To Tattoo or Not: That is the Question

Tattoos or body art has become acceptable forms of body decoration in the popular culture. The social stigma associated with tattoos has diminished in younger generations. The current popular culture has glamourized the use of tattoos as exemplified by them being worn by high profile entertainment and sports figures. Yet despite the growing popularity of tattoos, the health risks associated with them are not widely known. More recently, prominent health experts, such as the former Director of the National Institutes of Health, Dr. Bernadette Healy (2008), are speaking out about the risks of body art. In addition, evidence is beginning to accumulate demonstrating the untoward consequences of tattoos.

Several recent surveys to determine the prevalence of tattoos in the United States indicate the popular trends and their growing acceptance. A survey of 500 individuals between the ages of 18 and 58 years reported 24% had tattoos. Of this group, 19% had acquired their first tattoo before 18 years of age (Laumann & Derick, 2006). Another survey of 579 of adolescents and young adults, ages 18 to 25 years, found that 36% had tattoos (The Pew Research Center for the People and the Press, 2006). In a Harris poll of 2,302 adults, 14% reported having tattoos. The percentage of tattoo wearers was highest among 25- to 29-year-olds amounting to 32%, whereas 9% in the 18 to 24 years age range reported having tattoos (Harris Interactive, 2008). These percentages are higher than of other countries. It is estimated that approximately 9% of the populations of European countries have tattoos; this number is approximately 12% in England. (Roberts & Ryan, 2002).

Infections, allergic reactions, and scarring represent the range of complications associated with tattoos. HIV, hepatitis B, and hepatitis C infections can result due to contaminated needles and improper technique performed by both licensed and unlicensed tattooists (Centers for Disease Control and Prevention [CDC], 2008; Helmenstine, 2009; Sweeney, 2006; U.S. Food and Drug Administration [FDA], 2008a, 2008b; Slonim, Roberto, & Downing, 2005).

A *Staphylococcus aureus* skin infection may occur (U.S. FDA, 2008b). The CDC recently reported the outbreaks of community-associated methicillin-resistant *S. aureus* in the states of Kentucky, Ohio, and Vermont (CDC, 2006). These outbreaks affected 44 individuals, 34 with tattoos and 10 secondary contacts, with whom the tattooed individual had close contact. Outbreaks were traced back to unlicensed tattooists who worked in unsanitary facilities that were not properly regulated by local agencies. Many of the affected individuals in the Ohio community were high school students (CDC, 2006).

Allergic reactions occur and some happening years after the tattoo has been applied (Engel et al., 2008; U.S. FDA, 2008a, 2008b). The allergic reactions include granulomas and the rarer cases of pseudolymphoma and pseudoepitheliomatous epidermal hyperplasia (Engel et al., 2008; Sweeney, 2006; U.S. FDA, 2008a, 2008b). Tattoo granulomas (small bumps forming around the injected pigment materials) are primarily associated with the use of selected color pigments: red (mercuric sulfide), yellow (cadmium sulfide), blue (cobalt), and green (chromium oxide; Sweeney, 2006; U.S. FDA, 2008a). Impurities of the pigment product can precipitate allergic reactions as well. For example, it is estimated that pigments have a purity level of less than 80% (Engel et al., 2008).

To date, there has been negligible progress in adequately regulating the pigments used for tattooing. Instead, regulatory efforts have been directed to the licensing of tattooists and monitoring tattoo establishments, although there is greater variability with regulations at the state level (CDC, 2008; U.S. FDA, 2008a). The composition of tattoo pigments are revealing. There are approximately 50 pigment colors used for body art (U.S. FDA, 2008b). The coloring materials used for tattoos are primarily azo pigments.

These pigments are preferred for tattooing for its color intensity and longevity properties (Engel et al., 2008). The worrisome choice of this product for tattooing is that it is used for industrial purposes such as printing and in the paints of automobiles (Engel et al., 2008; U.S. FDA, 2008b). Surprisingly, azo pigments are not allowed to be used in the manufacturing of cosmetics due to carcinogenic risks (Kuczkowski, 2004). It is known that as azo pigments degrade, carcinogenic amines are produced (Engel et al., 2008).

Some pigments contain plastic materials. Black pigment is composed of two forms of iron oxide (also known as rust), carbon and logwood. Ochre is composed of iron
oxides that are mixed with clay. Green colors contain lead (Helmenstine, 2009).

None of the colorants have been approved for injection into the skin (U.S. FDA, 2008b). In addition, the colorants have not been subjected to the level of product safety review warranted because there are currently a dearth of regulations to provide oversight and monitoring here in the United States or worldwide (Engel et al., 2008). According to FDA regulations as specified in the Federal Food, Drug, and Cosmetic Act, tattoo inks are considered to be appropriate for obtaining FDA approval prior to public use. However, the FDA has not exercised its authority due to other more compelling public health concerns and until recently, the lack of substantive empirical evidence (U.S. FDA, 2008b). Yet the full scope of the untoward effects of tattoos cannot be estimated because there are no public health reporting requirements for disclosing problems associated with body art (Engel et al., 2008).

Erroneously, a belief exists that the temporary tattoos such as henna are without risk. The FDA has not approved the use of henna for tattoos; it is approved only for use in hair dyes (Jacob, Zapolanski, Chayavichitsilp, Connelly, & Eichenfield, 2008; U.S. FDA, 2008a, 2008b). p-Phenylenediamine is an oxidative chemical that is added to black henna to increase its longevity and color intensity. It is an additive that can cause contact dermatitis with permanent effects. The long-lasting effects include sensitization to hair and clothing dyes. It can also cause cross-reactivity to ester anesthetics, sulfonamides, and hydrochlorothiazides (Jacob et al., 2008; Sweeney, 2006).

Kohl and harquus are other types of temporary tattoos that can cause contact dermatitis as well. Harquus is a temporary black tattoo ink that is used primarily in North African and Middle East (Mataix, Silvestre, Blanes, Pastor, & Lucas, 2008). One of the major problems with temporary tattoos is the users are under the misconception that they are harmless. Based on this belief, parents may allow young children to have temporary tattoos.

Several treatment approaches can be used for tattoo removal, although not without their own set of risks. These include dermabrasion, cryosurgery, excision, chemical peels, and continuous wave lasers (Saini, Whovsen, & Kaufman, 2008; Sweeney, 2006). Q-switched lasers have been cited as one of the most effective techniques for tattoo removal, although costly and painful (Saini et al., 2008; Sweeney, 2006). Untoward reactions of Q-switched laser treatments include the hyper/hypopigmentation, atrophic scarring, and localized granulomatous reactions. In addition, laser treatment may cause a chemical reaction with certain color pigments resulting in a permanently darkened tattoo (Sweeney, 2006).

Depending on a number of factors including the type of pigment used and tattooist’s procedure, the tattoo itself may not be completely removed (Saini et al., 2008; Sweeney, 2006). Removal of the tattoo may result in severe scarring requiring the use of skin grafts for treatment (Healy, 2008).

Health education regarding the health risks of tattoos needs to be provided to youth and their families during routine health supervision visits. This health prevention conversation needs to occur with youth with special health care needs and their families as well. It is important that youth and families are fully informed of the possible health risks associated with both temporary and permanent tattoos. For those who choose to have a tattoo, information about obtaining a tattoo under safer conditions is needed as recommended by the CDC (2008). The youth should know to go only to a licensed facility and query them as to their safety procedures. Major elements of safety and infection control procedures they should ask about are the following: (a) Does the facility use disposable needles and razors and dispose of them after one time use? (b) Are razors and needles discarded into disposable, biohazard-labeled containers? (c) Is the tattoo artist required to wash hands before and after putting on disposable gloves? (d) What is the procedure for sterilizing reusable equipment and supplies? and (e) Are client stations disinfected between clients? (CDC, 2008).

Nurses are in an ideal position to advocate for regulations to protect the public from the harmful effects of tattooing. Tattoo consumers would be well served by being fully informed of the potential risks associated with tattooing. As Dr. Bernadette Healy (2008) suggested, all potential users of tattoo services should be given an informed consent with detailed explanation of the potential risks prior to undergoing tattooing.

Furthermore, consumers need to be advised that if they experience adverse reactions to tattoos, it should be reported to the FDA. Adverse reactions can be reported to the local FDA district office or contacting FDA’s Center for Food Safety and Applied Nutrition Adverse Events Reporting System at 301.436.2405 and by email CAERS@cfsan.fda.gov (U.S. FDA, 2008b).

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References


