Prevalence of Body Modifying Concepts and Awareness of Complications among Young Adults

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Abstract

Aim & Objective: The study aimed to investigate the prevalence of body-modifying concepts and awareness of complications among young adults.

Background: Body modification involves permanent alteration of the human body, including body piercing and tattoos. The FDA advises caution when using body modification, as it may cause adverse reactions and infections. The FDA encourages consumers to use caution when undergoing body modification, as it is an intentional and potentially harmful practice.

Materials and Methods: This was a descriptive correlational study primarily designed to gather information and discern relationships, if any, between selected variables. Data were collected among the young adults through google forms. The prevalence of the questionnaire was assessed using frequency and percentage distribution.

Results: The tattoo prevalence among young adults is 72%, with arms having a higher prevalence rate of 48%. 62% of the participants have expressed their interest in getting body modifications in the future. Piercing was common among 55% of young adults, with the nose, belly, face, and eyebrows being the most common sites. The 21-30 age group had a higher piercing rate 43%. Almost 46% of young adults had their tattoos from licensed professionals. The major reason for tattoos was fashion and aesthetics. Most young adults were unaware of the associated risk factors and sterilization methods involved in tattooing. Parlors were preferred for tattoos among young adults. 46% of young adults were aware of infection risks associated with tattoos and piercings. Sixty-six percent of people had tattoos without complications, and 97% believed that people with body piercings were not criminals and treated them equally.

Conclusion: Young adults often engage in body modifications to enhance their appearance and fashion sense, often without consulting their families. However, they are unaware of the potential risks and hazards associated with body modifications.

Keywords: Body modification, Tattoo, Piercing, Fashion, Complications, Awareness.

1. Introduction

The body modification involves the deliberate alteration of the human body through procedures like tattooing and body piercing. [1,2] These practices have a long history and are well-known in various cultures across Asia, Africa, America, and Oceania. Although their appearances vary, they always hold specific meanings for the culture. Piercings were used in initiation rites, while tattoos signal religious affiliations, strength, or social status.[3,1`]

The tattooing concept was prevalent among sailors and working-class members in the early 20th century, later assigning affiliations to groups like bikers or inmates. In the 1980s, Punk and Gay movements adopted invasive body modification as a protest against conservative middle-class norms. Body modifications remained provocative until the 1990s.[4,5,1]

The U.S. Food and Drug Administration (FDA) (2000) instructed customers to use caution when getting tattoos. However, the organization chose not to control tattoo inks or colorants. Furthermore, tattoo pigments are not controlled by state health boards. Additionally, studio equipment and instrument sterilization in tattoo parlors and piercing parlors, inspections are largely uncontrolled. The FDA advises caution for customers, addressing potential negative reactions to the wide range of tattoo colors and infections during the procedure.[6,7]

Tattoo and piercing studios are unregulated in inspection and equipment sterilization, making it crucial for customers to ensure safety procedures are being followed. The level of regulation depends on the location, as local laws and governments govern these activities. Inconsistent regulation and enforcement may send conflicting public health messages.[8,6]

2. Procedure For Tattoo/Piercing

Ancient Day Tattoo Equipment

Tattoo tools in Polynesia were built using a chisel and hammer, consisting of a simple chisel and hammer. Artists made minor cuts in the skin, then hammered ink directly into the skin using the 'Stick and Poke' method. This ancient method is still used in some parts of the world, especially in tribal communities, where tattoos reflect an act of advancement. Old Egyptian needles were believed to be made from bronze, with different sizes for intricate and basic designs. The first tattoos used homemade inks, likely made from ash or soot mixed with oil or breast milk. Samoan tattoo ink is traditionally made from candlenuts smoldering on fire, mixed with sugar and water.[9,10]

Modern Day Tattoo Equipment

Thomas Edison's humble beginnings led to the invention of the first electric tattoo machine in 1891, based on a modified version of the electric pen. This innovation led to a steady increase in tattoo popularity. This was done by injecting pigment particles into the dermis through electrically driven, vibrating equipment, which is done by injecting metallic salts into the dermis at a rate of 50 to 3,000 times per minute and a depth of 1 to 2 millimeters.[9,10,6] The majority of human tissues are strongly scattered in the visible and near-infrared areas of the electromagnetic spectrum, in part because of the tissue's relative thickness and structural characteristics. These skin's optical characteristics aid in the penetration, absorption, scattering, and remittance of incident radiation at different wavelengths. (Figure.1) Tattoos were also applied using implements like pens, pencils, knives, needles, or straight pins.[10,6]

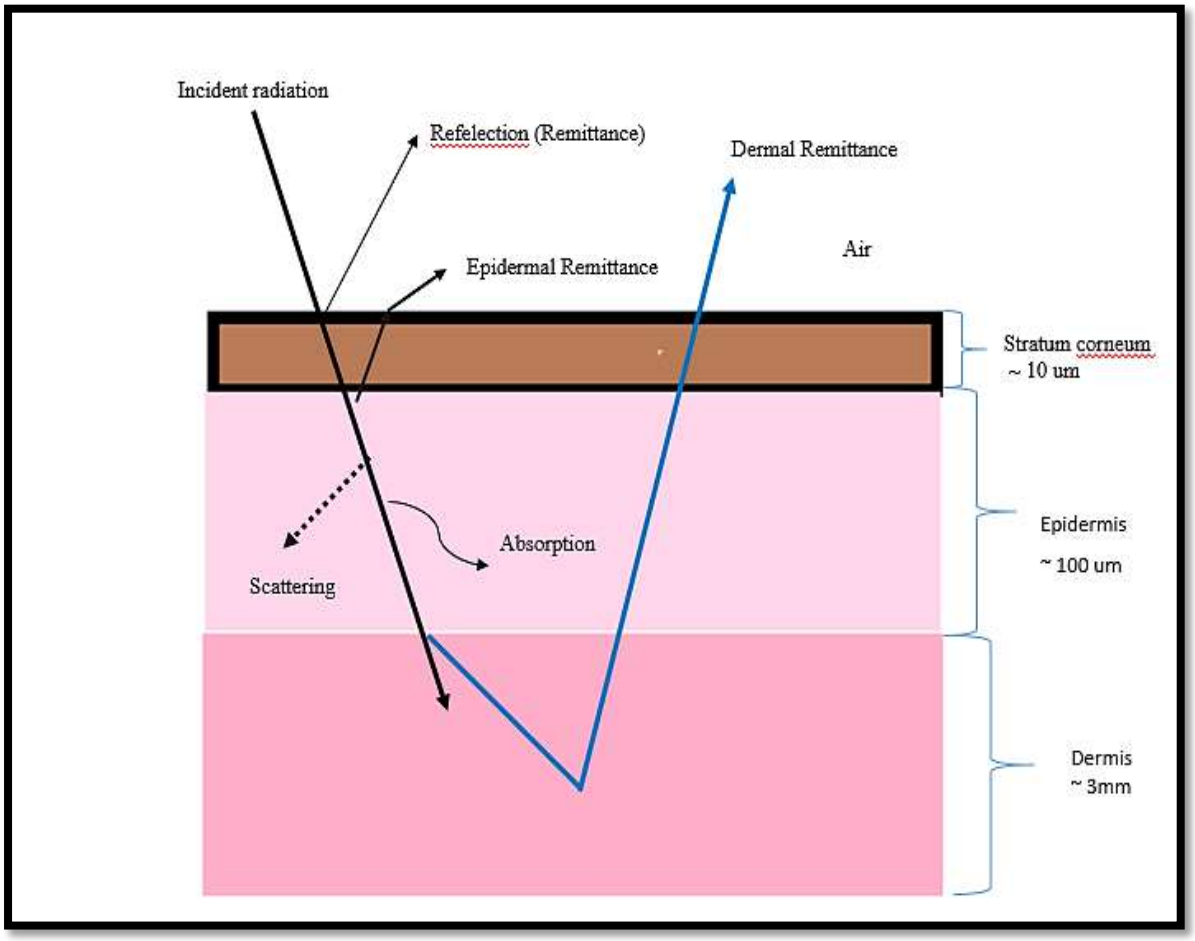

Figure 1: Optical pathways of skin using tattoo machine. (Miranda 2015a)

3. Piercing Procedure

Body piercing along with body jewelry was the most popular and effective way to enhance the body parts, with involves inserting body jewelry into a hollow needle-pierced hole to embellish the body part, with a wide variety of styles available. The common site preferred for piercings such as the navel, breast, lip, nose, and tongue, was the common site preferred for piercing.

Body piercing is a type of body modification like tattooing. Related ways to perform body modification include:

- A piercing site is stretched by threading larger diameter jewelry through it every 4-6 weeks while it heals in order to enlarge the hole that was initially made. Lip stretching to encompass wide discs is one cultural variation of this. Over time, the skin will also become significantly stretched by heavy jewelry. (Figure 2)
- In the pocketing technique, the ends of a semicircular ornament are inserted into the skin, exposing the middle. (Figure 3)
- An anchor is inserted under the skin via a procedure known as transdermal piercing. It appears as tiny pores where tissue can develop while healing. The anchor has jewelry screwed into it. Sometimes this method is referred to as anchoring. [13,6]

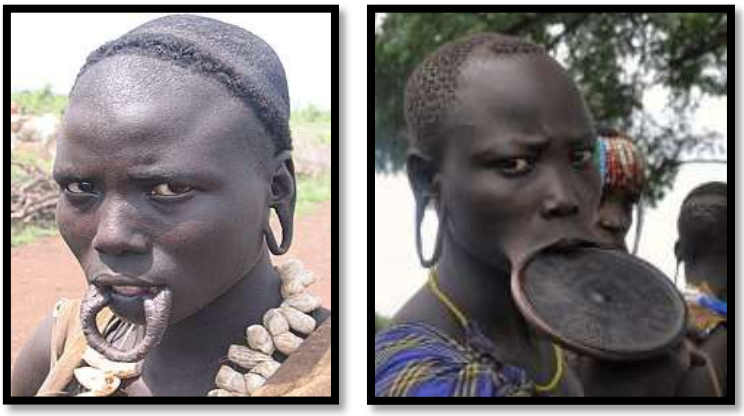

Figure 2: a. contemporary Mursi woman with lip plate b. contemporary Mursi woman showing pierced lower lip without lip plate (Picture source: internet)

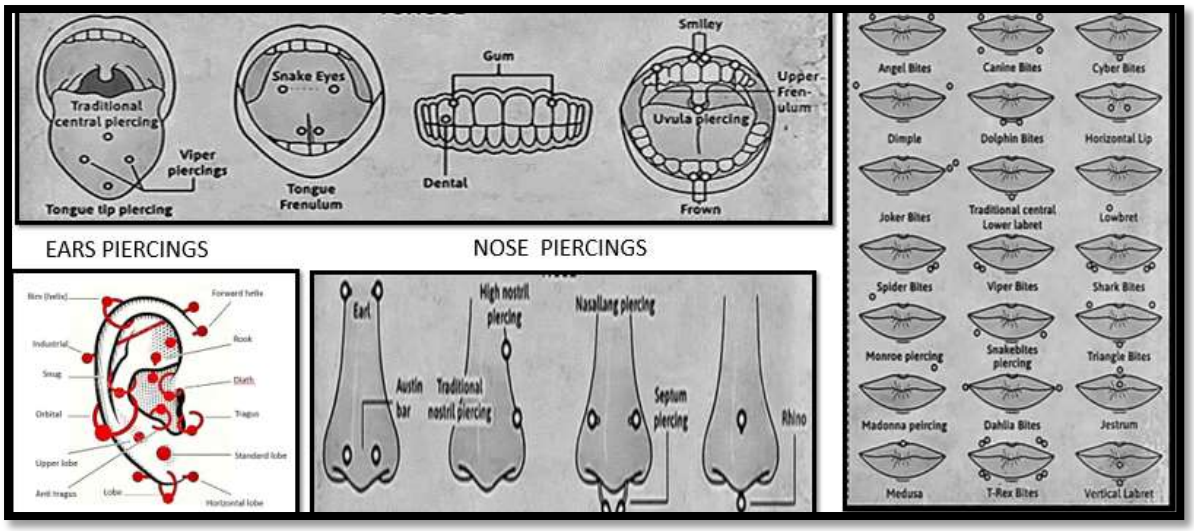

Figure 3: Types of oral and lip, ear & nose piercing

Figure 4: Septum -piercing with septum nose ring (pocketing technique) done by a young male

Figure 5: Dermal piercing in the face

Figure 6: a) Cartilage ear-piercing done using industrial piercing type.
b) Anchoring technique

Types of tattoos

Figure 7: Modern line tattoos

(a)

(b) **(c)**

Figure 8 : (a,b,c) : Neo – traditional tattoo arts

Figure 9: Ancient old traditional tattoos

Motivational categories to get tattooed/pierced:

Tattoos and body piercings have grown in popularity, appealing to diverse socioeconomic strata over the past decade.[14,1] Motivational studies are crucial for understanding body alterations and removing the outdated stigma associated with these changes.[15,1] The main focus is on the importance and distinctiveness of these motivational categories and highlighting the similarities but potential differences in motivational features between the two.[1]

Motivation factors which contribute as a driving force for body piercing and tattoos are

- Individuality involves establishing and maintaining one's identity, distinguishing oneself from others, and being unique, influenced by various motives.[6,1]
- Personal narratives involve motivations, self-expression, and catharsis for self-expression. [11,1]
- Physical endurance tests one's capacity for pain, overcoming limitations, and showcasing tenacity. Endorphins release in response to painful stimuli, causing sedative and mood-enhancing effects, potentially causing a 'thirst for pain'.[17,18,1]
- Group affiliations and subcultural participation drive bodily alterations, driven by friendship, love signals, and social group fit.[6,1]
- Resistance to invasive body changes, linked to criminal activity and subcultural movements, often stems from opposition to society and parents, highlighting their controversial nature**.** [14,1]
- Neo primitives, a movement of body moderators, engage in extreme body modification to highlight the historical relevance of body modification, highlighting spiritual and cultural motivations for achieving physical alterations**.** [11,1]
- Tattoos and body piercings have an addictive quality, possibly due to endorphins released during painful penetration, causing analgesic and euphoric feelings. People must hold onto memories, experiences, values, or spirituality**.** [19,1]
- Sexual motivation involves cosmetic, genital, and nostril piercings to stimulate sex organs, express affectation, or emphasize one's sexuality, as well as expressing personal sexuality. [20,1]
- Some individuals use spontaneous decision-making processes for bodily alteration, while others are under the influence of alcohol or drugs, without specific reasons, despite no apparent personal motivation. .[21,1]

Health risks associated with tattooing and body piercing

Risk of tattooing:

Tattoo placement can lead to systemic infections, chronic illnesses, and widespread inflammatory reactions. Doctors must identify tattoo problems and advise young patients on the hazards, focusing on high-risk patients, to prevent complications and ensure a safe and healthy tattoo experience.[22]

Non-sterile tattooing techniques pose health hazards like syphilis, hepatitis B and C, and increased risk of neuromas and hematomas.[20,6] Tattoo pigments can cause skin reactions like photosensitivity to cadmium and hypersensitivity to cinnabar. Exposure to ink components like copper, zinc, selenium, aluminum, and iron increases the risk of allergic reactions, infections, and metal poisoning. Abscesses and keloid scars can be treated with topical or systemic antibiotics, while laser removal can remove keloid scars.[23,6]

Risk of piercing:

Oral piercings pose risks, including speech impairment, tooth fractures, and aspiration due to potential dislodging.[24,6] Materials are known to cause allergy — including anaphylaxis — must be avoided in the individuals undergoing body piercing, including any sanitary products normally used in the procedure (eg. nickel-plated items, latex surgical gloves).[14]

Strong contraindications

Body piercing is strongly contraindicated in individuals with local infection or inflammatory disease, including:

- Previous hypersensitivity reaction to any associated materials.
- Dental caries or gum disease — for oral piercings.
- Eczema and psoriasis.
- Sexually transmitted infection.

What are the side effects and risks of body piercing?

The lack of regulation and incident reporting (especially regarding sensitive or high-risk piercings), means that estimates of the incidence of adverse effects of body piercing are inconsistent and unreliable.[14]

- Bleeding
- Pain — as piercing is rarely undertaken with a local anesthetic.
- Nausea — the pain experienced may lead to nausea.

Cutaneous adverse effects

The following cutaneous adverse effects may occur.

- Contact dermatitis
- Allergic contact dermatitis is the most frequent non-infectious cutaneous complication.
- Nickel is the most common allergen.
- Multiple piercings increase the risk of contact dermatitis.[14]

Infectious complications

The penetration of the skin barrier with body piercing exposes underlying tissues. With body piercing, wound healing is slow due to the presence of a foreign body, and in cartilaginous piercings, poor blood supply. Deep piercings and those made through mucosal surfaces carry a higher risk of developing an infectious complication. Additionally, oral infections can cause swelling and obstruct the patient's airway after body piercing.[14]

Psychological effects

Body piercing can have psychological effects on individuals who undergo the procedure.

- Where it is necessary to remove piercings, it may be psychologically traumatic, especially when the piercings were attained for such reasons as identity, resilience, spirituality or remembrance. Using suture material, non-stick posts or non-metal catheters to maintain the body piercing opening if the removal is intended to be temporary may provide the individual with some reassurance.
- The deformity that can occur with piercings can reduce self-esteem and body confidence.

- The individual's disinterest leads to the intentional removal of 13–18% of body piercings at body sites other than the earlobes in Western culture. [16]

Need for the study:

Investigating the incidence and prevalence of body piercing and tattooing is crucial for understanding the factors behind the rising trend in body modification. Further investigation is needed to fully comprehend these factors.[11,6] The second goal was that body-altering processes involve health risks, and factors like age, gender, and ethnic background influence participants' awareness and complications in these processes.[6]

Aim & Objective

- The study aimed to investigate the prevalence of body-modifying concepts and awareness of complications among young adults.

Method of study:

Using Google forms, international business machines (IBM) ran descriptive correlational research to gather data and identify associations between particular factors among young adults. The prevalence of the questionnaire was assessed using frequency and percentage distribution. IBM statistical package for the social sciences (SPSS) Statistics for Windows was used to analyze the data, with a significance level of 5%. P-value <0.05 is considered to be statistically significant.

Participants:

A total of 100 participants were recruited through tattoo and body arts by educated employees of the facilities between Jan 2022 – 0ctober 2022. Age; mean = 25; range = 19 to 35, employment status 100 % employed, ethnicity, gender 50 % female and male, marital status; single, and educational attainment 100 % college-educated are among the sociodemographic features of the research population.

Survey questionnaire:

A self-report survey called the body art survey assessed participants encounters and observations with tattoos and piercings. The survey included eleven body-piercing questions and thirteen tattoo items, divided into two sections. Race, gender, age, work position as well marital status, and educational attainment of the five demographic factors evaluated. Participants were asked how many tattoos and piercings they had, the age at which they received their first body art, the anatomical placements, and any difficulties. The process was also elaborate, along with where it was performed and the kind of tool employed. Participants were assessed on their perception of safety and exposure to health risks in body piercing and tattooing procedures using a separate question. The tool was sterilized using a yes/no format, and participants were asked about the cleanliness of the facility where they obtained the procedure.

The study asked 19-year-olds seeking tattoos and body piercings at studios to complete a survey form. Demographic questions were asked, defining tattoos as permanent marks or designs and body piercings as holes. Pierced individuals were asked to respond to demographic queries in the piercing section, while tattooed individuals without piercings were asked to answer demographic questions and the tattoo portion of the survey form.

The study investigated the prevalence, motivations, and complications of body modifications, focusing on individual expression as the primary reason for body piercing among 100 participants. The survey forms were distributed anonymously to participating sites

4. Results

Table 1: The Prevalence of Body-Modifying Concepts and Awareness of Complications among Young Adults.

S.NO	QUESTIONNAIRE	OPTIONS	FREQUENCY	PERCENTAGE
1.	Do you have tattoos	Yes	72	72.0
		No	28	28.0
2.	Have you been tattooed on any of those sites	Arms	48	48.0
		Neck	19	19.0
		Face	3	3.0
		Head	2	2.0
3.	If you do not have one, would you consider it in future	Yes	62	62
		No	38	38
4.	Have you done piercing	Yes	55	55
		No	45	45
5.	How many piercings have you done and mention the sites	Nose, belly, eyebrows, face	55	55.0
		No	45	45.0
6.	At what age you did do piercing and Tattooing	1-20 years	29	29.0
		21-30 years	43	43.0
		No	28	28.0
7.	Do they change gloves and needles for each person	Yes	52	52.0
		No	20	20.0
8.	Are they licensed by the state or city	Yes	52	52.0
		No	8	8.0
		Don’t know	40	40.0
9.	Reason for making body art	Fashion, Aesthetics	75	75.0
		To distinguish from others	5	5.0
		Religious	4	4.0
		Others	16	16.0
10.	When you decided to undergo tattoo and piercing, did you ask	friends, brother parents	45	45.0
		No	27	27.0

S.NO	QUESTIONNAIRE	OPTIONS	FREQUENCY	PERCENTAGE
	someone's advise			
11.	Were your parents informed when you underwent a tattoo	Yes	45	45.0
		No	27	27.0
12.	Are the places and instruments used for body art always safe in terms of health and hygiene	Yes	46	46.0
		No	7	7.0
		Don’t know	19	19.0
13.	Where did you get your body art done	Parlour	40	40.0
		Dermatologist	18	18.0
		Others	14	14.0
14.	Level of cleanliness at the place where body art was carried out	Very dirty	3	3.0
		Dirty	12	12.0
		Clean	55	55.0
		Very clean	2	2.0
15.	How many people do you know with piercings and tattoos?	1-5	17	17.0
		5-10	80	80.0
		10-15	3	3.0
16.	Do you think negatively of someone that has multiple tattoos	Never mind	25	25.0
		No	60	60.0
		Yes	15	15.0
17.	If you are in a restaurant/ store and someone who works there has a piercing/tattoo would you avoid them or walkout	Yes	13	13.0
		No	63	63.0
		Never mind	23	23.0
18.	Is it risky undergoing piercing/tattooing	Yes	10	10.0
		No	67	67.0
		Don’t know	23	23.0
19.	Can tattoos and piercing can transmit infectious diseases	Yes	46	46.0
		Don’t know	22	22.0
		No	32	32.0
20.	Did you get any complications after carrying out the body art	Yes	6	6.0

S.NO	QUESTIONNAIRE	OPTIONS	FREQUENCY	PERCENTAGE
		No	66	66.0
21.	How do you view people with piercings and tattoos?	criminals	3	3.0
		Same as everyone	97	97.0

The study found that 72% of young adults underwent tattoos, with arms having a higher prevalence rate of 48%. 62% of young adults were interested in having tattoos, with 46% from licensed professionals. The reason for tattoos was fashion and aesthetics. Most young adults were unaware of the risks associated and sterilization methods involved in tattooing. The parlor was the preferred place for tattoos among young adults. Nearly 46% of young adults were aware of the infection caused by tattoos, and the complication rate was absent in 66% of individuals. Almost 97% of young adults considered tattoos as not criminals and viewed them as the same as everyone.

5. Discussion

Body modifications, including tattooing and body piercing, have been practiced worldwide for thousands of years. They serve as a way to identify oneself, denote financial status, or beautify the body. Body piercings have been used by pirates and Roman Centurions, symbolizing royalty, bravery, and virility. However, in Western culture, tattooing and piercing are often considered taboo due to the Old Testament's prohibition of marking one's flesh for gods.[12]

In this modern era, both genders are almost equally represented in obtaining tattoos and body piercing. This description includes both adults and adolescents from a wide range of occupations and socioeconomic groups.[12] Similar participants from different categories Caucasian, heterosexual, and employed were included in Milner et.al's research, making the study suitable for our study. The results address Greif et al.'s question about women's interest in body art. In our study equal ratio for gender predilection. One could hypothesize that further research demonstrating female interest in piercing and tattooing will result in higher piercing and tattooing trends among working women, especially Caucasians.[21,6] In the research done by Heywood et al. A greater prevalence of tattooing was found in 20- to 29-year-old fell into this range.[25] Same as our study when compared to the age group, 21-30 years age group had a higher piercing and tattooing rate 43%, and the age group between 1-20 had 29%. In the study done by authors among their participants, 90.7% reported being tattooed by a professional, and the rest were consulted by doctors and other sources.[25] which is similar to our study where participants reported that tattoo parlors 40% were the preferred location for young adults to get inked. A dermatologist was consulted by 18 %, and 14% of people were not willing to mention it.

In a study by Oinam et al., their participants in the context of tattooing 42.4% of students were interested in getting a tattoo, 51.4% were not interested, and 6.3% were eager to get a tattoo.[26] In our study out of 100 participants 72% were in the context of tattoos and 67% of the participants were eager to get a tattoo in the future and 33% were not interested in getting done. In our research, 28% were not in context with tattoos due to many other reasons as

similar to the study done by Oinam et al. their participants would not get tattooed due to fear of the needle and 51.4% had other reasons for not having a tattoo.[26]

In our study participants before doing body modifications majority 45% of them seeked advice from different individuals like friends, family, and the person who had undergone body modifications already and 27% were didn't take anyone's advice before body modification. Similar to our study the author Oinam et al. in his study that 65.3% of students were in favor of taking someone's advice before getting body art.[26]

In our study participants, most of them 45% informed their parents before undergoing procedure and the majority of the participants underwent by arms 48% followed by the neck 19%, and the least on the face and head. In the study done by authors who pierced their subjects, personal expression and art were the two main motivations for getting pierced or tattooed. Less significant factors were the way it was perceived as a religious symbol, control, that friends had it, that it was a sign of group membership, that it was a fashion statement, as well as that it was a sign of marital commitment. In our study, the reason for tattoos was shown to be fashion and esthetics 75% and the least common is for religious reasons and commitments according to the opinion among the participants.

In the research done by Bernard et al. The majority of participants thought their body piercing and/or tattooing treatments were safe, and their participants' assessment of health concerns was linked to those operations. Others expressed concern about the safety of their piercings.[6]

In our study while asked about the risky behaviour and sterilization while tattooing almost of the young adults were not aware of it, at least 55% confirmed it was sterilized and the remaining 12% and 3% said it was unsterilized. Similar to our study the author Oinam et al. in his study participants reported that 88.2% were disagreed that places and instruments used for tattooing were always safe in terms of health and hygiene while 11.7% of students agreed. According to their study, 52.8% of students agreed that tattooing was a less risky procedure than surgery while 47.2% of students agreed that tattooing had some health risks,[26] same as our study 67% of them agreed that there won't be any risk associated with body modifications while 23% were not aware of the risk. and 10% were agreed that risk factors may arise. In our study participants underwent body modifications majority of them 66% were not reported any sort of complications and at least 6% of them mentioned they were associated with minor complications and level of cleanliness at the place was reported as 55% and at least 12% and 3% were experienced unhygienic atmosphere.

In our study among young adults, 55% of them had piercings. The common site of piercing was found to be ear cartilages, pinna, nose, belly, and eyebrows. When compared to the age group, 21-30 years age group had a higher piercing rate 43%, Almost 46% of the young adults had their body modifications from licensed professionals. This is similar to the study done by Mayers et al., for an overall prevalence of 51%. (In neither study did we count pierced ear lobes in females tallying only pierced ear cartilage or pinna sites. Males with pierced ear lobes were counted as pierced).[27]

In our study participants were asked to young adults whether they were aware about the infection arise by tattoos and piercings 46% were reported that they aware of infectious diseases. Similar to our study, Oinam et al. research showed that 75% of students were aware

of the health risks related to tattooing, including which allergic dermatitis, HIV/AIDS, septicemia, etc.

In our study, the participants were asked whether they knew a person with body modifications majority 80% knows more than five to ten people and the rest knows one to five people and there were no negative thoughts among the person who has body modifications were reported by 60% and 25% of them reported that they never mind with multiple body arts and least 15 % of them felt negativity towards the body arts. In our study participants stated when a person is in a restaurant/ store and someone who works there with body modifications majority of them 63% will not avoid them 23% never mind and least 13% said felt like avoiding them. In our research majority, 97% of the participants were reported that the person with multiple body modifications will be viewed same as everyone and at least 3% were agreed that similar to criminals and other reasons etc. Moreover, we should point out that the present study did not consider some variables that may influence the attitude toward body art, such as political orientation or religious persuasion.

6. Conclusion

This investigation highlights the widespread nature of body piercings and tattoos among young people, citing a variety of factors, including physical endurance, resistance, group affiliations, resistance, spirituality, cultural tradition, addiction, and beauty. These factors make it important for professionals to adopt preventive measures and create successful health promotion programs since they help explain why body modification is a technique that is widely used. Future studies should concentrate on determining the relevance of these motives for people to engage in these behaviors.

Conflicts of interest: None

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