
   1. If you answered NO, go to question 4.

2. How old were you when you got your first tattoo?

3. How many tattoos do you have? ___________

4. Did you ever get a body piercing? (besides your earlobe)
   - Yes
   - No
   2. If you answered NO, go to question 8.

5. How old were you when you got your first body piercing?

6. How many body piercings do you have? ___________
   (Do not count those in your earlobe)

7. Where are your body piercings? Circle all answers that apply.
   1. Eyebrow
   2. Nose
   3. Lip
   4. Tongue
   5. Nipple
   6. Navel
   7. Genital organ
   8. Ears (besides your earlobe)

The following statements apply to tattoos and/or body piercing.

If you don’t have any tattoos or body piercing, go to question 12

8. Why did you get your first tattoo or body piercing?

   A. To mark my femininity/masculinity
   B. To feel independent
   C. For no reason
   D. I wanted one
   E. Someone made me do it
   F. For good luck
   G. To remind me of an event in my life
   H. As a beauty mark
   I. To be different
   J. To be part of a group
   K. To increase stimulation and sensual pleasure
   L. Other (please specify) ____________________________

**REFERENCES**


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Book Reviews/Recension

Raj Bhopal and John Last (Eds.), Norwich, UK: The Stationery Office (Nuffield Trust), 2004

The celebration of 100 years of academic public health at the University of Edinburgh brought together approximately 330 participants with 17 contributors. The output from this meeting is the content of this book. There are three sections, as noted in the title.

The discussion of the development of Edinburgh and the effects of these developments on the health of the inhabitants speaks to the interactions of crowding, poor sanitation, poverty and poor health care on morbidity and mortality. The section on the past also outlines the roles that medical officers of health played in bringing about the changes necessary to improve the lot of the citizenry. I enjoyed the historic reviews that comprised the first five chapters. There was considerable overlap and repetition of the material, but it clearly demonstrated the interactions that occur in public health.

The next six chapters were less informative as the authors discussed issues that are currently being debated in public health circles. At times, these issues would have been better informed by the review of the past and the observations made on the past interactions of health and the environmental, social and economic conditions that are relevant today. Nevertheless the issue of increasing emphasis on healthy survival, the continuing risk of communicable disease (much less than in the past but not entirely defeated) and the roles of statistics and social sciences summarized the contribution of the University of Edinburgh in these areas.

The three chapters on the future of public health include the role of genomics, legislation and public health practice. As “looks into the future”, these were necessarily less evidence based.

As a light read, especially for graduates of the University of Edinburgh and particularly the Department of Public Health and the Usher Institute, this book could be worthwhile. Generally speaking I cannot recommend this book for the average reader unless there is a strong interest in history and/or in the University of Edinburgh.

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