

## ORIGINAL ARTICLE

# Piercing and tattooing in high school students of Veneto region: prevalence and perception of infectious related risk

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## Key words

Body art • Piercing • Students

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## Summary

**Introduction.** Body piercing (P) and tattoo (T) is a growing social phenomenon over recent years. Nowadays in Italy little is known about the prevalence, the attitude, the medical and social consequences of these activities. The purpose of this study is to examine the prevalence distribution and the attitude towards P and T and the perception of the risk for infections, in a sample of high school students living in the four Provinces of the Veneto Region (Italy).

**Methods.** An anonymous, self administrate multiple-choice questionnaire about piercing and tattoo practices was distributed during the 2009-2010 academic year to a sample of randomly extracted grades to obtain information about socio-demographic characteristics, family educational level, personal attitude, prevalence and perception of the importance of the sanitary, technical and artistic competence of the operator.

**Results.** The correctly compiled questionnaires were 2712 (95.4%). Males and females were respectively 46.2% and 53.8% (mean age  $17 \pm 1.7$  years). The 20.2% and the 6.4% of all the students had already experienced respectively P and T and

resulted "very interested" the 46.7% to P and the 57.4% to T. Esthetical motivations are the main ones referred to use body art. The most part of interviewed subjects (81.6%) think that it is possible to have an infection, but only about 50% of students reported to know specific information about transmission of HIV, Viral Hepatitis and skin infections. The parents' educational levels do not influence the perception of the risk of infection. The majority of interviewed subjects (88.0%) prefers to undergo body art practices in a qualified center. Only the 30% of students recur to a medical help to solve problem of infection.

**Discussion.** The piercing and tattoo prevalence rate in our study (P: 20.2% and T:6.4%) resulted similar to other Italian ones (range reported: P: 20.3-35.1%, T: 4.8-8.6%), showing an increasing trend with age.

Since a high rate of interviewed students referred a substantial ignorance about the risk of transmission of body art related infectious diseases, it is suitable to promote as soon as possible among the youth educational interventions and counseling.

## Introduction

Tattooing (T) and body piercing (P) showed a raise from the 90s and the trend does not show signs of decreasing in the near future. Adolescents and young adults have increasingly acquired body piercing over recent years and medical literature in relation to prevalence of P is partially still limited [1].

Body piercing is ubiquitous and concerns all socio-economic and age groups, with a major concentration between 15-30 years old [2]. In USA it is estimated that 2% of the population (about 6 million of people) have P. In a U.S. study conducted in a college population P showed a prevalence rate between 17 and 33% [2] and in undergraduate university students an overall prevalence of 51% (40% males and 60% females) [3]. The same study reported tattooing as a very common practice with an overall prevalence of 21.8% (23% males and 21% females) was found [3]. In Germany the general population show a prevalence

rate for P of 6.8% and for T of 8.5%, with a peak in younger subjects (14-44 years) reaching the 14% for P and 15% for T [4].

In Italy other studies [5, 6] found a prevalence rate between 35,1 and 31.3% for P and 11.3 and 4.8 for T in high school students.

Both procedures occur across the social spectrum and over a wide range of age. They intend to create a permanent body modification according to the social trends or beauty or to display a transgressive and reactive behavior.

Nowadays in Italy little is known about the current prevalence, social distribution, attitude, and medical and social consequences of these activities.

The purpose of this study is to examine the prevalence distribution of piercing and tattoo, the causes of the choice of these practices, the perception of the associated risk for infections, in adolescent living in the Veneto Region (North East of Italy), who attend manifold sort of high school.

## Methods

Body piercing has been defined as the “penetration of jewelry into openings made in such body areas as eyebrows, lips, tongues, nose, nipples or genitals”. Tattooing is defined as an invasive procedure in which multiple punctures produce an indelible decorative design with pigment introduced into the skin [7].

To evaluate the attitude to the piercing and tattoo (also defined as body art) and the perception of the risk of infections related to these practices, an anonymous, self-administered multiple-choice questionnaire was distributed during the 2009-2010 academic year to a selected group of high school students living in the Veneto Region (Italy).

The Veneto Provinces randomly involved in the study were Verona, Vicenza, Belluno and Venezia; and the high schools sampled were classic, scientific, artistic, pedagogic liceo and professional and technical schools. From each school two first, third and fifth grades were randomly extracted to obtain a total of six grades for each school.

The validated questionnaire assessed information about: socio-demographic characteristics as age, sex, family educational level (university or high school or middle school) considering the higher educational level reached at least of one parent; personal attitude towards piercing and tattoo practices; prevalence of subjects with piercing and tattoo; the perception of the importance of the sanitary, technical, artistic competence of the operator. Moreover the student’s awareness of the potential transmission of some infectious diseases associated with these practices was evaluated.

The data from this study were collected and processed in compliance with the national law on privacy (Law N. 196/2003).

Students were assured the confidentiality of their responses and the participation was voluntary. Approval from parents and teaching staff of each school was obtained before conducting the survey.

To ensure a high response rate, the survey was brief and non-intrusive, easy to complete (requiring less than 15 minutes), and administered at the beginning of a class lesson. All questionnaires were immediately collected and their information was entered in a database.

## Statistical analysis

Statistical analyses were carried out using EpiInfo 6.01 software supplied by the Centres for Disease Control, Atlanta (GA, USA). Frequencies were compared by  $\chi^2$  test (Mantel-Haenszel). P values were considered significant when less than or equal to 0.05

## Results

A total of 2843 students participated to the study. The data were analyzed from the 2712 correctly compiled

questionnaires (95.4%); the main cause of exclusion in the data base entry was due to the lack of information on birth, sex and grade attended. Among considered students 1252 (46.2%) were males and 1460 (53.8%) were females; age range was between 13 and 22, mean age  $17 \pm 1.7$  years. Their socio-demographic characteristics are reported in Table I.

In the most part of families (89%) both parents are present, while in 9.8% there is a single parent. They are only son in 23.3% of cases.

Considering the higher educational level achieved by least of one the family parent, the 25.2% reported university degree, and 53.4% and 21.3% attained respectively a middle (high school) and low (till junior high school) schooling.

Among the school students and in relation to male or female sex, ones who “experienced” and ones who answered to be “very interested” about piercing and tattoo didn’t show any significative difference in relation to the manifold sort of high school (Figs. 1 a, b).

Positive attitudes toward P were found in 29.0% of males and 54.5% of females respectively ( $p < 0.0001$ )

Tab. I. Socio-demographic characteristics of the 2,712 enrolled students.

	Males (%)	Females (%)	Total (%)
<b>Years</b>			
< 14	0.3	0.1	0.2
14	28.3	30.0	29.4
15	7.5	4.3	5.4
16	25.8	29.5	28.2
17	8.7	6.0	6.9
18	22.7	26.2	25.0
> 18	6.9	3.8	4.9
<b>Class</b>			
First	37.4	36.2	36.6
Third	27.8	29.2	28.7
Fifth	34.8	34.6	34.7
<b>Nationality</b>			
Italian	95.3	95.7	95.6
Other	4.7	4.3	4.4
<b>Residential area</b>			
Downtown	22.4	19.8	20.7
Suburb	25.4	23.2	24.0
Municipal district >15.000 inhabitant	10.5	9.8	10.0
Municipal district <15.000 inhabitant	41.7	47.2	45.2
<b>Residential city</b>			
Belluno	22.2	22.7	20.7
Verona	28.7	28.0	29.6
Vicenza	27.2	24.2	26.0
Venezia	21.9	25.1	23.7

Fig. 1 a, b. Prevalence rate of attitude of students regarding piercing and tattoo by sex and type of school attended.

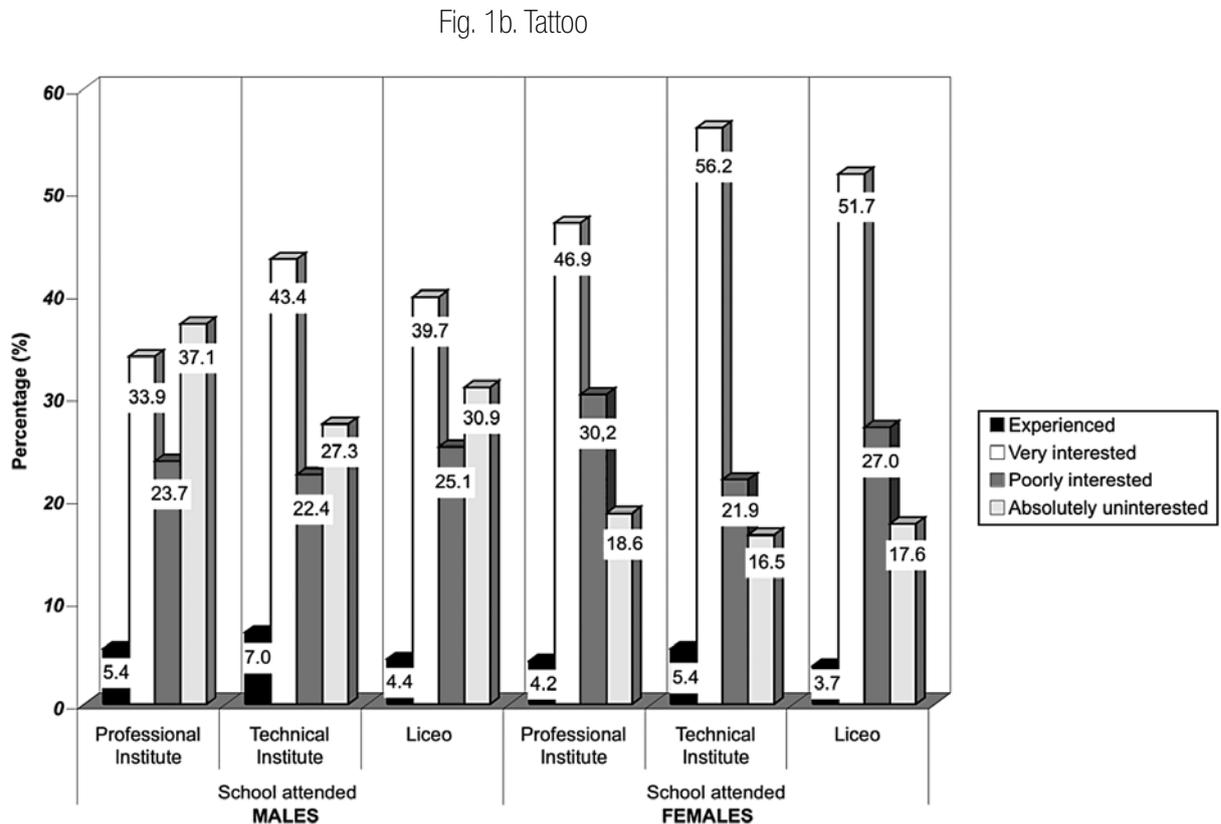
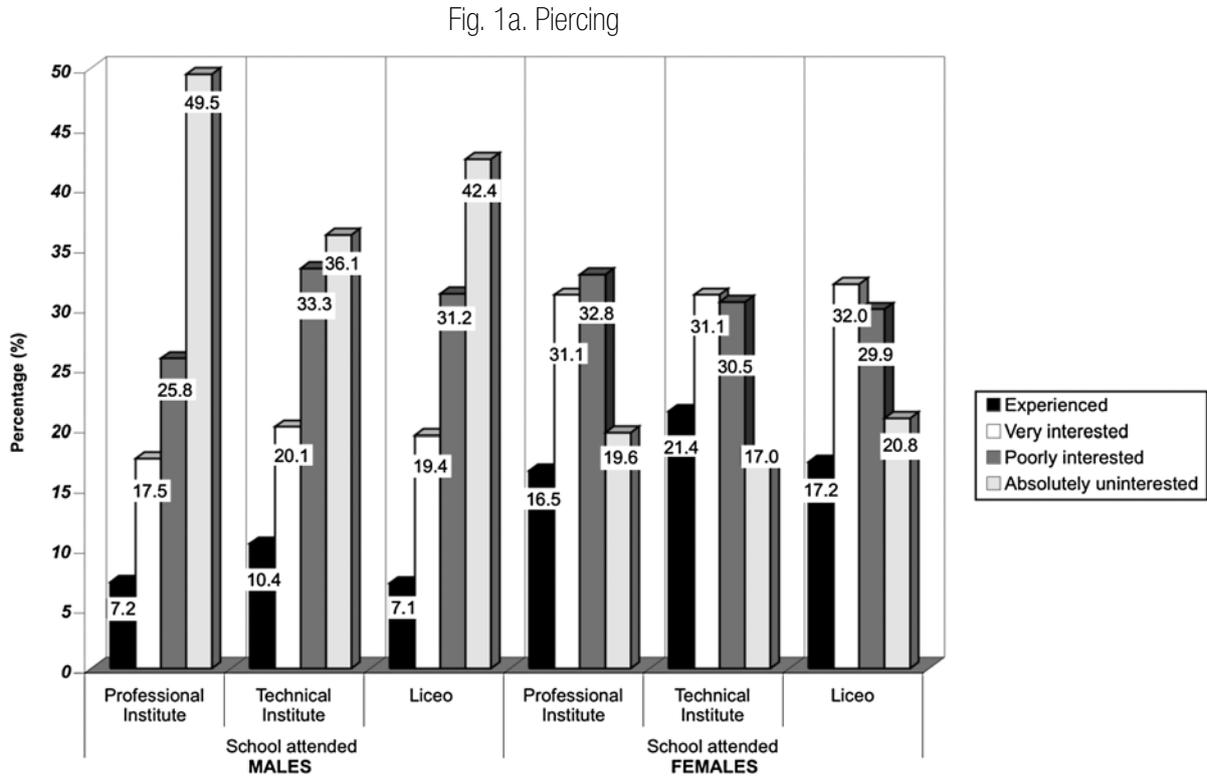
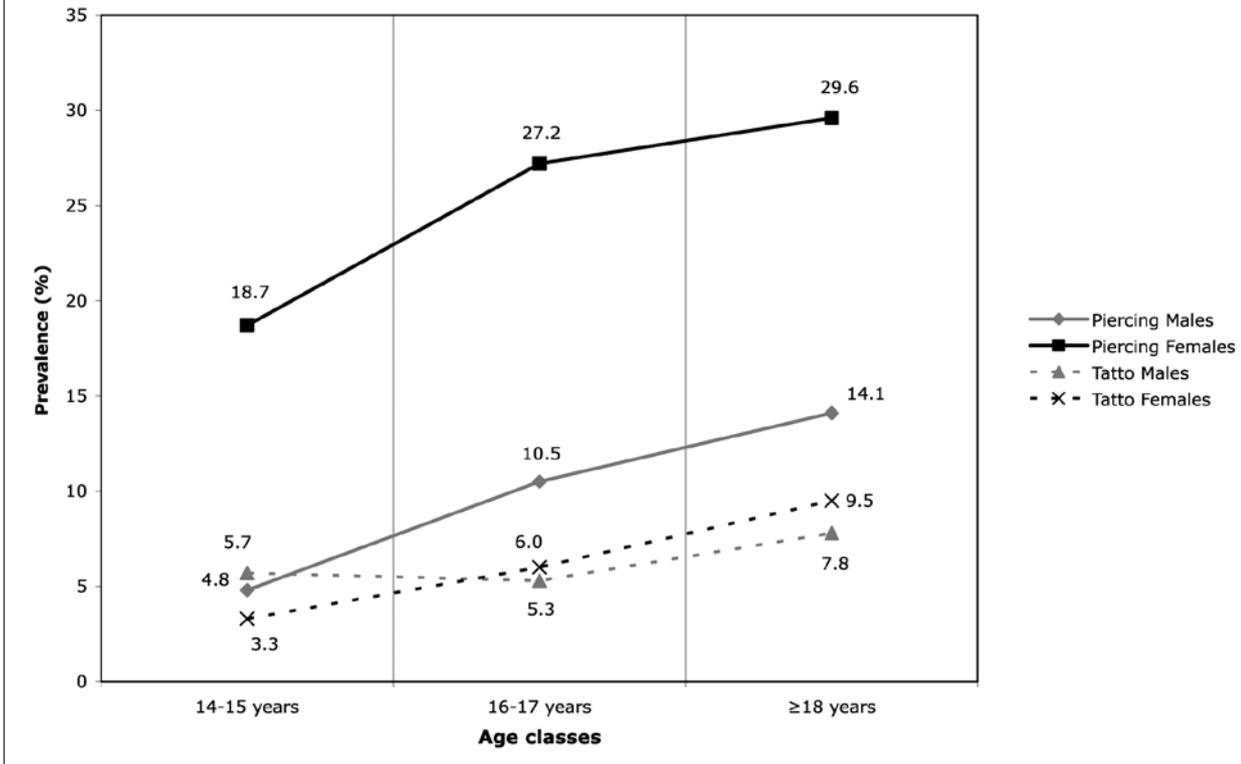


Fig. 2. Prevalence rate of students who have experienced piercing and tattoo by age and sex.



(Fig. 1a), and for T in 46.7% and 57.4% of males and females respectively ( $p < 0.0001$ ) (Fig. 1b).

The 20.2% and the 6.4% of all the students respectively experienced P and T. An increasing trend with age was found in both sexes and for both kind of practices ( $p < 0.0001$ ); with a particular higher prevalence in females (range 18.7-29.6%) for P (Fig. 2).

Piercing removal was considered on average in 21.1% of subjects who experienced it (males: 28.7%, range 15.0-31.6%; females: 19.5%, range 12.9-23.4%) and in 12.0% of subjects who experienced tattooing (males: 17.6, range 13.0-28.0%; females: 9.1, range 6.5-14.5%).

The reasons to have body art resulted for both sexes by relevance: esthetical motivations (28.2% of cases), transgression (16.1%), curiosity (15.5%), fashion (12.0%), attention drawing of the other sex, to make a personal statement, to emulate a VIP, to belong to their own group.

The main cause for willing students not to have body art performed on them was parent prohibition, while personal dislike for the subject was the main cause for unwilling ones (Tab. II).

As regard to infections, the most part of interviewed subjects (81.6%) think that it is possible to get an infection. but when specific notices were asked about HIV, Viral Hepatitis and skin infections only about 50% of them – more often females – appeared truly aware of the risk (Tab. II).

For both sexes parents' educational level does not influence the perception of the risk of infection (Fig. 3).

The most part of interviewed subjects prefers to undergo body art practices in a qualified center (88.0%), followed to friends (9.5%) or other choices (2.5%). In a qualified center the students consider sanitary characteristics to be important -as the use of latex gloves (96.9%), of single-use needles (97.0%), of sterilized instruments (97.7%)- followed by artistic performance (94.3%).

## Discussion

Tattooing and piercing are perceived as body art decoration, growing in popularity and increasingly belonging the generational conformity [1, 8] thus this phenomenon is worthy of an immediate attention.

In fact, the principle motivation to undergo to these practices in our studied population was above all related above all to embellish themselves (esthetical motivations and to be fashionable), while transgression appears only in 16% of responses.

This study represent a report on the practice of piercing and tattoo in young people aged 13-22 years in four provinces of Veneto Region (North East Italy), attending a wide range of Italian high school. In Italy some schools like artistic and pedagogic liceo are mostly attended by females (respectively 66.6% and 84.5%) [5, 9] and this may explain the higher prevalence of female sex in our study.

The piercing and tattoo prevalence rate in our study (P: 20.2% and T: 6.4%) resulted similar to other Italian ones (P: range 20.3-35.1% and T: range 4.8-8.6%) [5, 10],

**Tab. II.** Student's attitude (rate) to piercing and tattoo regarding: personal interest, generic and specific perception of risk of infection, infection problem solving.

	Piercing		Tattoo		
	Males	Females	Males	Females	
STUDENT'S ATTITUDE					
Does not want					
Do not like it	54.4	53.3	48.3#	43.1#	
Do not approve it	26.1	21.9	26.3	23.1	
May not					
Parents prohibition	47.1#	54.6#	33.3#	46.3#	
Fear	7.7	19.7	5.9	18.0	
PERCEPTION OF RISK OF INFECTION					
Generic risk					
Yes	77.7*	83.6*	77.7*	83.7*	
No	3.3	1.4	3.3	1.4	
Non responders	19.0	15.0	19.0	14.9	
Specific risk					
HIV	Yes	52.4	54.8	50.2*	60.7*
	No	35.5	34.9	37.4	28.3
	Don't know	12.1	10.3	12.3	11.0
Viral hepatitis	Yes	45.4	46.9	44.8#	49.9#
	No	39.8	39.4	40.0	35.9
	Don't know	14.7	13.7	15.1	14.2
Skin infections	Yes	54.0#	69.5#	73.5*	81.7*
	No	22.2	19.5	12.7	8.2
	Don't know	13.8	11.1	13.8	10.1
Infection problem solving					
Medical help	28.4	35.6	42.9	41.7	
Self-medication	78.9	71.8	68.3	70.8	

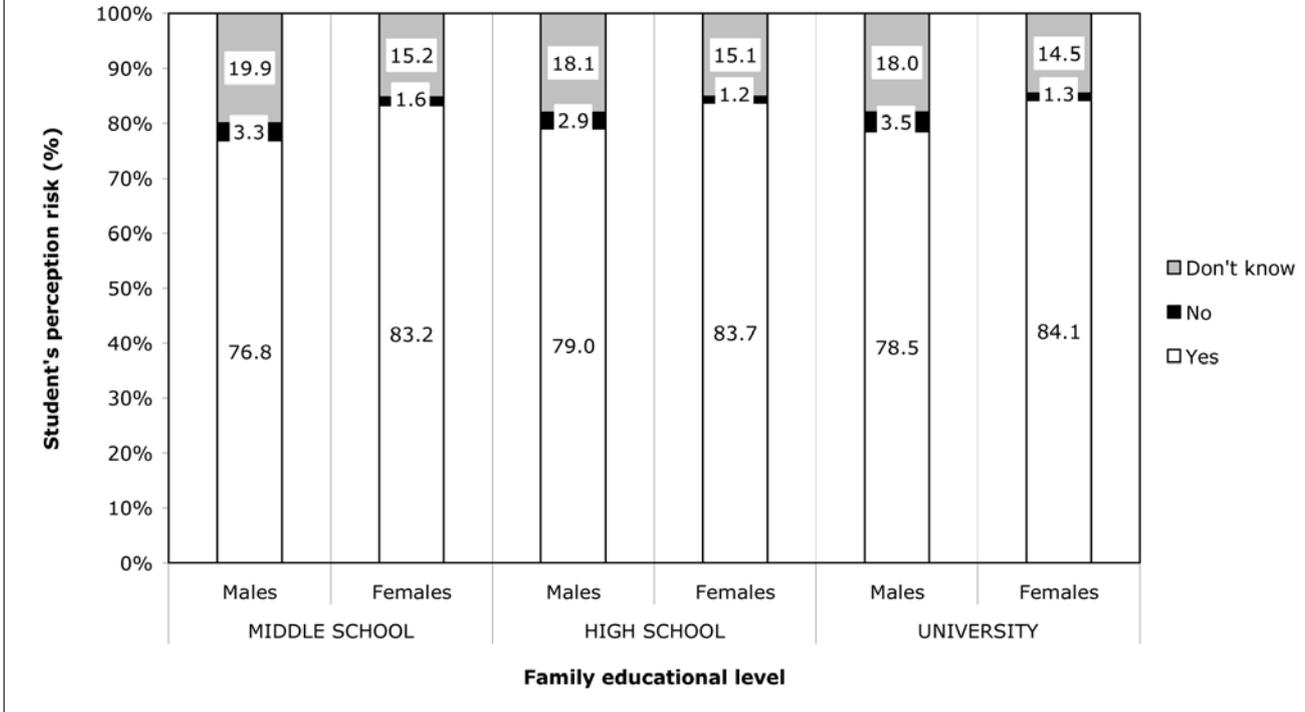
\* p &lt; 0.0001; # p &lt; 0.005

and international investigations performed on high school students reports similar or higher body art prevalence: between 17-50% for piercing and 7.9-20% for tattoo [2, 3, 8, 11]. The difference in piercing prevalence reported in some studies may be due to the different interpretation of the earlobe piercing: some of them consider only cartilage as piercing site in females, while others take in account all the ear [3, 12, 13]. The questionnaire for our study did not discriminate between piercing and earlobe earrings. The low piercing prevalence found in our and other Italian studies may be explained since earlobe earring is very common in our geographical area and females do not consider it as a piercing, excluding

therefore themselves from piercing users. A rise on the prevalence of subjects with body art with time can be also expected as our study shows that on average the 25.4% and the 45.6% of subjects are interested respectively to piercing and tattoo practices. Indeed both for piercing and tattoos a significant increase with age in this as in other studies was found [1, 5, 8, 10- 12].

An high rate (over 80%) of students perceives a generic risk of infection. Nevertheless when specific data are collected about the possible transmission of HIV, Viral Hepatitis and skin infections, respectively the 49.5%, 52.7% and the 21.2% of them answer "no" or "don't know". This point out that the major part of youth don't

Fig. 3. Student's perception of the infection risk (rate) and family educational level.



really know the specific route of transmission and then the pattern of the prevention of the possible related infections [1, 5, 14].

The demonstration that some serious infections are strictly correlated with those body art practices underlines then the importance of legislative and educational interventions [6, 12, 15-21]. This study shows that even if youth report to prefer qualified centers to undergo body art practices and in theory considers the use of safe instruments of great importance, the inappropriate knowledge on prevention of infections compromises the ability of a critical and aware choice and behavior [1]. The perception of the risk of infection doesn't appear to be related to the family schooling level, even if a light and not significant decrease in piercing and tattoo was found with the higher level of parent's education [9]. This fact may indicate that in this period of life the extra-familiar milieu is held in high regard, as it also appears from reported motivation to have body art.

This is why a great attention is due particularly to youth with a dedicated incisive informative and educational campaign to promote knowledge on health risks related to body art.

Prevention may be done through the acquaintance of related health risks and through the choice of a professional operator with a regular qualification as requested by specific guidelines of the Italian National Health Council (Circular letter of 5 February 1998 n. 2.8/156 and Circular letter of 16 July 1998 n. 2.8/633) and of Regione Veneto Guidelines (DGR 2401, 14/10/2010) [22]. Other relevant points for the risk of infection and other complications are represented by the chosen body site [22- 25] and by poor

knowledge about what to do in case of problems. When pierced people have health concerns, most of them return to their body piercer (decorator, operator) or try to seek help from a friend or the internet rather than medical advice [2]. This is also what emerges in our study, where respectively only 34.3% and 42.1% of pierced and tattooed students recur to medical help.

Prevention is defined as the promotion of health by the individual and the community, and therefore includes identifying unhealthy or risky behaviors and intervening to correct them or to minimize their effects.

Primary infection prevention activities intervene before the event, aiming to prevent it happening, and in case of body art practice by controlling the victim's exposure to the microorganism, with strategies that seek to change attitudes, lifestyles and behaviors of individuals and groups, as to educate communities and individuals on awareness and safety practices. Benefits can include, for example, a reduced incidence of infectious events, sometimes severe or fatal.

Prevention can positively improve the quality of health, and thus the quality of life, of both the individual and the community as a whole, supporting then personal and social development. There are also specific health and economic benefits: prevention activities save resources and contribute to the rationalization of medical care in public health systems.

In conclusion, the study underlines that educational interventions and counseling have to be organized for a wide range of age, but a better outcome can be obtained when the target is represented by young subjects if they are made aware before they put themselves at risk by performing any kind of body art.

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