

*Original article***Metaphors as Tattoos on human body: Passion or Pathosis?**Somia Gul¹, Aashi Safeer², Ameera Obaid³**Abstract**

Background: The trend of tattoos increases day-by-day in many of the countries but unfortunately there is no evaluation of this practice in Pakistan. The term “tattoo” is the art of making colourful designs beneath the skin. There are different types of tattoos with different colour of inks. This practice is done for many reasons including fashion, beauty, to hide skin marks, addiction to pain, to memorize something or due to any personal reasons. Some people hide their tattoos due to some restrictions. Tattooed people may face restriction in jobs. They may cause different type of skin infections and other medical conditions. **Objective:** Our motive of research is to evaluate the relation of tattoos with disease conditions and reasons for adaptation of tattoos in Pakistan. **Methodology:** The data was collected by online interviews and face-to-face interactions with participants and tattoo artists. All the participants (N=181) with permanent tattoos were asked about different questions regarding age, gender, motivations for being tattooed, opinions and side effects following tattooing etc. **Results:** In Pakistan, tattooing is more common among males (74.03%) than females (25.96%). The highest motivation of being tattooed was found to be fashion (31.57%) and beauty (36.31%). Greater number of participants considered tattooing as harmless (66%) and less considered it as harmful (28%), while few (N=6%) have mixed opinions. Common side effect experienced by participants was inflammation (23.36%) and then allergy (11.41%) but majority of the participants did not experience any severe side effects. People belonging to any occupation were equally influenced by tattooing but it is more common in teenagers. **Conclusion:** In Pakistan, tattoos trend seems to be increasing day-by-day. Most people regardless of age, occupation, religion and side effects got tattoos because of fashion and beauty and there were no severe side effects of tattooing in Pakistan.

Keywords: Tattoos; Tahitian; Permanent tattoos; Allergic reaction; Designs beneath skin

Bangladesh Journal of Medical Science Vol. 21 No. 03 July'22 Page : 730-740
DOI: <https://doi.org/10.3329/bjms.v21i3.59591>

Introduction:

“Tahitian” elucidate to strike suitably, is a word from which the term tattoo originates.¹“Tattooing is basically an art of making permanent or long-lasting designs under the skin with the help of different colours and dyes”.² Initially tattoos were seen on the bodies of an ice man in Italy.³ Tattoos were arising from Egypt and Nubians.⁴ Omaha men admire their success in combat zone by tattooing the back sides or breasts of their daughters. Osage men make tattoos

of skull on their back to show their success in feast. Inuit females got tattoos on their chins after marriage. Killers of the whales in Inuit, Nunangat, tattooed their bodies to remember the number of whales they killed. Tattoos are used as a marking for the slaves and criminals in Greek and Native America.⁵ During the World War 2, tattoos become very common and gain social adoption so this period is also called as the “Golden age of tattooing”.⁶ Tattoos are divided into five different types; amateur, professional, cosmetic,

1. Somia Gul
2. Aashi Safeer
3. Ameera Obaid

Faculty of Pharmacy, Jinnah University for Women, Karachi, Pakistan. Email: drsomi1983@yahoo.com

Correspondence: Somia Gul, Faculty of Pharmacy, Jinnah University for Women, Karachi, Pakistan.
Email: drsomi1983@yahoo.com

medicinal and traumatic tattoos. Amateur tattoos are easy to remove.⁷ In 1999, Shannon Bell gives statement in “Tattooed: A participant observer’s exploration of meaning” that there are two types of people, people that got tattoos are usually those who have usually 1 or 2 tattoos and the people who are tattooed are those who got greater size, multi-coloured and observable tattoos. She declared that now it is impossible for the person who are tattooed to get back to their natural appearance.⁸

Now a days, tattoos becomes cheaper due to modernization in technology and now it seems to become fashion for normal people.⁹ The reason behind tattoo craziness are aesthetical reasons, personal satisfaction, communal adoption and the use of a lot of colourful inks which make tattoos more attractive for people.² Some people make tattoos to mark their sameness, relationships, feelings, and connection with some gangs.⁶ Sometimes tattooing is done to mark females and lesbigay, handicap and sexually misused persons.¹⁰ The act of tattooing is more prevalent in weightlifter men than normal men.¹¹ In Egypt, the women tattooed their forelimbs, chins, hands and foots in the form of spots, rings and dashes.¹² People make tattoos to remember the death of their loved ones to remind them and to show their loss and pain associated with these incidences.¹³ Tattoos also indicates the isolation of persons from their societies and cultures.⁹ People after becoming parents show their excitement and happiness by making tattoos. Another reason is that people like and love this short-term pain or sensation so they tattooed for this reason. One family strongly believed that if all the family members make tattoo on their bodies at a time so the spirit of their loved one come and they also feel its presence. Some women got tattoos to express their on-going conditions like suffering through divorce and get newly married. One female wants to memorize the previous place in which she was living so she makes a tattoo of that place or environment which helps her to stay connected with that place. According to Jelene, she made a tattoo on her belly to hide the scar.¹⁴ One woman said that, when she will get married then she and her partner will make tattoo on their bodies because they will start a new journey of their lives and they want to remembered it in long terms even if they get separated from one another, while on the other hand many tattooed females get raped just because of their tattoos.¹⁵ According to the research of Harris poll in 2003, it is estimated that equal number of men (16%) and women (16%) have

tattoos but they are more common in gays, lesbian and bisexual people. In America, 83% of people have tattoos and 17% of people are without tattoos and Americans usually considered tattoos as a source of being sexier. 26% of tattooed people thought that tattoo increase their attractiveness; whereas, 31% of un-tattooed people think that tattooed people are not much intelligent. 2% of people regret tattoos because they think that tattoos cause diseases and infections. 16% of people feel repentant about tattoos if the tattoo is actually the name of some person.¹⁶

It has been observed that people make tattoos independent of their ages, gender, employment and public categories at a faster rate.¹⁷ According to one tattoo artist, all people got tattoos including doctors, health care professionals, lawyers and others.¹⁴ Tattoo practices are more common in Buddhism and Hinduism.¹⁸ Many Christian males have tattoos as their religious symbols and they don’t consider it a ‘sinful’ act. Non-Christian females make tattoos on hidden body areas which are usually topped by garments because some people in society consider tattoos as a ‘sinful’ act.¹⁸

A study conducted in New York City estimated that, undesirable effects of tattoos are common.²⁰ People with tattoos may develop keratoacanthomas commonly. Usually, red ink is involved in developing 82% of keratoacanthomas.²¹

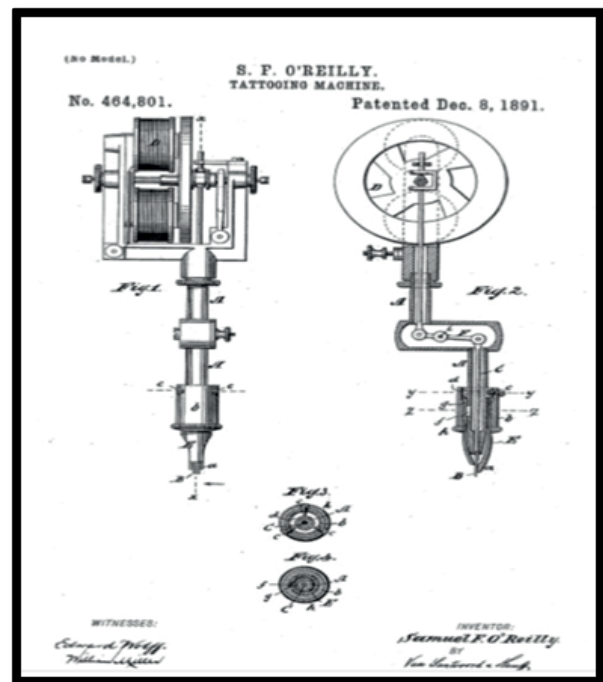


Figure 1: The first electric tattoo machine

Studies revealed that persons with tattoos are perceived negatively by companies.²² Applicants those have tattoos and piercing have less chances of hire ability by organizations, in non-customer exposure roles chances of bad impact of body is not observed. In customer-facing roles the person with tattoo has less hire ability rate compare to piercing.²³ Electric tattoo machine was invented by Samuel O'

Reilly in 1891. He was a tattoo artist in New York. This electric machine allows the consumption of numerous needles at a time and ultimately help in quicker and cheaper administration of tattoos than the traditional one⁶ (Fig:1).

Tattoo inks are basically suspensions of fine colouring matters in a suitable solvent by additioning of suitable binding agents ²⁴ (Fig: 2).

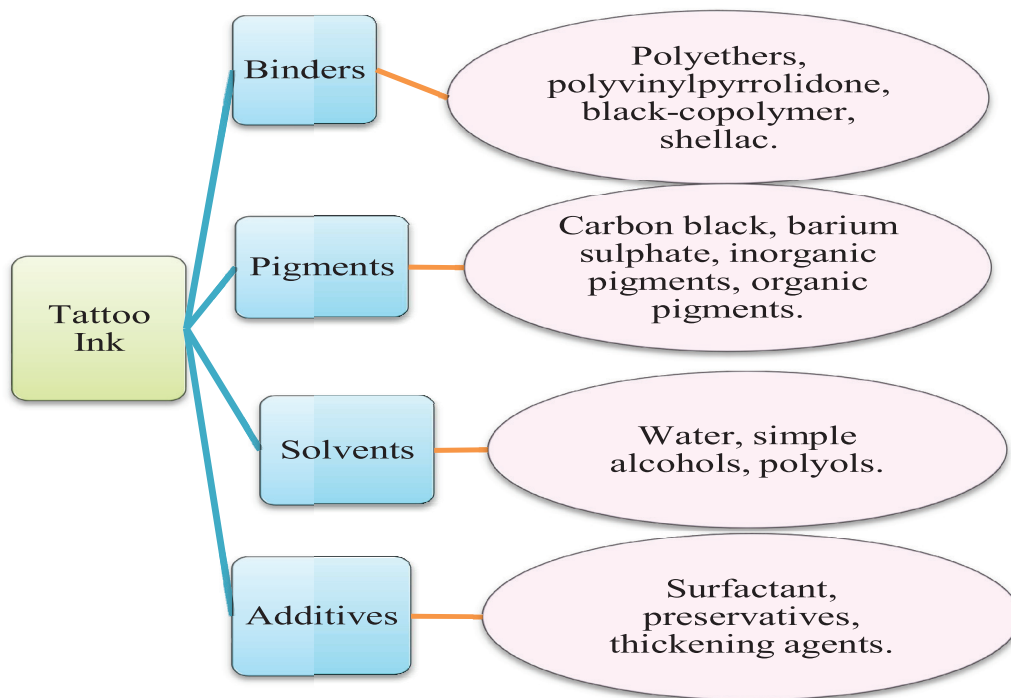


Figure 2: Composition of Tattoo inks

The metallic substances especially iron oxide in tattoo inks results in false diagnosis with MRI. These substances when interact with MRI procedure results in the production of electric current within the skin as well as raise in the temperature of the skin. This raise in the skin temperature results in second degree burn, swelling and pain.²⁵Tattoos may cause mycobacterial and MRSA infections if the tattoo inks are not clean.^{26,27,28}Tattoos may cause infectious blood diseases like Hepatitis C even if the patient is not associated with the use of IV drugs and transfusion of blood.²⁸Tattooing are a potential risk factor for iliopsoas abscess.²⁹They may cause different infections like necrotizing fasciitis; cellulitis or septicemia.³⁰People that are at risk of endocarditis can develop endocarditis after tattooing.³¹

One of the cases of a young female, 24 years old revealed that shegot blind for three weeks due to eye

ball tattoos but she doesn't feel any grief for this.³²

According to Pakistani tattoo artist named Zohaib, 90% of individuals think that tattoos are forbidden. Many people got tattoos to hide their skin marks or scars, injuries and surgical cuts. The price of 1 inch tattoo in Pakistan was RS. 1800-2000 in 2013.³³There are many Islamic groups who consider that tattooing is forbidden while this art is practising by some Islamic groups.³⁴A study conducted in Brazil indicated increased number of tattoos associated with Hepatitis B virus infection.³⁵According to the study of 2016, acute local inflammation is the most common complication of tattoos and other complications include infections, allergic contact dermatitis and inflammatory reactions. ³⁶A study conducted on individuals that were sunbathing at the beaches of Denmark to find complaints in people having tattoos. Out of 146 tattooed sunbathers, 31

individual's complaint of sun effects. Black, red and blue tattoos were dominantly responsible for sun-related complications.³⁷ Another study done by FDA, according to which there is negative effects on health due to tattoos ink, according to the FDA the sources of pigments like heavy metals, hydrocarbons and phthalates can act as cancer causing agents^{38, 39, 40}.

In Malaysia 3rd-dec-2019, after the images of nudity and obscenity of both males and females get viral on social media, the Minister of peregrinate and cultures ordered for investigations. According to him, act playing during tattoo show should not be tolerated any way. He further says that there will be a strict action against tattoo artist and models.⁴¹

Our objective of study is to evaluate the relationship of tattoos with diseases and to examine the reasons for adaptation of tattoos in Pakistan from individuals' perspectives.

Methodology:

This study is based on survey that has been conducted in Karachi, Pakistan in 2019 for five months. We have approached different tattoo studio pages from Karachi, Lahore, Islamabad, Azad Kashmir etc. in Pakistan. Collection of data has been done by messages, calls and face to face interactions. This study was based on briefly defined questionnaire in which various parameters were included such as age, gender, myths, inspiration for tattooing, side effects, and perspective about diseases transmission and other information about tattoos. We have approached total 322 people from which 181 participants have filled the questionnaire as well as give their interviews and remaining people did not filled questionnaire. Participants belonging to different religions were interviewed. Most of the participants we got were young and teenagers. We visit different tattoo artists in Pakistan and investigate about their work practice and views about risks associating with tattooing and then finally the data was sorted and analysed.

Ethical clearance: This research is approved by Departmental ethics Committee, Faculty of Pharmacy, Jinnah University for Women, Karachi, Pakistan.

Result and Discussion:

As the trend of tattooing increases day by day in many of the countries we have determined trends, motivations, myths, opinions as well as side effects experienced by people after tattooing in Pakistan. Total participants were 181.

Tattoo artists' interviews:

Tattoo artists have several perspectives about tattooing. An artist who runs tattoo studio in Lahore, according to him tattooing is the form of an art which is helpful for people in many ways such as to hide scars or to remind an individual about the reason to live and in his views, tattoos have no societal, psychical or bodily disadvantages that's why it cannot be considered as sinful act. His clients want tattoos of their partner's name, many of them do not know what type of tattoo they want to get, and boys usually want to get dragon tattoos while girls usually want to get flowers designs. According to him his clients often wish to get tattoos of their favourite entertainers, music and African symbols. One of the tattoo artists from Karachi said that, if tattooing is not done in hygienic manner, then it causes risk of blood borne diseases like Hepatitis B, Hepatitis C and HIV. Another artist from Karachi said that, individuals with permanent tattoos on visible areas have difficulty to get jobs in Pakistan. According to an artist in Islamabad, it is a false concept that people with permanent tattoos cannot donate blood as tattooing is done in layers of skin where there were no veins, he further said that he always guides his clients about to avoid heat, swimming and exercise as it can cause sweating which has sodium salts which are harmful for a wound to heal. Another artist from Lahore said that, people with tattoos can have jobs but it usually depends on the fact that where they got tattoos. They import their equipment's and inks from China, Bangkok and USA. According to him equipment's use for tattooing are same as medical instruments in a hospital and some side effects like redness and burning sensation are common after tattooing and a person can safely donate blood after 6 months of tattooing. Another tattoo artist from Islamabad said, it is a false concept that tattooing carry any harm as ink stays in dermis and it is there for the rest of life it does not dissolve and most of his clients donate blood just after tattooing. According to tattoo artists from Islamabad, Karachi and Lahore prices of tattoos totally depends upon size and design of tattoo usually simple tattoo cost around 3000Rs to 6000Rs per inch of tattoo and duration of tattooing depends upon the size of tattoos as some tattoos take minutes while some tattoos take days if they are of larger size.

Client's interviews:

There were 74.03% (N= 134) males and 25.96 % (N=47) females (Fig:3).

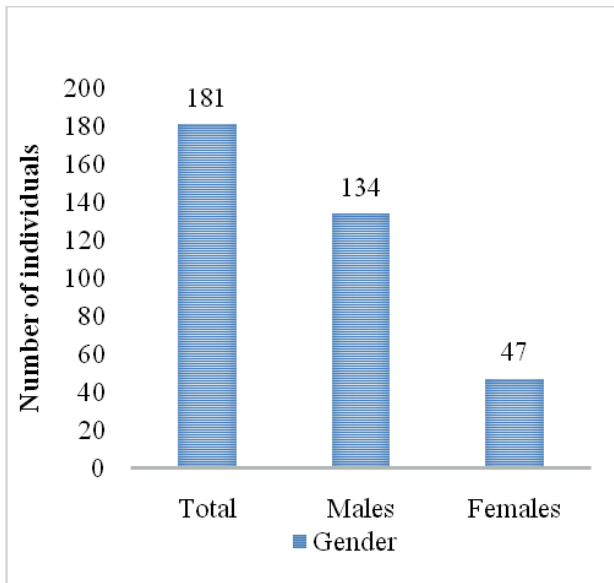


Figure 3: Gender mainly involved in tattooing

One reason behind a smaller number of females was that most of the females do not respond and few females hide their tattoos from their families and elders. Like, one woman said that as she is married so sometimes, she has to hide her tattoo from elders of her in-laws. Another reason behind a smaller number of female participants could be that tattoos were less prevalent in females as compare to males in Pakistan. Age groups of tattooing in Pakistan indicated that out of 100 % (N=181) participants, 45% (N=81) were between 16 to 24 years of age, 40% (N=73) were between 25 to 33 years of age and 15% (N=27) were between 34 to 42 years of age.

It is important to note that there were 39.2% (N=71) participants who got their first tattoo at the age of less than 15 years including 24 Muslims, 32 Christians, 12 Hindus and 3 participants from other religions. Majority of the participants i.e., 56.3% (N=102) got their tattoos at the age of <30 years including 74 Muslims, 20 Christians, 1 Hindu and 7 belonging to other religions while few number participants 4.4% (N=8) got tattoos at >30 years of age including 6 Muslims and 2 Hindus so the art of tattooing is more prevalent in teenagers and younger as compare to elders in Pakistan (Fig:4).

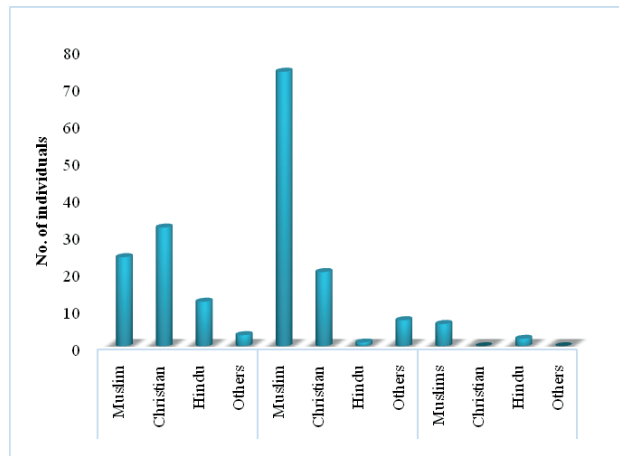


Figure 4: Number of individuals from different religions with respect to first tattoo age

There were total 57.45% (N=104) Muslims, 8.28% (N=15) Hindus, 28.72% (N=52) Christians and other participants 5.52% (N=10) were belonging to different other religions, respectively. The research was conducted in an Islamic country so therefore, most of our participants were Muslims. Also, there were two groups in a Muslim community, one group believe that tattoos are completely prohibited in Islam whereas other group believe that Muslims can get tattoos, but these results does not indicate that tattooing is more prevalent in Muslims as compare to other religions in Pakistan (Fig: 5).

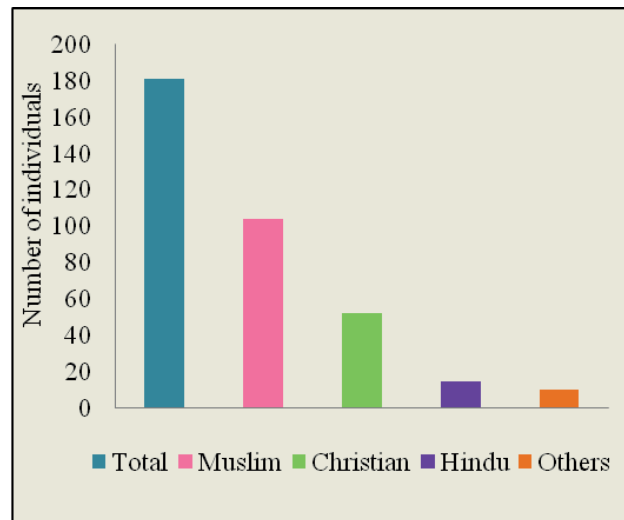


Figure 5: Religion of community with tattoos

About 66% (N=119) participants consider tattoos as harmless, 28% (N=51) consider it as harmful and 6% (N=11) participants said that tattoos can be harmless or harmful depending upon the quality of equipment's and type of tattoo parlour and tattoo artists you visited (Fig: 6).

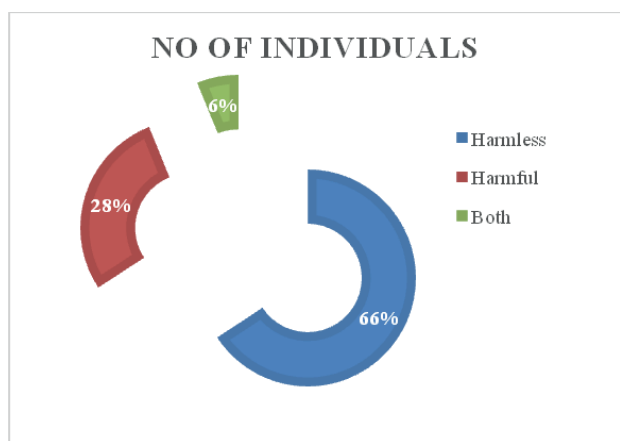


Figure 6: Views of tattooed people regarding tattooing

Socioeconomic status of the participants indicated that almost 35% were students, 6% nurses, 5% business man, 3% tattoo artists, 2% teachers, 2% doctors/ pharmacists/physiotherapists, 42% belonging to different kinds of jobs and 5% were unemployed. From these observations it is concluded that none of the specific profession is mainly involved in tattooing but people belonging to every occupation got tattoos (Fig: 7).

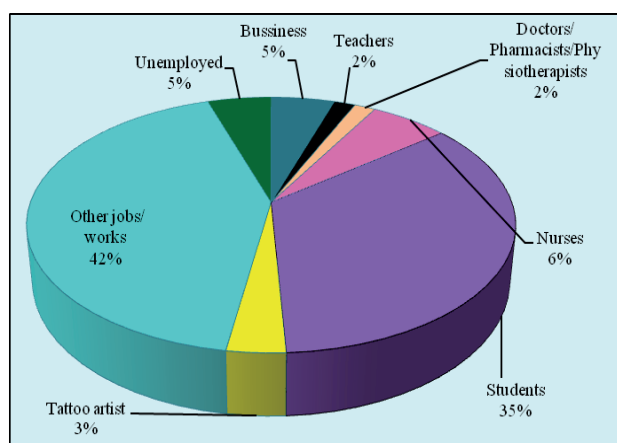


Figure 7: Demographic feature (Occupation) of tattooed population

It is revealed in the current study by the 24.86% participants (N=45) that jobs were restricted due to tattooing. Some people said that job restriction depends on the type and environment of job and tattooed people were not allowed to get government jobs. Some of the responders said that jobs are restricted only if the tattoos are present in those areas of body which are not covered by clothing. The opened tattoos create a bad impression in job interviews because the job owners want people as their representative and advocates. Some people said that job restriction due to tattooing is an issue only

in Pakistan but not in other countries because here people were judge by the way they look or appears rather than what they are truly from inside (Fig: 8).



Figure 8: Tattoo appearance on hand

Likeness of tattoos by family members of participants was judged and found that 44.198% (N=80) participants were liked by their family and friends, 22.651% (N=41) participants tattoos were disliked and 33.149% (N=60) participants were neutral in their opinions. According to some participants they usually hide their tattoos from their families and relatives as it put bad impact on others about them and people misjudge them.

By investigating the most prominent reason or motivation for getting tattoos, it is found that most of the participants have more than one reason or motivation for getting tattoos. 33.14% (N=60) of the participants got tattoos for fashion, 3.86% (N=7) because of their culture, 38.12% (N=69) because of beauty, 4.97% (N=9) due to addiction to pain, and 19.88% (N=36) for their personal reasons such as to memorize something, to hide skin marks, etc. (Fig:9).

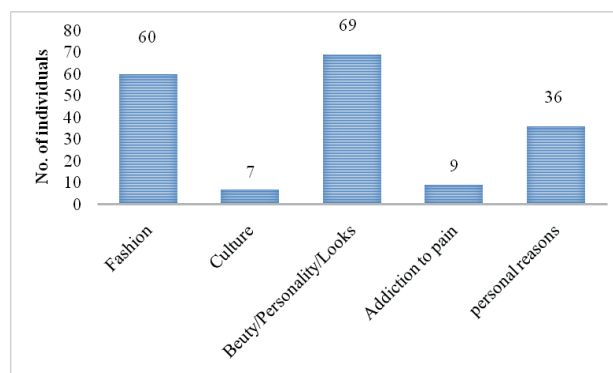


Figure 9: Reasons for tattoos adaptation

One male who has more than two tattoos on his body has no reason for getting them, he just wants to get tattoo so he got and nothing inspired him (Fig: 10).



Figure 10: Tattoos without any particular reason

According to one female participant, “tattoos are a form of self-expression and art and people do it as a form of therapy or ode to their loved ones and if a person is willing to make a commitment with the design on his body forever then why not?!” One participant got tattoo after she losses both of her parents in the same year so she was going through a difficult phase so she got a tattoo which motivates her and keep reminding her that bad times don’t last long and life goes on. Her tattoo says “this too shall pass”. Some people got tattoos to remind some events happened in their lives, some to feel the pain, and some have passion of tattooing. Some want the names or alphabets of their loved ones in form of

tattoos (Fig: 11).

One younger girl got tattoo because she thinks that she was the owner of her own flesh in this designed world. One man actually addicted to the hip hop music so he got inspired by hip hop artists that’s why he got tattoo(Fig: 12).

One of the male participants got tattoo because he loved his nick name as well as his cast name but



Figure 11: Tattoo showing the first alphabet of name

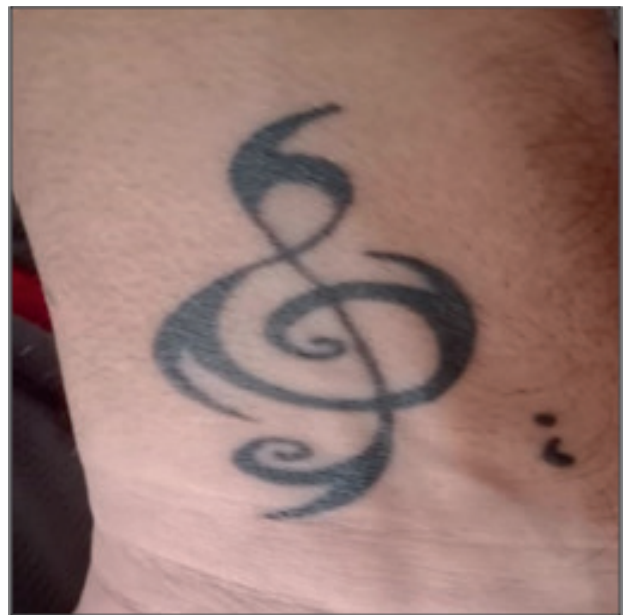


Figure 12: Music Note tattoo

now, he regrets that tattoo. Another man who is a gym teenager faced many things. He does not have many friends and he consider himself as his only true and loyal friend. He got a tattoo because of his past memories. A line in Arabic which means that “your faith has to be greater than your fear” (Fig: 13).



Figure 13: Arabic tattoo

Tattooing was also done for other reasons too like for self-discovery, experience and to put memorable pieces of art. Another motivated reasons for tattoos just because of the bad effect of movies and favourite actors. One of the male participants got tattoo because of fashion and he also got it to make his self believe that he is brave and can take his own decisions while another one has a passion for art so he made this art on his body in form of tattoo (Fig: 14).

One participant after winning his first competition in fitness got his first tattoo. It revealed that tattoos are made to write some good or bad stories that happened in our lives, not even to show off (Fig: 15).

Other reasons for being tattooing in different participants are like one male, who is a magician want something on his body that will keep on reminding him not to give up his passion. Another got tattoo for his love to get valuable moments stored in form of tattoo on his body. A 19 years old participant wanted to get tattoos since his childhood and he was waiting for years to turn 18 and then got his first tattoo. His family won't pay for his tattoo so he also did a job just to earn enough to get a tattoo. He is looking forward to get his entire body inked. According to him tattoos are just about personal preferences. Some people love tattoos, some like piercing and stuff like that.

Among participants, one revealed tattoo as a personal duel and battle against the society and the mentality which surrounds him. Initially he was just fond of tattooing but when he finally made the decision to get inked and to go through that needle stitching pain, he knew what he was getting himself into. He used to hide it. He was the first in his city to get one. After days of hiding, it turned into months. A few people appreciate and most had their judgemental stares at him. Later on, he found out the only place where he was not judged was football ground around his team mates. The tattoo itself stands for something and that something led him to peace.

Investigation on spending money in tattooing revealed that, 23.75% (N=43) participants spent within hundreds on tattoos, 65.19% (N=118) spent thousand and 11.04% (N=20) spent more amount of money on tattoos. The prices of tattoos vary from parlour to parlour due to different ink colours and sizes of tattoos. A person with more than one tattoo or large size tattoo on body obviously spend more than a person with a small tattoo. The price also varies depending upon number of inks consumed.

From 100% (N= 181) participants, 35.35% (N=64) of the participants were aware that tattoos are photosensitive, 32.04% (N=58) were aware that tattoo inks contain pigments that are used in car paints, 46.40% (N=84) participants have knowledge about the transmission of diseases by tattooing and 39.22% (N=71) participants were aware of the fact that people with permanent tattoos cannot donate blood. Some participants said that they wear full sleeves clothes during summer to prevent sun burn while some considered tattoos as not photosensitive. One concept came up that good quality inks do not contain any harmful pigments. Another concept revealed by some participants that persons with permanent tattoos can donate blood only after 3-6 months. Majority of participants said that if tattooing does not involve hygienic procedure, then it will cause transmission of diseases. (Table1)



Figure 14: Tattoo due to fashion and art



Figure 15: Tattoos about personal reasons

Table 1: Awareness of Tattoos knowledge regarding hygienic procedure transmission of diseases

Knowledge About	Aware	Unaware	May be
Photosensitivity	64(35.35%)	73(40.33%)	44(24.30%)
Pigments used	58(32.04%)	113(62.43%)	10(5.52%)
Transmission of diseases	84(46.40%)	48(26.51%)	49(27.07%)
Blood donation	71(39.22%)	59(32.59%)	51(28.17%)

According to 181 responders, most of the tattoo artist

use precautions like wearing gloves, using proper and sterilized equipment whereas only few responders denied it. Similarly most of the responders said that their tattoo artist give proper advise like avoidance of sun exposure, keeping tattooed skin clean, using moisturizer and choosing clothing carefully while few participants refuse it.

In this study we have also inquired about the side effects experienced by participants and their views regarding tattooing. Some participants experienced more than one side effect. 11.60% (N=21) participants experienced allergy out of which 11 participants consider tattooing as harmless and 10 considered it as harmful. 23.75% (N=43) participants faced inflammation out of which 26 consider it as harmless and 17 consider it as harmful. 6.07% (N=11) participants faced blood clots out of which 9 consider it as harmless and 2 consider it as harmful. Skin infection is faced by total 5.52% (N=10) participants out of which 8 consider it as harmless, 1 consider as harmful and 11 have neutral opinion. 53.03% (N=96) of the participants do not face any of the side effect (Fig: 16).

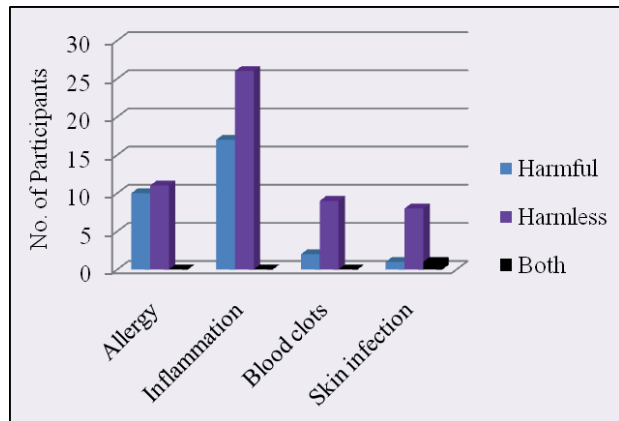


Figure 16: Relationship between side effects experienced by participants and views of participants

Some of the responders revealed that if you visited a good tattooing place then artists also ask to open your packet of needle by your own self as well as they let you know about everything before getting tattoos. Different opinions from participants are like “tattoos are harmless to those who have it but harmful to narrow minded mentality”, “if tattoos were made by professionals that use cleaners, moisturizers and sterilize equipment then it is harmless but if it is made by home-made tattoo machines then definitely it would be harmful”, “tattoos are good if you take care of it and own it” etc.

Conclusion:

In Pakistan, tattoos trend seems to be increasing day by day, so we have evaluated the motivation for being tattooed and relationship of tattoos with diseases from individual perspective, our data shows that body art is done for varieties of reasons, most of the respondents regardless of gender, age, religion, occupation, prices and side effects got tattoos because of fashion, beauty, to hide skin marks, due to personal reasons and to memorize something and

there were no serious side effects of tattooing known in Pakistan.

Recommendation:

It is concluded and recommended from the current study that tattoos may involve in transmission of diseases if hygienic conditions are not maintained during tattooing.

Source of fund (if any): No funding has been provided for this working.

Conflict of interest: No conflict of interest exists.

Author's contribution:

Data gathering and idea owner of this study: Somia Gul Aashi Safeer, Ameera Obaid

Study design: Somia Gul

Data gathering: Somia Gul Aashi Safeer, Ameera Obaid

Writing and submitting manuscript: Somia Gul Aashi Safeer, Ameera Obaid

Editing and approval of final draft: Somia Gul

References:

- Hassan, J. P. H., Meldgaard, J. and Nordqvist, J. The Greenland Mummies. London: British Museum Press. 1991.
- Kluger N, Koljonen V. Tattoos, inks, and cancer. *The lancet oncology*. 2012 Apr 1;**13**(4):e161-168. [https://doi.org/10.1016/S1470-2045\(11\)70340-0](https://doi.org/10.1016/S1470-2045(11)70340-0)
- Spindler K. The man in the ice: the discovery of a 5,000-year-old body reveals the secrets of the Stone age. 1sted. New York: Harmony Books. *Three Rivers Press*. 1996 Feb 27. p.305.
- Tassie G. Identifying the practice of tattooing in ancient Egypt and Nubia. *Papers from the Institute of Archaeology*. 2003 Nov. **14**(0). 85-101. <https://doi.org/10.5334/pia.200>
- Gay K, Whittington C. Body marks: Tattooing, piercing, and scarification. Brookfield. *Twenty-First Century Books*; 2002;p.112.
- DeMello M, Rubin GS. Bodies of inscription. *Duke University Press* 2000 Jan 25; p.256. <https://doi.org/10.1515/9780822396147>
- Kuperman-Beade M, Levine VJ, Ashinoff R. Laser removal of tattoos. *American journal of clinical dermatology*. 2001 Feb;**2**(1):21-25. <https://doi.org/10.2165/00128071-200102010-00004>
- Bell S. Tattooed: A participant observer's exploration of meaning. *Journal of American Culture*. 1999 Jun;**22**(2):53-58. https://doi.org/10.1111/j.1542-734X.1999.2202_53.x
- Porcella A. Tattoos: A marked history. 2009 Dec. p.1-38. URL: <https://digitalcommons.calpoly.edu/socssp/2>
- Jeffreys S. 'Body art' and social status: Cutting, tattooing and piercing from a feminist perspective. *Feminism & Psychology*. 2000 Nov;**10**(4):409-429. <https://doi.org/10.1177/0959353500010004002>
- Mayers LB, Judelson DA, Moriarty BW, Rundell KW. Prevalence of body art (body piercing and tattooing) in university undergraduates and incidence of medical complications. *In Mayo Clinic Proceedings* 2002 Jan ;**77**(1):pp. 29-34). Elsevier. <https://doi.org/10.4065/77.1.29>
- Lane EW. An Account of the Manners and Customs of the Modern Egyptians, 5th edition. London: Dover Publications. 1860.
- Keinlen A. Skin deep: Tattoos mark the body's surface, but their inspiration is drawn much deeper. *Herizons*. 2005;**19**(2): 24-27.
- Johnson FJ. Tattooing: Mind, body and spirit. *The inner essence of the art. Sociological Viewpoints*. 2007 Oct 1;**23**:45.
- Kang M, Jones K. Why do people get tattoos?. *Contexts*. 2007 Feb;**6**(1):42-47.
- Sever JM. A third of Americans with tattoos say they make them feel more sexy. *The Harris Poll*. 2003

- Oct;58:1-5.
17. Armstrong ML. Career-oriented women with tattoos. Image: *The Journal of Nursing Scholarship*. 1991 Dec;23(4):215-220. <https://doi.org/10.1111/j.1547-5069.1991.tb00674.x>
 18. Scheinfeld N. Tattoos and religion. *Clinics in dermatology*. 2007 Jul 1;25(4):362-366. <https://doi.org/10.1016/j.clinidmatol.2007.05.009>
 19. Johnson RA, Avenarius CB. The Role of Religious Values: Young Christians' Opinions towards Tattoos. Explorations: *The Journal of Undergraduate Research and Creative Activities for the State of North Carolina*. 2014;9:138-148.
 20. Brady BG, Gold H, Leger EA, Leger MC. Self-reported adverse tattoo reactions: a New York City Central Park study. *Contact Dermatitis*. 2015 Aug;73(2):91-99. <https://doi.org/10.1111/cod.12425>
 21. Fraga GR, Prossick TA. Tattoo-associated keratoacanthomas: a series of 8 patients with 11 keratoacanthomas. *Journal of cutaneous pathology*. 2010 Jan;37(1):85-90. <https://doi.org/10.1111/j.1600-0560.2009.01286.x>
 22. Swanger N. Visible body modification (VBM): Evidence from human resource managers and recruiters and the effects on employment. *International Journal of Hospitality Management*. 2006 Mar 1;25(1):154-158. <https://doi.org/10.1016/j.ijhm.2004.12.004>
 23. Timming AR, Nickson D, Re D, Perrett D. What do you think of my ink? Assessing the effects of body art on employment chances. *Human Resource Management*. 2017 Jan;56(1):133-149. <https://doi.org/10.1002/hrm.21770>
 24. Dirks M. Making innovative tattoo ink products with improved safety: possible and impossible ingredients in practical usage. *Tattooed Skin and Health*. 2015;48:118-127. <https://doi.org/10.1159/000369236>
 25. Armstrong ML, Elkins L. Body Art and MRI: Tattoos, body piercings, and permanent cosmetics may cause problems. *AJN The American Journal of Nursing*. 2005 Mar 1;105(3):65-66.
 26. LeBlanc PM, Hollinger KA, Klontz KC. Tattoo ink-related infections—awareness, diagnosis, reporting, and prevention. *New England Journal of Medicine*. 2012 Sep 13;367(11):985-987.
 27. Kennedy BS, Bedard B, Younge M, Tuttle D, Ammerman E, Ricci J, et al. Outbreak of Mycobacterium chelonae infection associated with tattoo ink. *New England Journal of Medicine*. 2012 Sep 13;367(11):1020-1024.
 28. Carney K, Dhalla S, Aytaman A, Tenner CT, Francois F. Association of tattooing and hepatitis C virus infection: A multicenter case-control study. *Hepatology*. 2013 Jun;57(6):2117-2123.
 29. Gulati S, Jain A, Sattari M. Tattooing: A potential novel risk factor for iliopsoas abscess. *World Journal of Clinical Cases: WJCC*. 2014 Sep 16;2(9):459.
 30. Porter CJ, Simcock JW, MacKinnon CA. Necrotising fasciitis and cellulitis after traditional Samoan tattooing: case reports. *Journal of Infection*. 2005 Feb 1;50(2):149-152. <https://doi.org/10.1016/j.jinf.2003.10.018>
 31. Akkus NI, Mina GS, Fereidoon S, Rajpal S. Tattooing complicated by multivalvular bacterial endocarditis. *Herz*. 2014 May 1;39(3):349-351.
 32. Lindsay, J. *Eyeball Tattoos Leave Woman Blind For Three Weeks*. 2019 Nov 5. Retrieved from Metro: <https://metro.co.uk/2019/11/05/eyeball-tattoos-leave-woman-blind-three-weeks-11047056/>
 33. Malik, S. *Tattoos: Skin deep*. 2013, March 17. Retrieved from The Express Tribune: <https://tribune.com.pk/story/520153/tattoos-skin-deep>
 34. Larsson G. Islam and tattooing: an old question, a new research topic. *Scripta Instituti Donneriani Aboensis*. 2011 Jan 1;23:237-256. <https://doi.org/10.30674/scripta.67390>
 35. Nishioka SD, Gyorkos TW, Joseph L, Collet JP, Maclean JD. Tattooing and risk for transfusion-transmitted diseases: the role of the type, number and design of the tattoos, and the conditions in which they were performed. *Epidemiology & Infection*. 2002 Feb;128(1):63-71. <https://doi.org/10.1017/S0950268801006094>
 36. Islam PS, Chang C, Selmi C, Generali E, Huntley A, Teuber SS, Gershwin ME. Medical complications of tattoos: a comprehensive review. *Clinical reviews in allergy & immunology*. 2016 Apr 1;50(2):273-286.
 37. Hutton Carlsen K, Serup J. Photosensitivity and photodynamic events in black, red and blue tattoos are common: a 'Beach Study'. *Journal of the European Academy of Dermatology and Venereology*. 2014 Feb;28(2):231-237. <https://doi.org/10.1111/jdv.12093>
 38. U.S. Food and Drug Administration. *Think Before You Ink. Are Tattoos Safe?* 2009, October. Retrieved from FDA Consumer Health Information: <https://www.cascadecountymt.gov/DocumentCenter/View/520/Think-Before-you-Ink-PDF>
 39. Paradisi A, Capizzi R, De Simone C, Fossati B, Proietti I, Amerio PL. Malignant melanoma in a tattoo: case report and review of the literature. *Melanoma research*. 2006 Aug 1;16(4):375-376.
 40. Baker PA, O'Dowd GJ, Khan IU. Dermatofibrosarcoma protuberans arising in a decorative tattoo. *Sarcoma*. 2005 Mar 1;9(1-2):37-41. <https://doi.org/10.1080/13577140500094289>
 41. *Malaysian minister criticises 'obscene, half naked' tattoo show in Kuala Lumpur*. 2019, December 3. Retrieved from BBC News <https://www.bbc.com/news/world-asia-50639544>