



Knowledge, Attitudes and Practice of Women About Adverse Effects of Cosmetics in Yazd City, Iran

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Abstract

Background: Cosmetics use is universal and Iran is the 3rd biggest user of cosmetic products among the Middle East countries. Using cosmetics can be associated with multiple adverse reactions from less severe local reactions to systemic reactions and serious complications.

Objectives: The aim of the study was to explore the knowledge, attitudes, and practices of women in the city of Yazd about adverse effects of cosmetics.

Methods: A cross-sectional study was conducted on 200 women in the city of Yazd in 2011. Data were collected through a researcher-designed questionnaire for assessing participant's knowledge, attitude, and practice. Data were tabulated and analyzed by SPSS, using descriptive analysis and Pearson's correlation coefficient. Results with a P value of less than 0.05 were considered statistically significant.

Results: The mean score of participants' knowledge about using cosmetics was 5.95 ± 2.47 (ranging 0 to 14). The mean score of attitude and practice about using cosmetics were 31.80 ± 3.96 (ranging 21 to 40) and 12.92 ± 2.83 (ranging 4 to 18), respectively. There wasn't a significant correlation between participants' knowledge and practice, however, there was a positive significant correlation ($P = 0.01$, $r = 0.248$) between their knowledge and attitude. Results showed a positive statistically significant correlation between attitude and practice with age ($r = 0.168$ and 0.139 , respectively).

Conclusions: Women had low level of knowledge about adverse effects of cosmetics. Practice of women was also unfavorable. Therefore, there is a need to educate women about the possible risks of cosmetics through formal channels.

Keywords: Knowledge, Attitudes, Practice, Cosmetics, Women, Yazd

1. Background

Cosmetics have been traditionally used by women in order to beautify their faces and to control their physical appearance and, presumably, physical attractiveness (1, 2). Today a boom in the cosmetic and toiletries sector is created across the world due to an increase to look and feel good (3, 4).

A cosmetic product is defined as "any substance or preparation intended to be placed in contact with various parts of the human body (epidermis, hair system, nails, lips and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance and/or correcting body odors and/or protecting them or keeping them in good condition" (5).

The federal food, drug, and cosmetic act (FDCA) of the United States of America defines cosmetics as "articles intended to be rubbed, poured, sprinkled, or sprayed on, introduced into, or otherwise applied to the human body or any part there of for cleansing, beautifying, promoting attractiveness, or altering the appearance" (6).

Based on these definitions, products such as skin creams, lotions, perfumes, lipsticks, nail polishes, eye and facial make-up preparations, soap products, shampoos, permanent waves, hair colors, toothpastes, and deodorants fall under the category of cosmetics (7).

It is possible to say that cosmetic use is universal (8). In 2003, the world market for cosmetics and toiletries, with 4.8% increase from 2002, was valued at US \$201 billion (4). Among the Middle East countries, Iran is the 3rd biggest user of cosmetic products (9).

Despite the fact that cosmetic products must not cause damage to human health (10), their use can be associated to multiple known and unknown adverse reactions from less severe local reactions (erythema and contact urticarial rash, irritation, burning sensation, light itching in correspondence of the application zone of the product), to systemic reactions (rhino conjunctivitis, headache, asthma, infections, etc.), and finally more serious complications (breast cancer, bladder cancer and non-Hodgkin lymphoma) (8, 11, 12).

Nevertheless, most of the people give more importance to the short term results of using cosmetic products on their skin appearance rather than their long-term adverse effects to the whole body. Generally, consumers assume that cosmetic products are safe and pose no risk to the human health (13).

Understanding consumers' behavior, i.e. "the decision process and physical activity individuals engage in when evaluating, acquiring, using, or disposing of goods and services" (4). Trough KAP studies, is essential to help to plan, implement, and assess health education programs.

2. Objectives

Due to excessive use of cosmetics in Iran (14) and lack of studies in this regard, the study was performed to assess womens' knowledge, attitudes, and practices about adverse effects of cosmetics in Yazd, Iran.

3. Methods

A cross-sectional survey was conducted on women in the city of Yazd in 2011. Regarding $\alpha = 5\%$, $d = 0.5$, and $SD = 3.45$, 200 women were selected using the cluster random sampling method to participate in the study. The first 10 geographic clusters were selected in the urban area of Yazd and then by referring to houses in selected clusters and asking the women to participate in the study, the required subjects entered in the study. A total of 20 participants were selected from each cluster. All married women in the age range of 15 - 60, who were able to answer the questions, were eligible to enter the study.

Data were collected through a researcher-designed questionnaire including demographic information (age, education level, job, and income) and questions that were designed for assessing participant's knowledge, attitude, and practice.

The participants' knowledge was asked by 11 multiple choice and 4, 2 item (yes/no) questions, attitudes were assessed by 8 five point Likert scale (1 = strongly disagree, 5 = strongly agree) questions and the women were asked

about their practice regarding the cosmetics through 12, 2 items (yes/no) and 4 multiple choice questions.

The questionnaire face and content validity was approved by a panel of experts. All the items in the scales was found to have a content validity index and content validity ratio higher than 0.90. A cronbach's α of 0.83, in a pilot study with 15 subjects also approved the internal consistency of the attitude subscale. The collected data were tabulated and analyzed by SPSS, version 16, using descriptive analysis, one way ANOVA and Pearson's correlation coefficient. The normality of distribution of the data was checked by Kolmogorov-smirnov test. Results with a P value of less than 0.05 were considered statistically significant.

Ethical considerations: The aim of the study was explained for the participants and they were ensured for the confidentiality of their information. Moreover participation in the study was voluntarily and oral consent was obtained before participation.

4. Results

A total of 200 17 - 57 years old women (mean: 29.22 ± 9.07) enrolled in the study. The socio-demographic characteristics of the participants are shown in Table 1.

Table 1. Socio-Demographic Characteristics of the Participants in This Study

Variable	No. (%)
Education level	
Illiterate	2 (1)
Primary education	55 (27.5)
High school	93 (46.5)
University	50 (25)
Job	
Housewife	120 (60)
Employee	33 (16.5)
Self-employment	47 (23.5)
Monthly income, Household average, Rial^a	
< 2,500,000	35 (17.5)
2,500,000 - 5,000,000	136 (68)
> 5,000,000	29 (14.5)

^a32650 Rials = 1 US Dollar.

4.1. Knowledge

The mean score of participants' knowledge about using cosmetics was 5.95 ± 2.47 (ranging 0 to14). Most par-

ticipants (84%, n = 168) knew that chemicals used in hairdressers are harmful for their health and most of them (63%, n = 126) said that using therapy methods in hairdressers for their skin beauty is not admissible. More than half of the participants' (68%, n = 136) answered that using sunscreen cream is admissible for pregnant women. Less than half of the women (42%, n = 84) stated that allergy test should be done before dyeing the hair. Frequency distribution of participants' answers to multiple choice questions is presented in the [Table 2](#).

4.2. Attitude

The mean score of participants' attitude about using cosmetics was 31.80 ± 3.96 (ranging 21 to 40). The frequency of participant's responses to attitudes items are shown in [Table 3](#).

4.3. Practice

The mean score of participants' practice about using cosmetics was 12.92 ± 2.83 (ranging 4 to 18). When asked about dyes, they usually use, 25 women (12.5%) stated that they use herbal dyes, while 61 women (30.5%) responded that they don't use any chemical or herbal dyes. Most of the women (75%, n = 150) said that they usually purchase their cosmetics from reliable places. 42% of the women (n = 84) used cleaner milk to clean eye cosmetics, however, 52.5% of them (n = 105) used water for this purpose. About 50% of the women (n = 95) have not used decolorizing agents during the past year ([Table 4](#)).

4.4. Associations Between Socio-Demographic Variables and the Use of Cosmetics

According to the ANOVA test, there was no significant differences found between participants' knowledge, attitude, and practice by education level, however, knowledge of self-employed women (6.85 ± 2.23) was higher than housewives (5.46 ± 2.53), which was statistically significant ($P = 0.001$). There was no significant difference in terms of attitude and practice by job, however, knowledge score means of women with higher incomes (more than 5,000,000 Rials monthly), was higher than other income groups, which was statistically significant ($P = 0.03$). However, there were no significant differences in terms of attitude and practice by income.

Based on results of Pearson correlation coefficient, there was no significant association between participants' knowledge and practice; however, there was a positive significant correlation ($P = 0.01$, $r = 0.248$) between their knowledge and attitude. Results showed a positive statistically significant (at 0.05 level) correlation between attitude and practice with age ($r = 0.168$ and 0.139 , respectively).

5. Discussion

Due to the diffused use of cosmetics within the women, it seems that assessing women's views about adverse effects of cosmetics will be beneficial in designing educational interventions to improve women's skills in selecting and using cosmetics. Therefore, here we report the results of a cross sectional study conducted on women in Yazd, Iran. The aim of the survey was to assess the knowledge, attitudes, and practices of target populations about using cosmetics and their adverse effects.

The study results revealed that, except in 1 question (the first step for cleaning the skin), less than 50% of women gave correct answers to all knowledge questions. Most of the women were not aware of the importance of sensitivity tests before dyeing their hair. Therefore, it can be concluded that the participants' knowledge level is low to medium. A study titled "Knowledge, attitudes, practices (KAP) and sources of information on safe cosmetics and personal-care products among journalists in a major Philippine news paper" carried out by Serrano (15) revealed that the journalists exhibited a medium level of awareness (52.39%), which was close to low level (0% - 49%). These results are consistent with the results of our study.

In another study by Dlova et al. (16), most of those who had used skin lighteners (85 of Africans and 76% of Indians) claimed awareness of the adverse effects of the products, although this didn't appear to inform knowledge of the product, how it was used, nor the decision to use the product. Totally, it can conclude that the awareness levels of cosmetics users are low.

Despite the unfavorable level of women's knowledge, their attitude toward complications of excessive and inappropriate consumption of cosmetics was somewhat favorable, however, less than 50% of them believed that laser therapy may be carcinogenic. The respondents in Serrano study (15) also showed a medium level of favorable attitude (69.67%) toward the use of safe cosmetics.

What women stated about their performance in using cosmetics, represents their relatively desirable behaviors of most of them in consumption of cosmetics, except that 58% of them didn't do sensitivity test before hair dyeing, which can be explained by their lack of knowledge about this subject. Despite the participants paying attention to cosmetics' manufacturer company, harmlessness, expiration date, production and consumption of data, production license, and brand credibility, it should be noted that there are many counterfeit brands on the market and should be investigated that whether women have enough skills for the correct and accurate selection in this diverse market? The respondents in the Serrano study also showed a medium level of favorable practices (64.68%) (15). Although some studies examined the prevalence of cosmet-

Table 2. Frequency Distribution of Participants' Answers to Knowledge Questions^a

Item	Correct	Incorrect and Don't Know	Correct Answer
1. The first step for cleaning the skin	118 (59)	82 (41)	Cleaner milk
2. The most prevalent cause of skin allergy	18 (9)	182 (91)	Perfumes
3. The most harmful mascaras for eyelashes	81 (40.5)	119 (59.5)	Water proof mascaras
4. Advantages of using sunscreens in cosmetics	49 (24.5)	151 (75.5)	Skin cancer prevention
5. The most prevalent side effect of chemical dyes	7 (3.5)	193 (96.5)	Skin dandruff
6. The most important reason of harmful effects of hair dyes	88 (44)	112 (56)	Using inappropriate amounts of oxidants
7. Appropriate shampoo after hair dying	79 (39.5)	121 (60.5)	Boosters
8. The most common side effect of cosmetics and pharmaceuticals on skin	68 (34)	132 (66)	Skin irritation and sensitivity
9. Appropriate skin for using cosmetic powders	80 (40)	120 (60)	Wet skins
10. Cosmetics that had the most side effects on skin	53 (26.5)	147 (73.5)	Oily cosmetics
11. Side effects of nail polish	59 (29.5)	141 (70.5)	Yellowish discoloration of nails

^aValues are expressed as No. (%).

Table 3. Frequency distribution of participants' responses to Attitude items^a

Item	Strongly Agree	Agree	No idea	Disagree	Strongly Disagree
Inappropriate use of cosmetics causes rashes, skin darkening and wrinkles	134 (67)	52 (26)	9 (4.5)	5 (2.5)	0 (0)
The quality of cosmetics is more important than their price	140 (70)	54 (27)	4 (2)	2 (1)	0 (0)
Tattoo causes cancer	72 (36)	36 (18)	74 (37)	12 (6)	6 (3)
Laser therapy is carcinogenic	52 (26)	40 (20)	89 (44.5)	16 (8)	3 (1.5)
Hair dying on pregnant and breast feeding women has harmful effects	107 (53.5)	65 (32.5)	19 (9.5)	7 (3.5)	2 (1)
Using chemical dyes and decolorization may cause white hair	72 (36)	73 (36.5)	33 (16.5)	18 (9)	4 (2)
Using sunscreens should be started from earlier ages	83 (41.5)	46 (23)	39 (19.5)	28 (14)	4 (2)
I usually prefer to use water for cleaning of cosmetics	31 (15.5)	57 (28.5)	21 (10.5)	62 (31)	29 (14.5)

^aValues are expressed as No. (%).

ics use in different communities (14, 16-18), they did not evaluate the favorability of the practices. Therefore, the issue seems need more accurate studies.

The lack of a significant relationship between women's educational level and their knowledge, attitude and practices, may be indicative of not addressing this issue in the formal education programs. It is also likely due to the fact that most women gain the information they need through informal channels such as hair-doers or their peers.

In general, participants' responses to questions about their practices in using cosmetics were more desirable than their answers to knowledge questions. There was no statistical significant relationship between women's practices and their knowledge and attitude that was found, however, a positive statistically significant correlation between attitude and practice with age was found, which

may be due to the fact that most women adjust their performance based on their own and their peers experiences.

In conclusion, our results, although not representative of general population, since obtained in a restricted population and geographical area, suggests that it is important to design and implement health education programs in formal educational organizations such as schools and universities to increase and improve women's and hair-doers' knowledge and attitudes about the dangers associated with excessive using of cosmetics and reduce the inappropriate use of these agents.

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Table 4. Frequency Distributions of Participants' Responses to Practice Questions

	Yes	No
Practices Questions		
1. Consulting with pharmacists for selecting cosmetics	154 (77)	46 (23)
2. Using others' cosmetics	37 (18.5)	163 (81.5)
3. Using sunscreens	160 (80)	40(20)
Paying attention to following factors in the selecting of dye hair		
4. Continuity of color	149 (74.5)	51 (25.5)
5. Manufacturer Company	178 (89)	22 (11)
6. Harmlessness	176 (88)	24 (12)
7. Expiration date		
8. Doing sensitivity test before hair dying	84 (42)	116 (58)
Paying Attention to following factors when buying cosmetics:		
9. Production and consumption data	185 (92.5)	15 (7.5)
10. Production license	142 (71)	58 (29)
11. Brand credibility	179 (89.5)	21 (10.5)
12. Using acetone for cleaning nail polishes(if they use nail polishes)	114 (57)	94 (43)

Footnotes

Authors' Contribution: All authors developed the original idea and the protocol, collected, abstracted and analyzed the data, and wrote the manuscript.

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