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CROSS SECTIONAL STUDY: THE HEALTH RISKS OF TATTOOING IN ASMARA, ERITREA

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ABSTRACT

Background: The safety of tattoos and body piercing has been the subject of concerns. As the popularity of tattoos continues to grow, so does the concern about potential risks associated with it. This study aims at assessing the physical and psychosocial health risks of tattooing in Asmara. **Methods:** The research design was descriptive cross-sectional study which mixed both quantitative and qualitative methods. Face to face interview was conducted using structured questionnaire. Quantitative data was analyzed using SPSS version 20 to produce the frequencies whereas the qualitative data was analyzed by using thematic frame work analysis method. **Results:** There were a total of 200 of respondents in this study. Majority of the respondents (61.5%) were in the age group of 21-30. Most of the respondents (81.5%) have acquired their tattoos before the age of 20. The commonly tattooed body parts were hand (61.5%) and arm (47.5%). Tattoos on sensitive body parts including the neck, genitals, cheeks, thighs, lips, abdomen and forehead accounted for 12.5%. A total of 124 (62%) respondents experienced a problem after 24 hours of acquiring the tattoo. Inflammation was the most frequently reported problem (75%). Seventy nine percent of the male respondents and 73.3% of the female respondents regretted their tattoos because it was hard to erase. A total of 67.5% hide their tattoos most of which (83.3%) hide their tattoos at “social gathering”, followed by “around the family (41.4%) and “at work (28.1%)”. **Conclusion:** Physical health risks that are manifested with tattooing are massive in our settings including the risk of transmission of blood borne diseases, infections and other physical problems including inflammation, pain and bleeding. The worst part of it is that the health seeking behavior was very low. In addition, mistreatment, insult, neglect and discrimination show the social consequences of tattooing which forced them to feel uncomfortable and to hide their tattoos in public places.

KEYWORDS

Tattooing, Health risks and Tattooist.

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INTRODUCTION

Tattoo is a permanent mark or design made on skin with pigments inserted through pricks into the top layers (Langerhans cells)¹. The oldest known tattoo goes back 5,300 years which was found in a well preserved mummy in Austria (long-distance)². Tattooing in Africa dates thousands of years, from

symbols of fertility on women in ancient Egypt to tattoos symbolizing tribal hierarchy (Egypt and nubia)³. Tattoos existed in Eritrea as part of culture, medicine and religion. The Tigrigna ethnic group, have practiced tattooing the holy cross on their forehead, wrist and hand as a symbol of Christianity. Other ethnic groups have the practice of scarification on the face. In addition, tattoos have been practiced in Eritrea as traditional treatment modality for goiter and other swellings. All these practices show that tattooing have existed in our society in different forms and for different purposes. Hence, motivations for tattooing may be explained as, medication, identity, peak experience, rebellion, remembrance, beliefs, impulsivity and uniqueness⁴. In the US, tattoos are becoming more popular indicating that 1 in 5 adults have at least one tattoo⁵. Recent studies indicate that more women are interested to get tattoos than men in USA and Australia (window to the psyche)⁶. It can be seen that there is a clear growth in the number of tattoos since the early 90's, especially among the 18-35 age group⁷.

The classic tattoo pigment was simply whatever is at hand, like soot from burnt wood, which can be pricked into the skin or rubbed into small cuts in the skin, with or without the need to create scar in addition to the tattoo⁸. The materials used can be machine needles, thorns, or sewing needles, or any sharp material that can easily be found in the surrounding⁹.

The skin is a highly immune sensitive organ and the long term consequences of repeatedly testing the body's immune system with injecting dyes are poorly understood¹⁰. Toxins in some tattoo inks may enter the kidneys, lungs or lymph nodes through the circulatory system¹¹. There have been reports of bad reactions to tattoo inks right after tattooing or even years later as the use of needles and other piercing instruments allow the transmission of diseases (Body piercing)¹². In addition, introducing chemicals into the skin involve non infective risks, such as allergic reactions (Tattoos: counseling the adolescent)¹³.

The fact that tattooing has been associated with self-harming in some studies can indicate the presence of mental problems (Tattoos, body piercings, and self-injury: is there a connection)¹⁴. People who get

tattooed are more likely to crave excitement and go out of their way to experience new things¹⁵. Tattooing may be associated with risky behaviors including: abuse of alcohol, tobacco or illicit drugs, risky sexual activity, gambling, antisocial behavior and suicidal thoughts (Tattoos, body piercings, and self-injury: is there a connection)¹⁴.

The negative perceptions towards tattooed individuals tend to adversely affect the careers of many tattooed people as individuals with tattoos are perceived to lack kindness, compassion, empathy and are less hard working¹⁶.

Tattooing in our settings is currently being practiced behind curtains with unknown significance of its negative physical and psychosocial effects. This study aims at assessing the physical and psychosocial health risks of tattooing in Asmara.

METHODS

This is analytic cross-sectional study which includes both quantitative and qualitative methods. The study was conducted in Asmara, Eritrea. Due to the secretive nature of this practice in the country and difficulty in identifying tattooed people, the study participants were recruited by snow ball sampling method (sample diversity of snowball). The researchers have exhausted the waves of each seed (9). Qualitative data was collected to help in identification of possible risks related with tattoo and tattooing practice in this setting. Therefore, 5 highly experienced doctors and 3 tattooists were purposively selected for in-depth interviews. People with any kind of tattoo in any part of their body were included in the study. However, tattoos practiced unwillingly because of traditional beliefs and as a form of traditional medicine were excluded.

The quantitative data was collected through interview using a structured questionnaire. The questionnaire included variables regarding tattooing such as demographic characteristics, age of acquiring the tattoo, methods, motivation, physical effects, regret and perception. The qualitative data was collected using a semi-structured questionnaire to guide the key informant interview. Highly experienced medical doctors and tattoo artists with

significant experience were included in the key informant interview.

Quantitative data was analyzed using SPSS version 20 to produce the frequencies. The data are presented in tables. The qualitative data was analyzed manually by thematic frame work analysis.

RESULTS

There were a total of 200 respondents in this study (Table No.1). Majority of the respondents (61.5%) were in the age group of 21-30. Most of the participants (81.5%) acquired their tattoos before the age of 20 with the mean age of 17.23 years. Female respondents accounted for only 16.5%. Fifty five percent of the participants reached secondary level of education.

The commonly tattooed body parts were hand (61.5%) and arm (47.5%) (Table No.2). Tattoos on sensitive body parts including the neck, genitals, cheeks, thighs, lips, abdomen and forehead accounted 12.5%. The material mostly used to get tattooed was thorn (71.5%) followed by needle (20.5%) and machine (16.0%). Machine (43.2%) was chosen more than needle (10.8%) in the group who acquired their tattoos between the ages of 21-40. But needle (22.7%) was more frequently used in the younger age of acquiring tattoo. With regard to ink application, 72% of the participants reported to have used melted rubber as ink. Machine's ink was the second commonly used ink (15%). The usage of machine's ink increases with increasing educational level. Other inks include black tablets (laxatives), charcoal, black henna and eye liners (11%).

A total of 124 (62%) respondents experienced a problem after 24 hours of acquiring the tattoo. Inflammation was the most frequently reported problem (95%). There were also significant number of complaints of pain (50%) and bleeding (18.5%). About six percent of the respondents reported other problems especially infection with the presence of pus and numbness for extended periods of time. All the respondents who used soot of oven and 80.4% of those who used melted rubber experienced swelling and inflammation. Using melted rubber was significantly associated with feeling of inflammation and pain with p-value of 0.003 and 0.001

respectively. Soot of oven was also associated with the highest bleeding complaints (42.9%). Only 6.3% of the respondents who have had complication consulted a health personal. The most frequently claimed reason was lack of awareness on the consequences and potential health risks (66.1%), being ashamed (22.5%) and self-treatment (12%).

More than half (54.5%) of the respondents were smokers, 73.5% use alcohol, and 6%use illicit drugs. Twenty one percent of the respondents practice gambling and 34% have a police record. Among the respondents, the most reported motivation for tattooing was "just liking it" (41%) followed by "remembrance" (36%) and "peer pressure" (23.5%). "Impulsive decision" had also a significant influence in 21% of the respondents. More than half (54%) of the respondents regret their tattoos. With increasing age, the frequency of regret seemed to increase with all the respondents above age 40 feeling regret. The feeling of regret was slightly higher among males (55.7%) than among females (45.5%).

Seventy nine percent of the male respondents and 73.3% of the female respondents regretted their tattoos because it was hard to erase. Twenty percent of the respondents regretted their tattoos because of reasons like loss of interest, family pressure, people's perception, stigmatization and ruining the skin. About fourteen percent (13.6%) of the respondents tried to remove their tattoos using different techniques. From the 27 participants who tried to remove their tattoos, only 7% actually succeeded. Majority of the respondents (71.9%) didn't want to tattoo again. About sixty two percent of the participants feel uncomfortable because of their tattoo. The spatial analysis shows that the highest percentage of respondents (83.7%) felt uncomfortable during "social gathering" followed by "around family" (70%) and "at work" (30.9%). The other places where people felt uncomfortable included public transports and churches. Only 15.5% of the participants felt discriminated in their daily lives because of their tattoos. The age group 21 to 30 had the highest percentage (48.4%) of feeling discriminated followed by the age group 11 to 20 (22.6%). The percentage of individuals who were treated worse by their parents after acquiring their

tattoo were about 16.5%. Only 10% of the individuals were treated better by their friends after acquiring the tattoo. The number of respondents who reported that they were mistreated, insulted or neglected because of their tattoos was 45 which accounted for 22.5% of the respondents. About seven percent (6.5%) of the respondents reported that they were deprived of a specific service because of their tattoo. The places they were mostly deprived of included health facilities, schools, religious services and other services such as employment.

A total of 67.5% hide their tattoos most of which (83.3%) hide their tattoos at “social gatherings”, followed by “around their family” (41.4%) and “at work” (28.1%). The tendency to hide their tattoos increased with increasing age. The age group with the highest frequency (83.3%) of hiding their tattoos was 41 to 50. Higher percentage of females hide their tattoos (78.8%) compared to males (65.3%).

DISCUSSION

One of the most important finding of this study was that 62% have experienced a physical problem 24 hours after acquiring their tattoos, the most being skin inflammation. These results were much higher than that of a study done in New York¹⁷. Pain and bleeding were also found to be highly experienced physical problems. In our study, all the people who used soot of oven have experienced inflammation and were associated with the highest reports of bleeding and pain. Other extreme findings included extended numbness of the body when tattooed on the neck and infection with pus. All these reports might have been due to the unhygienic tattooing procedure, and the insufficient skill of the tattooers exposing clients to deep piercings as well as contamination through the inks used. No safety measures were mentioned by traditional tattooers except for using disposable materials. Gloves for safety and alcohol as a disinfectant were used by some of the machine tattooers which could decrease the risk of many health problems. “Everybody wants to drink alcohol and smoke during the procedure” said one experienced tattooer to relieve pain which could lead to accidents because of altered consciousness. Thorn was the most frequently used material to get tattooed

as it is easily available and incurs no cost. The limited knowledge and restricted availability of machines might also have contributed to this result. This research also indicated that the usage of machine was common among individuals who acquired their tattoos after the age of 20 which showed the role of maturation in choosing the material to get tattooed. In the key informant interview conducted among the doctors, all pointed out the clear and very dangerous risk of transmission of blood borne diseases such as HIV, hepatitis B, hepatitis C and Human papilloma virus. These risks were associated not only with the unsterilized materials used but also with the unsafe environment where tattooing is being practiced at the moment. The places where tattoos were practiced varied greatly ranging from hygienic houses of some clients to unhygienic areas, depending on the neighborhood of the client. In this aspect, the clients who used tattoo machines were relatively more hygienic and so the risks of tetanus as well as other infections could be higher among the traditional tattooers.

The most popular site of tattoo in this study was hand followed by arm. This was consistent with a study done in New York¹⁰. This study also found locations of tattoos including neck, back and genitals. The experienced medical doctors in the qualitative analysis gave a brighter picture of the most dangerous parts to get tattooed, “neck, back, genital areas, perineal areas and areas with superficial nerves such as the tip of the breast are the most dangerous parts to get tattooed”. The risks involved with pricking those body parts to an unknown depth and introducing unknown contents of ink could predispose a person to a number of physical health risks reaching up to paralysis and death.

The mean age (17.23 years) of acquiring a tattoo in this study was slightly higher than that of adolescents in Italy which was 15 years¹⁸. Acquiring a tattoo in this study was found to be common before the age of 20 (81.5%). This was higher than that of Chicago, USA (16%)¹⁹. In this study risky behaviors like smoking and drinking alcohol were mostly started before acquiring tattoos, whereas gambling, drugs and police record tend to start after acquiring

tattoo. This result has suggested the role of those risky behaviors in getting a tattoo. In our study, more than half of the participants have already regretted their tattoos which were greater than the US study²⁰. The duration of the tattoo was significantly associated with regret where feeling of regret increased with increasing duration of the tattoo. The large percentage of regrets in our settings was best explained by the motivation of getting a tattoo where most of them were taken with no meaningful drives including “just liking it”, “impulsive decision” and “peer pressure”. Boredom, family pressure, people’s perception, stigmatization and ruining the skin were other reasons for regretting their tattoos. Relatively small numbers of respondents have tried to remove their tattoos. Not being sure of how to remove a tattoo and the extreme risks that might occur in trying to remove a tattoo might have been the reason for small percentage trials. Almost all of the individuals who tried to remove their tattoos were males which might have resulted with the more risk taking nature of males. From those who have tried to remove their tattoos only few have reported that they have actually removed their tattoos. The methods the participants practiced to remove their tattoos were very injurious including rubbing it with sandpaper, aluminum foil and liquor, pricking the tattooed skin with blade, thorn or any sharp material and using concentrated acetone. The very different methods used to remove the tattoo show the lack of knowledge and confusion that exists among the tattooed people who want to remove their tattoos.

Feeling embarrassed was quite high, as expected. The age group of 21 to 30 had the highest percentage of feeling discriminated (48.4%). This result might have been due to the nature of the age group where individuals are faced with a lot of opportunities in their life and struggle to settle. According to Eric Erickson, this age group is the one where one has productive work and has satisfactory sexual relation with intimate members of the opposite sex²¹.

According to the results of our study, the respondents who were mistreated, insulted or neglected had their tattoos for greater than 5 years. This result may have been due to the longer duration

of their tattoos which prolongs the time of being ever mistreated, insulted or neglected. The early experience of mistreatment, insult and neglect could make people more vulnerable to the risks of psychosocial problems. Relatives, strangers and neighbors were the social groups who were more blamed for the mistreatment, insult and neglect. Although the proportion was small, it was very surprising to find people who were deprived of some public services because of their tattoos. The same result was seen in public places of Japan where tattooed people were deprived of services²².

Table No.1: Demographic characteristics of respondents (n= 200)

S.No			Numbers	%
1	Age group	11 – 20	49	24.5%
		21 -30	123	61.5%
		31 – 40	20	10.0%
		41 – 50	6	3.0%
		>50	2	1.0%
2	Age of acquiring the tattoo	<20	163	81.5%
		>20	37	18.5%
3	Sex of the respondents	Male	167	83.5%
		Female	33	16.5%
4	Educational level of respondents	Elementary	5	2.5%
		Junior	34	17.0%
		Secondary	111	55.5%
5		College level	45	22.5%
		Bachelor’s degree and above	5	2.5%
6	School enrolment at the moment	Attending school	45	22.5%
		Not attending school	155	77.5%
8	Mean age of acquiring the tattoo	Minimum	Maximum	Mean
		4	29	17.23

Table No.2: Location of the tattoo on the respondent’s body parts (n=200)

S.No		Tattoo located on the arm		Tattoo located on the leg		Tattoo located on the hand		Tattoo located on the chest		Tattoo located on the back		Tattoo located on other body parts		
		N	%	N	%	N	%	N	%	N	%	N	%	
1	Age group	11 - 20	18	36.7	7	14.3	29	59.2	5	10.2	7	14.3	5	10.2
		21 -30	55	44.7	15	12.2	79	64.2	27	22	34	27.6	18	14.6
		31 - 40	15	75	2	10	10	50	3	15	4	20	1	5
		41 - 50	5	83.3	2	33.3	3	50	0	0	2	33.3	1	16.7
		51 - 60	2	100	0	0	2	100	0	0	2	100	0	0
		Total	95	47.5	26	13.0	123	61.5	35	17.5	35	17.5	25	12.5
2	Age of acquiring the tattoo	1 - 20	80	49.1	22	13.5	107	65.6	29	17.8	40	24.5	22	13.5
		21 - 40	15	40.5	4	10.8	16	43.2	6	16.2	9	24.3	3	8.1
3	Sex	male	88	52.7	23	13.8	106	63.5	28	16.8	43	25.7	3	9.1
		female	7	21.2	3	9.1	17	51.5	7	21.2	6	18.2	7	15.6

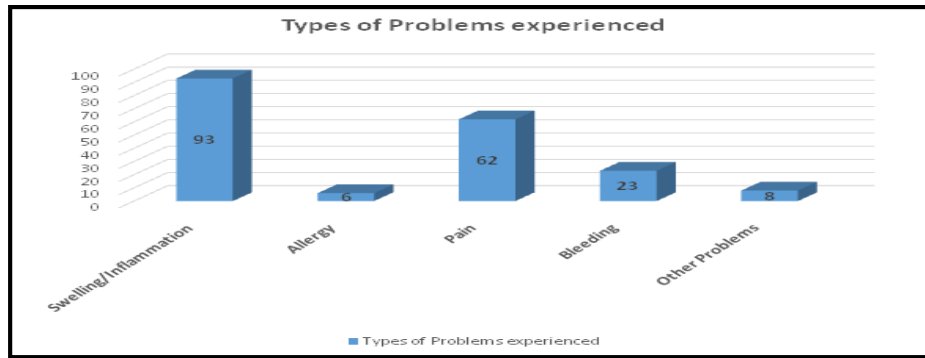


Figure No.1: Types of reported physical problems experienced by the respondents

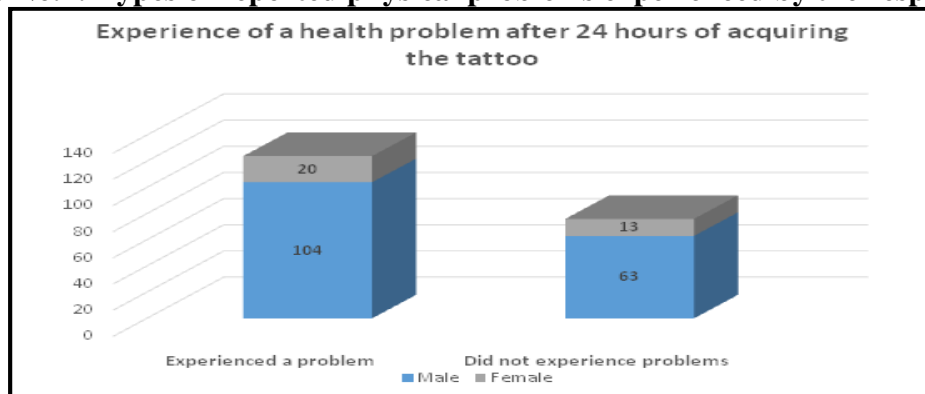


Figure No.2: Experience of a health problem after 24 hours of acquiring the tattoo

CONCLUSION

This study has addressed the health risks of getting a tattoo in our setting, considering the physical, social and mental perspective of health. It revealed that the physical health risks that are manifested with tattooing are massive in our settings including the risk of transmission of blood borne diseases, infections, and other physical problems including inflammation, pain and bleeding. The worst part of it is that the health seeking behavior was very low. It also found unsafe tattoo locations which can become life threatening such as the neck, genitals and elbow areas where large blood vessels pass through and are very sensitive. Melted rubber, the ink commonly used, is very dangerous and risky with contents that can potentially cause different physical health risks like skin cancer. The population of this study was mostly practicing risky behaviors with smoking and drinking alcohol being the most pronounced. It was revealed that most of the respondents started these risky behaviors long before they got tattooed which led us to assume that exposure to these kinds of lifestyle can have influence in getting a tattoo. A

psychosocial health risk was revealed in a significant proportion of the participants as evidenced by the presence of constant regret of their tattoos, continuous desire to remove them and a feeling of embarrassment. In addition, mistreatment, insult, neglect and discrimination show the social consequences of tattooing which forced them to feel uncomfortable and to hide their tattoos in public places.

DATA (AND SOFTWARE) AVAILABILITY CONSENT

The study was approved by the School of Public Health Research and Ethics Committee. After informing the aim of the study, informed consent was obtained from the study participants prior to data collection. Only volunteer tattooed individuals were included in the study. Confidentiality was ensured and efforts were made to respect cultural values, norms and taboos of the respondents

COMPETING INTERESTS

No competing of interests.

GRANT INFORMATION

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BIBLIOGRAPHY

1. Schmidt R, Armstrong M. Tattooing in adolescents and adults, Up to Date 2013, Available at www.uptodate.com.
2. Sulzenbacher G. The glacier mummy, Discovering the Neolithic Age with the iceman, Folio, *Vienna-Bolzano and South Tyrol of Archeology*, 2002.
3. Krutak L. Spiritual skin: magical tattoos and scarification, *Germany: Edition Reuss*, 1st Edition, 2013, 400.
4. Hennessy D. Reflexivity: what in the 'GAK' is that? In R. J. Butler (Ed.), *Reflections in Personal Construct Theory*, Chichester: Wiley-Blackwell, 2011, 221-235.
5. Harris Interactive, One in Five U.S. Adults Now Has a Tattoo, <http://www.harrisinteractive.com/NewsRoom/HarrisPolls/tabid/447/mid/1508/articleId/970/ctl/ReadCustom%20Default/Default.aspx> (accessed 22nd March 2012), 2012.
6. Corso R A. Nationwide Harris poll, *Harris Interactive, New York*, 2008.
7. Atkinson M. Miscreants, malcontents and mimesis: Sociogenic and psychogenic transformation in the Canadian tattoo figuration. Unpublished doctoral dissertation, *The University of Calgary, Calgary, Alberta, Canada*, 2001.
8. Cook J. Captain Cook's journal during his first voyage round the world made in H.M. Bark "Endeavour", *A literal transcription of the original MSS. London*, 2005, 1768-1771.
9. Grarup J. Maerket for livet- tatoveringer bland tliv gardens soldater, *Copenhagen: Gyldendal*, 2013.
10. Leger, Marie. Contact dermatitis, *New York's Central Park, United States: NYU Langone's Ronald O. Perelman Department of Dermatology*, 2015.
11. Van Vranken, Michele. *Are tattoos risky? Minnesota, United States: Teenage Medical Service*, 2010.
12. Stirn A. Body piercing: medical consequences and psychological motivations, *Lancet*, 361(9364), 2003, 1205-1215.
13. Montgomery D F, Parks D. Tattoos: counseling the adolescent, *J Pediatr Health Care*, 15(1), 2001, 14-19.
14. Stirn A, Hinz A. Tattoos. Body piercings, and self-injury: Is there a connection? *Psychotherapy Res*, 18(3), 2008, 326-333.
15. Koch R, Roberts A E, Armstrong M L, Owen D C. Body art, deviance, and American college students, *Soc Sci J*, 47(1), 2010, 151-161.
16. Radway, Janice. "Reading the Romance: Women, Patriarchy, and Popular Literature, *Chapel Hill: University of North Carolina Press*, 1984, 276.
17. Nair, Suresh. Is There a Link Between a Tattoo Ink and Cancer? *Let's see*, 2015.
18. Armstrong M L, Kelly L. Tattooing, body piercing, and branding are on the rise: perspectives for school nurses, *J Sch Nurs*, 17(1), 2001, 12-23.
19. Laumann A E and Derick A J. Tattoos and body piercing in the United States: a national data set, *Journal of the American Academy of Dermatology*, 55(3), 2006, 413-421.
20. Pew Research Center, 2012.
21. Schultz P. Duane and Schultz E. Sydney. Theories of personality, *Wadsworth Publishing*, 10th Edition, 2012, 504.
22. Stephen Mansfield, "The Indelible Art of the Tattoo," *Japan Quarterly*, 1/1, 1999, 30-41.

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