



Assessment of Prevalence, Awareness and Practices Regarding Cosmetics Harmful Effects among Saudi Female University Students of Albaha; Saudi Arabia

**Hasan S. Al-Ghamdi^{1*}, Abuobaida E. E. Abukhelaif², Manal Croft¹,
Mohammed Yusuf³, Horeyah A. Al Ghamdi⁴ and Altaf Ali Mangi⁵**

¹Internal Medicine Department, Faculty of Medicine, Albaha University, Saudi Arabia.

²Pathology Department, Faculty of Medicine, Albaha University, Saudi Arabia.

³Surgery Department, Faculty of Medicine, Albaha University, Saudi Arabia.

⁴Faculty of Medicine, Albaha University, Saudi Arabia.

⁵Faculty of Pharmacy, Gomal University, Dera Ismail Khan, Khyber Pakhtoonkhwa, Pakistan.

Authors' contributions

This work was carried out in collaboration among all authors. Author HSAG designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AEEA and MC managed the analyses of the study. Authors MY, HAAG and AAM managed the literature searches. All authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2020/v32i1330619

Editor(s):

(1) Dr. Giuseppe Murdaca, University of Genoa, Italy.

Reviewers:

(1) Vyshnavi V. Rao, Bangalore Central University, India.

(2) Jaiganesh Ramamurthy, Saveetha University, India.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/60477>

Original Research Article

Received 30 May 2020
Accepted 25 July 2020
Published 06 August 2020

ABSTRACT

Introduction: Cosmetics are defined by the Saudi Food and Drug Authority as any material or preparation designed to come into contact with various external body parts (epidermis, hair system, nails, lips, and external genital organs) or with the oral cavity's teeth and mucous membranes for a variety of purposes, such as cleansing, perfuming, altering their appearance and/or keeping them in a good condition.

Objectives: The objective of the study was to assess the prevalence, level of awareness, and practices regarding cosmetics harmful hazards among Saudi female University Students of Albaha; Saudi Arabia.

*Corresponding author: E-mail: Dr.hasan33@hotmail.com, H.saeed@bu.edu.sa;

Methodology: This was a descriptive study intended to assess the prevalence, awareness and practice of Saudi female students of Albaha University. Systematic sampling methods were used to pick from each college, the predetermined sample size was taken, accordingly systematic random sampling was used to recruit 410 female students from medical and none medical colleges. Medical students at the latter level of their study were excluded from the study. Information was gathered using a self-administered questionnaire which was constructed to explore respondents' awareness and practice toward using cosmetics.

Results: A total of 410 respondents were enrolled in the study with a respondent rate of 93.2%, most of the respondents (62.4%) were none medical, and (37.6%) medical students. The prevalence of cosmetics use among our respondents is (97.8%), (82%) of them are between the age of 18 and 20 years and (76.3%) were unmarried. Most of the respondents (77.8%) used cosmetics daily while (20%) used to apply them sometimes or on need. Facial cosmetics, lipstick, and eye make-up as a group is the most commonly used cosmetics (64.9%) followed by skin lightening products (14.4%). 69% have an average level of knowledge concerning cosmetics adverse effects; (23%) have knowledge level and only (8%) having a good level of knowledge. A very significant proportion (37%) had experienced at least one side effect. Irritant contact dermatitis is the most commonly seen adverse effect affecting (38.8%) of the study population; followed by acne (27%) and allergic contact dermatitis (18.4%). Perfumes, deodorants, body lotions and creams by far the most common cosmetics products causing adverse effects (52.4%); followed by Facial cosmetics, lipstick and eye make-up in 143 (34.9%).

Conclusion: A high prevalence rate of cosmetic use among Albaha university female students. Unfortunately, only 8% of them have good knowledge about the harmful effects of cosmetics. A very significant proportion was experienced at least one cosmetics-related side effect. This study concludes that cosmetics health-related hazard awareness among our respondents was not satisfactory and therefore needs a special consideration on cosmetic use-related safety concerns through awareness programs to raise their awareness.

Recommendation: More researches should be directed to determine levels of knowledge and awareness towards cosmetic usage and its health hazards and safety measures. We recommended that a well-structured health education program should be done including lectures, workshops, campaigns and mass media orientation to increase the awareness level and educate the students about the hazardous effects of commonly used cosmetics.

Keywords: Cosmetics; awareness; Albaha; university female students.

1. INTRODUCTION

Exposure to chemicals from various sources is common in daily life; one such source is the broad variety of products described under the heading "cosmetics," including the numerous types of common and widely marketed facial makeup preparations, hair dyes, fingernail polishes, eye, and lip beauty products. Cosmetics or maquillages are defined by the Saudi Food and Drug Authority as any substance or preparation intended for contact with the various external parts of the human body (epidermis, hair system, nails, lips, and external genital organs) or with the teeth and mucous membranes of the oral cavity for a variety of purposes, such as cleansing, perfuming, changing their appearance [1].

Cosmetics include skin creams, lotions, perfumes, make-ups, hair dyes, deodorants, lip cosmetic products and others intended to be

rubbed, poured, powdered, sprayed, injected into or otherwise applied to the human body for cleaning, beautification, beauty promotion or alteration of appearance [2,3]. Cosmetic products have become the daily habit of everybody, particularly the following fashion classes, young women living in higher institutions [4,5].

Cosmetics contain fragrances and preservatives as the main ingredients. These products carry a lot of danger to consumers without their awareness; harmful effects may be of Short-run outcome on their skin appearance as opposed to the long-term impacts on the entire body. Some of the dangers comprise, skin ailments and reactions, allergies, damage to nails, chronic diseases aging, danger to reproductive organs, and cancer, hair problems, headaches, and unwanted dependency on cosmetics [6,7]. Parabens are a group of chemicals which are widely used in food, pharmaceuticals and cosmetic products as preservatives. They are

produced from para-hydroxybenzoic acid (PHBA), which exists naturally in many fruits and vegetables and may cause skin allergy, as well as using aluminum as deodorants and antiperspirants are also allergic causative agents. Others include paraffin oil, paraffin, and lanolin. Cosmetic substances may contain allergens or precursors that can be metabolized to produce contact allergens that could potentially cause allergic dermatitis. These products can present risks to human health because of their ability to stimulate T cells which can cause allergic reactions in addition to inflammatory skin diseases [8]. Finally, the concurrent on-site analysis of various substances from a single sample, called multiplexed point of care testing [9,10], has recently become particularly relevant for pathological or toxicological samples being quantified in vitro. Consequently, the technological advances in clinical sciences will help to identify ingredients in cosmetic preparations [11,12].

2. METHODOLOGY

2.1 Study Setting

The study was conducted at Albaha University, Albaha province, Kingdom of Saudi Arabia. Albaha province is located in the southwest region of Saudi Arabia. The University is one of the large Universities in the kingdom. It contains 16 colleges and 22914 students; 55% of them were female.

2.2 Study Design

This was a descriptive study intended to assess the prevalence, level of awareness, and practices regarding cosmetic harmful effects among Saudi Female University Students of Albaha; Saudi Arabia.

2.3 Sample Size

The research population was calculated using a website (Raosoft) with a confidence level (95%) and an error margin (5%). The total number of female students at Albaha University is 12603, so the sample size needed is (373); the authors have decided to increase the sample size needed by (10%) to overcome the skipped or wrongly answered questionnaires.

The exclusion criteria included questionnaires containing more than 3 unanswered questions,

poorly filled out forms, and omitted personal details such as age and gender.

2.4 Data Collection

Information was gathered using a self-administered questionnaire designed to explore the perception and behavior of respondents toward cosmetics use. It composed of three components, the first was on general information of the study sample the second addressed cosmetics practice pattern, and the third component address the awareness of the respondents regarding cosmetics-related adverse effects.

2.5 Data Analysis

All data obtained from participants in the study has been coded and recorded. The completeness and accuracy of the filled-out questionnaires were reviewed before data entry. The statistical analysis was completed using Statistics 21.0 of IBM SPSS (SPSS Inc., Chicago, IL, USA). The Microsoft Office 2010 was used for the statistical analysis.

3. RESULTS

A total of 410 respondents who were undergraduate female students enrolled in the study with a respondent rate of 93.2% out of 440 questionnaires were distributed. Most of the respondents 256 (62.4%) were none medical and 154 (37.6%), medical students. 82% of the participants are between the age of 18 and 20 years, 76.3% of them were unmarried. Table 1 and Fig. 1 shows the sociodemographic characteristics of the respondents, including age, marital status, residence, academic level, and educational background.

3.1 Practices and Uses of Respondents

Regarding practices and uses of cosmetics among respondents, our study revealed that most of the respondents 401 (97.8%) had a tradition of using one or more cosmetics consider making up their faces and body improve their general appearance and 9 (2.2%) not using cosmetics at all. 319 (77.8%) used to apply creams daily while 82 (20%) of them used them sometimes or on need Table 2 and Fig. 2.

Concerning the types of cosmetic products used, the majority of our respondents 266 (64.9%) use

Facial cosmetics, lipstick, and eye make-up followed by skin lightening products in 59 (14.4%). Perfumes, deodorants, body lotions, and creams used by 48 (11.7%) and Hair and nail cosmetic products in 37 (9%). When asking about the purpose of cosmetics use their responses showed that they apply cosmetics for beautification; cleaning and correcting body odor; protection; and for enjoyment; 71%, 12.4%; 10.5% and 6.1% respectively Table 3 and Fig. 3.

Table 1. Distribution of respondents according to socio-demographic characteristics

Item		Number	Percentage
Age	18-20 Year	336	82 %
	21-23 years	51	12.4 %
	More than 23 years	23	5.6 %
Marital Status	Married	97	23.7 %
	Unmarried	313	76.3%
Residence	Single	23	5.6%
	With friends (Campus)	202	49.3%
	With family	185	45.1%
Academic level	First-year	135	33%
	2nd year	69	16.8%
	3rd year	73	17.8%
	4th year	86	21%
	5th year	47	11.4%
Educational backgrounds	Medical	154	37.6%
	None medical	256	62.4%

Table 2. Respondents percentage of using cosmetics and their frequency of use

Item	Category	Number	Percentage	Total
Percentage of using cosmetics	Yes	401	97.8%	410
	No	9	2.2%	100%
Frequency of using cosmetics	Daily basis	319	77.8%	
	Sometimes (on need)	82	20%	410
	Not at all	9	2.2%	100%

Table 3. Type of cosmetics used and the purpose of using them

Item	Categories	Number	Percentage
Type of cosmetics used	Facial cosmetics, lipstick, and eye make up	266	64.9%
	Perfumes, deodorants, body lotions, and creams	48	11.7%
	Skin lightening products	59	14.4%
	Hair and nail cosmetic products	37	9%
Purpose of using cosmetics	Beautification	291	71%
	Cleaning and correcting body odor	51	12.4%
	Protection	43	10.5%
	Enjoyment	25	6.1%

Table 4. Level of knowledge and previous history of adverse effects of cosmetics among respondents

Item	Categories	Number	Percentage
Level of knowledge about cosmetics adverse effects	Good (80%-100%)	33	8%
	Average (50%-79%)	283	69%
	Low (below 50%)	94	23%
Previous history of adverse effects	Yes	152	37%
	No	258	63%

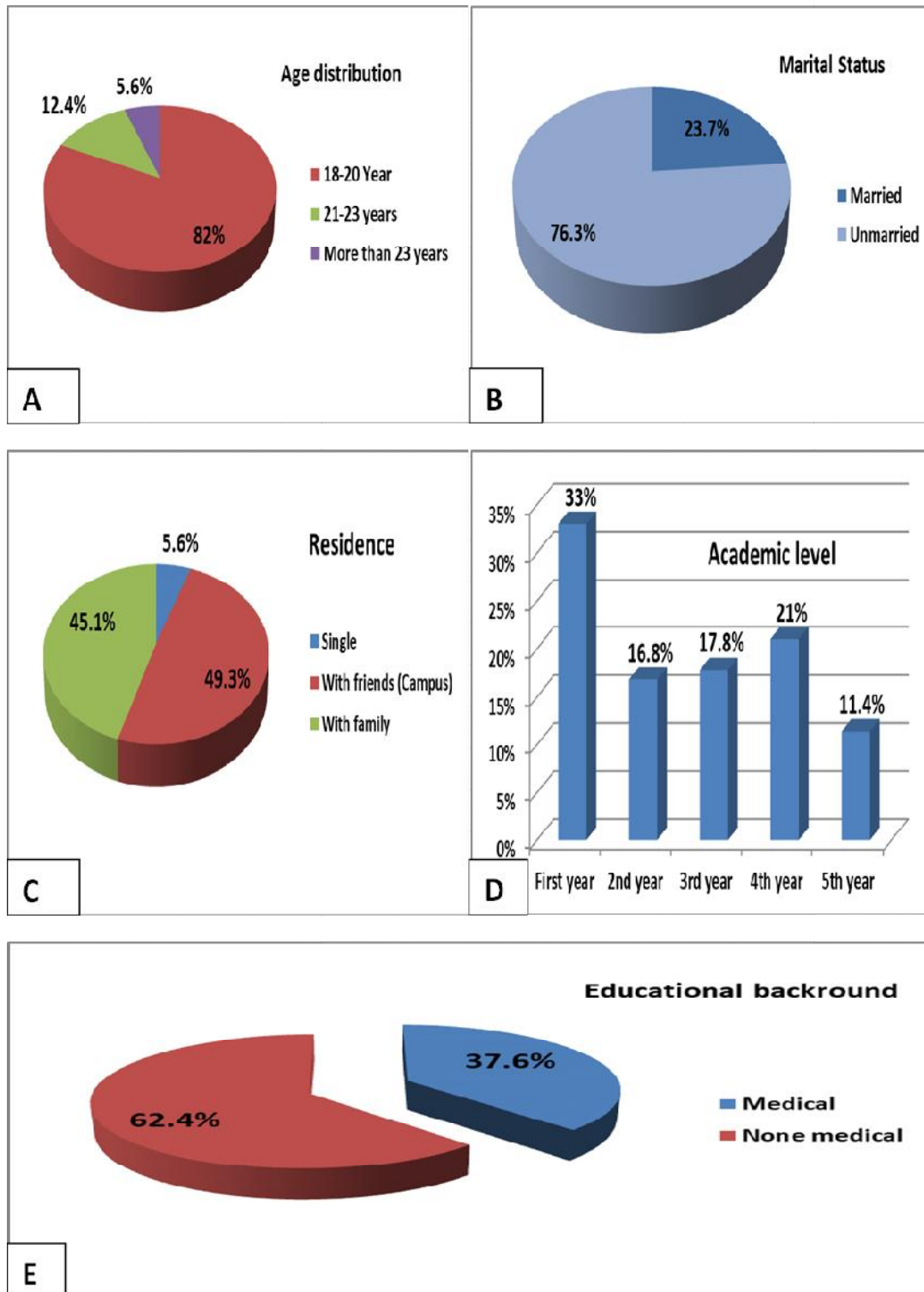


Fig. 1. Distribution of respondents according to socio-demographic characteristics A- Age distribution; B- Marital status; C- Residence; D- Academic level; E- Educational background

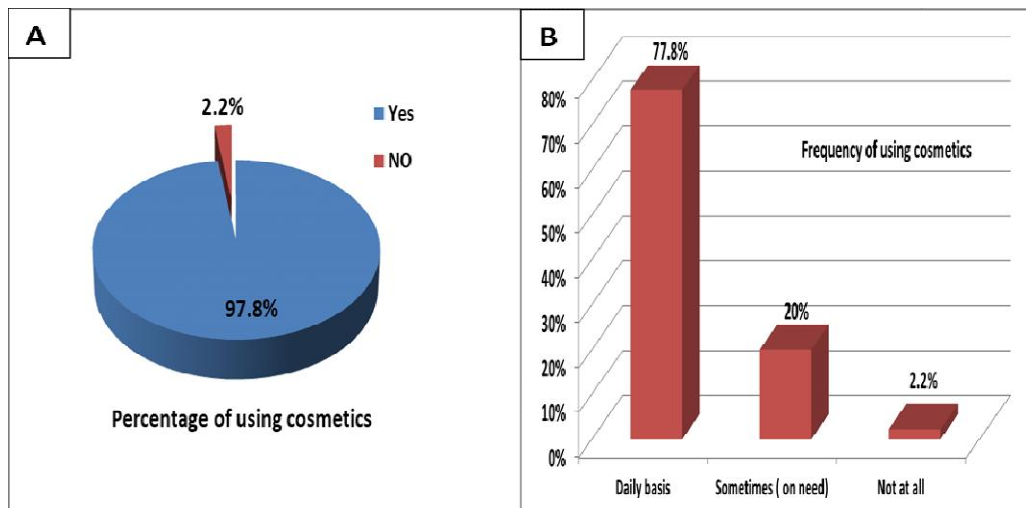


Fig. 2. (A) Percentage and (B) frequency of using cosmetics among respondents

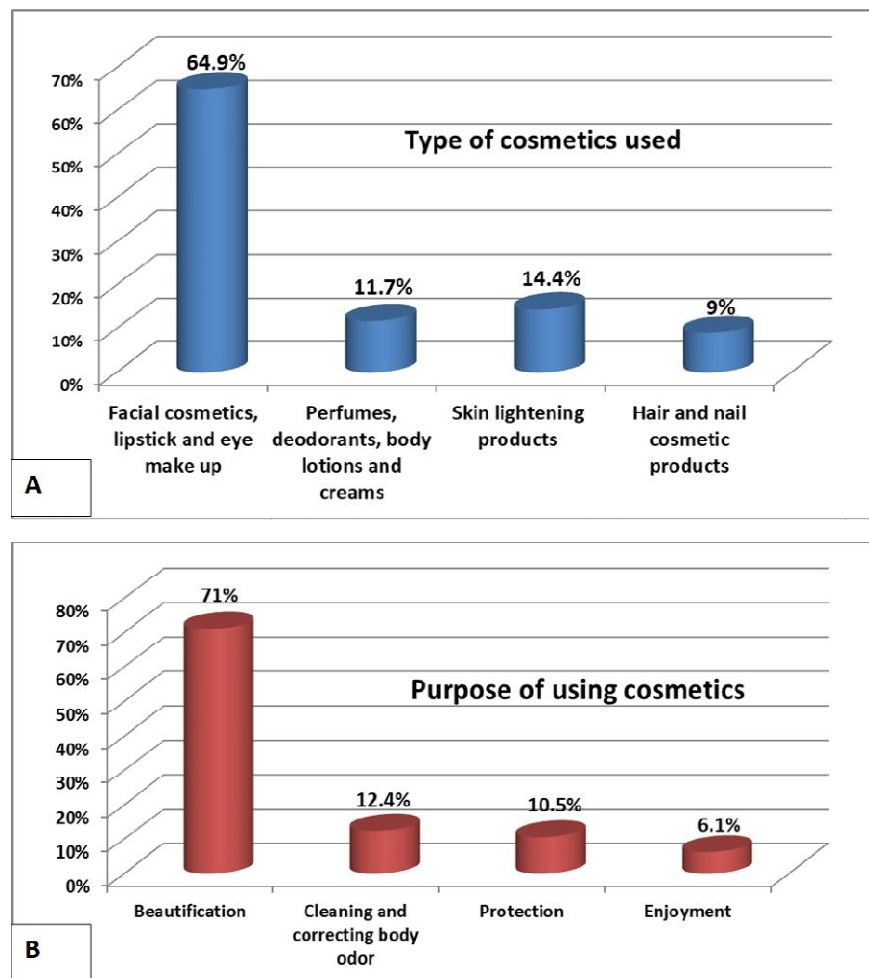


Fig. 3. (A) Type and (B) purpose of cosmetics used by respondents

Table 4 and Fig. 4 showed that 283 (69%) of our respondents have an average level of knowledge concerning cosmetics adverse effects; 94 (23%) have knowledge level and only 33 (8%) having a good level of knowledge. The majority 258 (63%) had no previous history of adverse effects while 152 (37%) had experienced at least one side effect.

Concerning adverse effects irritant contact dermatitis is the most commonly seen adverse effect affecting about 59 (38.8%) of the study population; followed by acne 41 (27%) and allergic contact dermatitis 28 (18.4%). Hyperpigmentation and hypopigmentation were the least commonly seen in 17 (11.2%) and 7 (4.6%) respectively Table 5 and Fig. 5.

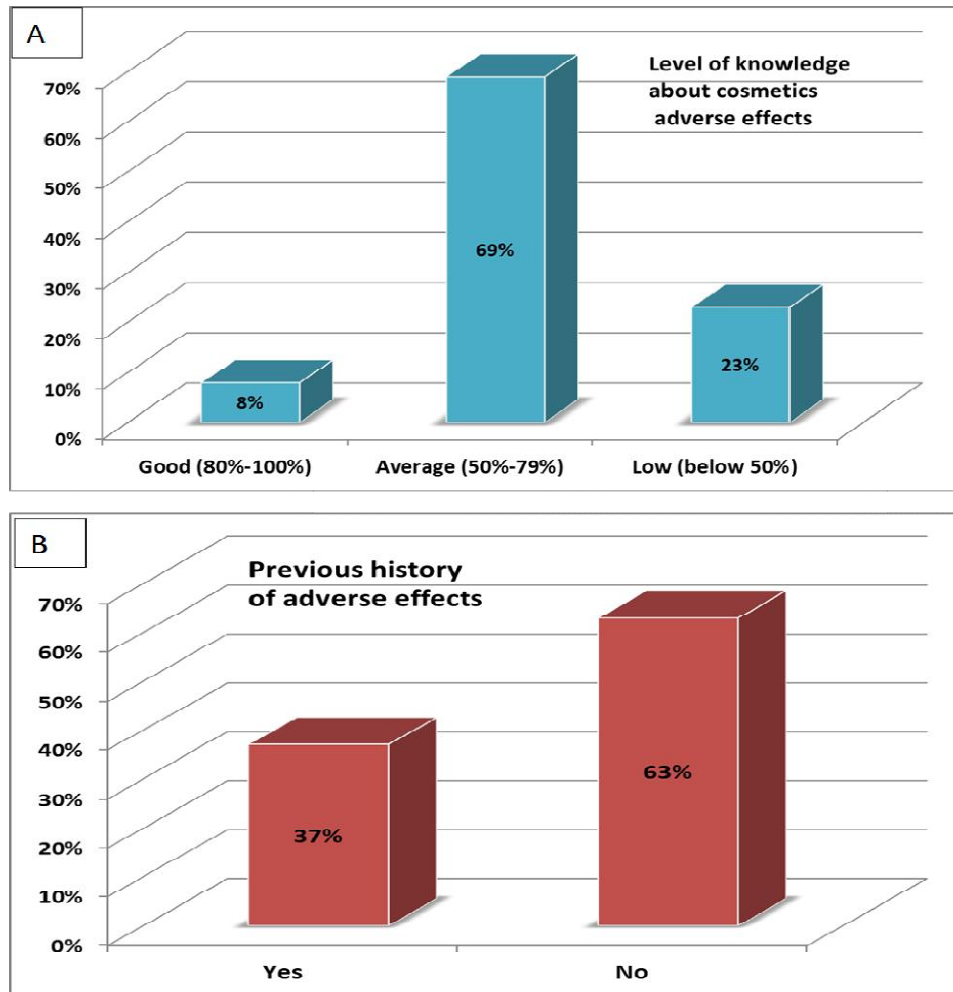


Fig. 4. (A) Level of knowledge and (B) previous history of adverse effects of cosmetics among respondents

Table 5. Type and percentage of adverse effects among respondents in regard to cosmetics

Adverse effects	Number	Percentage	Total
Irritant Contact dermatitis	59	38.8%	152
Acne	41	27%	
Allergic contact dermatitis	28	18.4%	
Hyperpigmentation	17	11.2%	
Hypopigmentation	7	4.6%	

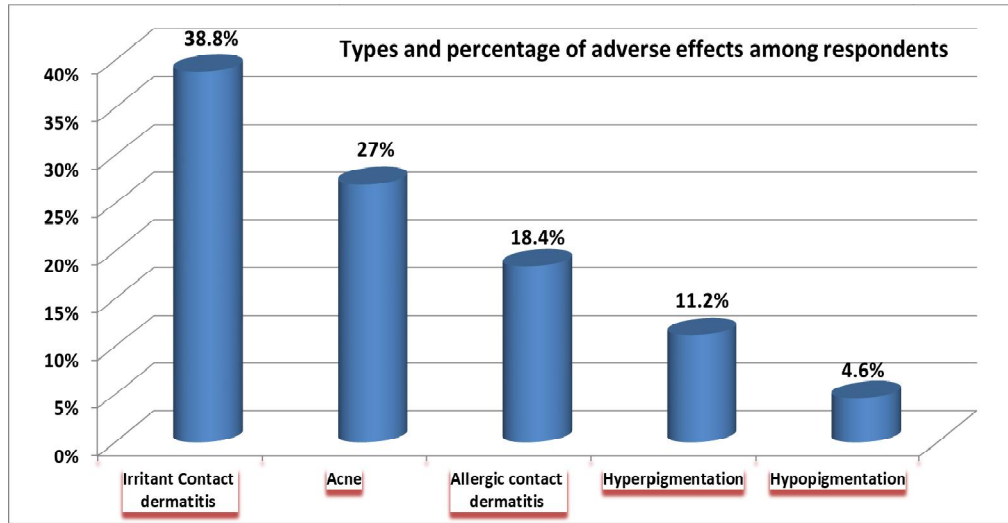


Fig. 5. Types and percentage of adverse effects of cosmetics

The questionnaire is well constructed to help us to differentiate between the adverse effects, specifically for irritant and allergic contact dermatitis in regard to the onset, symptoms, and type of cosmetics products used. Moreover, any students reported any adverse effects are

examined by the dermatologists available in the medical center of Albaha University and a full detailed history is obtained. Any dermatological symptoms and/or signs are documented with full details regarding onset, course, duration, and photos are requested if available.

Table 6. Common source of adverse effects among cosmetics products

Item	Categories	Number	Percentage
Type of cosmetics	Facial cosmetics, lipstick, and eye make up	143	34.9%
	Perfumes, deodorants, body lotions, and creams	215	52.4%
	Skin lightening products	18	4.4%
	Hair and nail cosmetic products	34	8.3%

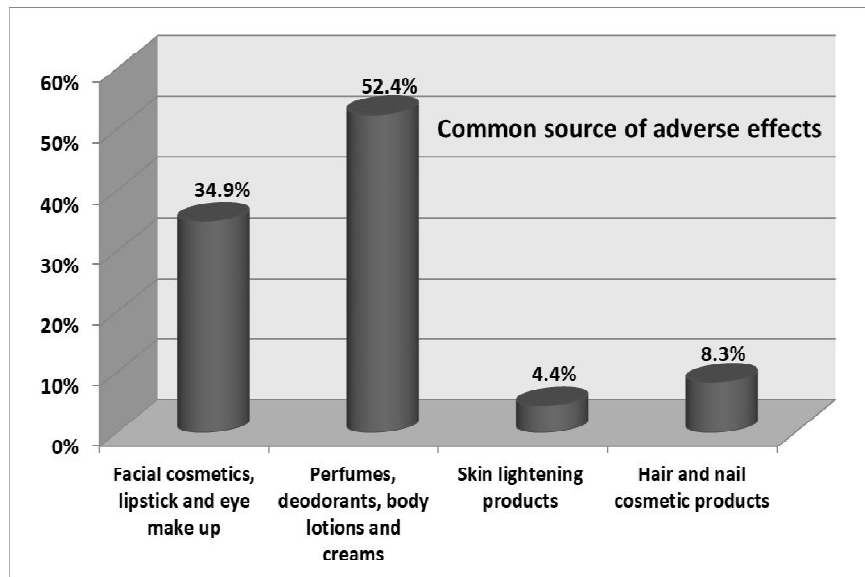


Fig. 6. Common source of adverse effects among cosmetics products

Table 7. Source of advice regarding the respondent's choice of cosmetics

Item	Category	Number	Percentage
Source of advice regarding cosmetic choice	Social media	163	39.8%
	Friends	109	26.6%
	Dermatologist	56	13.6%
	Beautician	48	11.7%
	Journals	34	8.3%

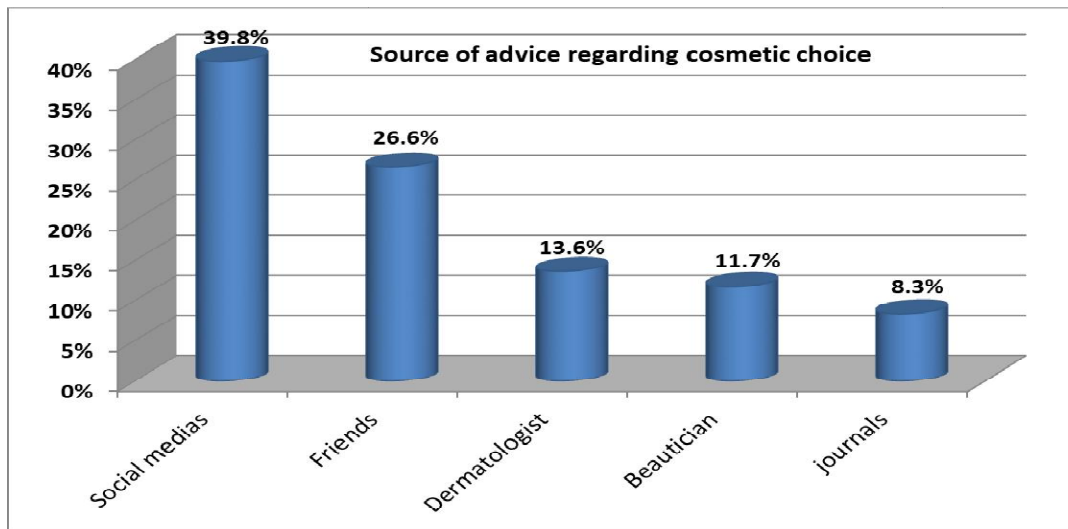


Fig. 7. Distribution of respondents according to their choice of cosmetic products

Table 6 and Fig. 6 showed the common sources of adverse effects among female students included in our study. Perfumes, deodorants, body lotions, and creams by far the most common cosmetics products causing adverse effect 215 (52.4%); followed by Facial cosmetics, lipstick, and eye make-up in 143 (34.9%). The third common source is hair and nail cosmetics 34 (8.3%) and the least common is skin lightening products that occur in 18 (4.4%).

Regarding their choice of cosmetic products among our respondents most of them (39.8%) were influenced in their choice by social media, (26.6%) by friends, (13.6%) by dermatologists, (11.7%) by beauticians and (8.3%) by journals as shown in Table 6 and Fig. 6.

4. DISCUSSION

Our study showed that using cosmetics products is prevalent among university female students in Albaha province in about 97.8% especially young, unmarried non-medical students. This percentage was similar to other studies done to estimate the prevalence of cosmetics use among university female students [13-15]. Our results

showed that being young between the age of 18-20, unmarried and non-medical students increase the rate of using cosmetics products mostly for beautification, cleaning, and correcting body odors, protection and enjoyment. Among cosmetics products, facial cosmetics including lip and eye products are the most common type used followed by skin lightening products. Most of the study populations use cosmetics products on a daily basis.

Regarding harmful side effects of cosmetic use among our respondents, A very significant finding was that only (8%) of students had a good level of knowledge about harmful side effects of cosmetic usage, 23% had a low level and 69% had average knowledge. These findings necessitate the elaboration of a well-constructed educational program to increase the awareness and knowledge about harmful effects regarding cosmetics. This program should include all female students in different colleges in Albaha University. 37% of the respondents showed a positive previous history of cosmetics adverse effects. Of this, irritant contact dermatitis is the most commonly observed adverse effect 38.8%, followed by acne (27%) and allergic

contact dermatitis in 18.4%. Regarding the source of advice in our study group; social media and friends are the most common source 39.8% and 26.6% respectively. Consulting a dermatologist account only for 13.6%; this low percent indicate that the educational program should include a strong recommendation for the students to consult a dermatologist regarding the use of cosmetics and to increase the awareness regarding the adverse reactions caused by them. The source of these adverse effects from which most of the respondents complained were Perfumes, deodorants, body lotions, and creams and the least complained is the skin lightening cosmetics. The most affected body parts include face and hair. Similar work was carried away by Jerzy Truchliński et al. in 2015 Lubulin he studied the legal status of the cosmetic ingredients causing the allergy. Similar another study was made by Anton C De Groot in 2010 and concluded that there are numerous ingredients that are causing the contact allergy.

5. CONCLUSION

Our study showed a high prevalence of cosmetics uses among young female students at Albaha University, most of them using it on a regular basis. Unfortunately, only 8% of them have good knowledge about the harmful effects of cosmetics. Cosmetics health-related hazard awareness among our respondents was not satisfactory and therefore needs a special consideration on cosmetic use-related safety concerns through awareness programs to raise their awareness. Finally, this study recommended that a well-structured health education program should be done including lectures, workshops, campaigns, and mass media orientation to increase the awareness level and educate the students about the hazardous effects of commonly used cosmetics. Dermatologists also should have an important role in their clinics.

CONSENT

The objective of the study was clarified for the participants and their information confidentiality was guaranteed for them, and oral consent was obtained from all of the study participants.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Dibaba H, Yadesa D, Legesse B, Shewamene Z, Gerima BW. Cosmetics utilization pattern and related adverse reactions among female university students. *IJPSR*. 2013;13:997-1004.
2. Martin M. Cosmetics and their relation to drugs. In: James S and James G, Eds. *Encyclopedia of Pharmaceutical Technology*. New York: Marcel Dekker. Inc. 2002;2:649–57.
3. Clarence R. Cosmetics. In: Scottfetzter Company Eds. *The World Book Encyclopedia*. Chicago; World Book. Inc. 1994;4:1075–76.
4. Eyob T, Yenet W. Cosmetics utilization pattern among female prospective graduates of Jimma University, Jimma, Southwest Ethiopia [Masters Thesis]. Jimma University; 2007.
5. Allergies and Cosmetics, WebMD; 2019. Available: www.webmd.com/allergies/guide/cosmetics
6. Verma N. Top 10 harmful effects of using cosmetics (Internet), ListCrux; 2014. Available: <http://listcrux.com/top-10-harmful-effects-of-using-cosmetics/>
7. Mansor N, Ali DEBM, Yaacob MR. Cosmetic usage in Malaysia: Understanding of the major determinants affecting the users. *International Journal of Business and Social Science*. 2010;1(3): 273-281.
8. Ahsan H. The biomolecules of beauty: Biochemical pharmacology and immunotoxicology of cosmeceuticals. *J Immunoassay Immunochem*. 2019;40(1): 91-108.
9. White JML, Basketter DA, Pease C, et al. Inter-mittent exposure to low-contraction paraphenylenedia-mine can be equivalent to single, higer-dose exposure. *Cont. Dermat*. 2007;56:262-265.
10. Bimie AJ, English JS. Immediate hypersensitivity to pharaphenylenediamine. *Cont. Dermat*. 2007;56:240-244.
11. Johansen J, Menne T. The fragrance mix and IST constituents: A 14-year material. *Contact Dermatitis*. 1995;32:15-23.
12. Hans-Jurgen S. Skin diseases in workers at a per-fume factory. *Cont. Dermat*. 2006;55:81-83.

13. Tejal P, Nishad D, Amisha J, Umesh G, Desai KT, Bansal RK. Cosmetics and health: Usage, perceptions and awareness. Bangladesh Journal of Medical Science. 2013;12:392-6.
14. Bayisa R, Ketele W, Weldegerima B. Assessment of knowledge, attitude and practice of cosmetics usage among university students [Masters Thesis]. University of Gondar; 2008.
15. Jalilian F, Ahmadpanah M, Karimi M, Salehi I, Vahidinia A, Emdadi S. Prevalence and reasons for cosmetic products use among female students in Hamedan Universities. Dermatology and Cosmetic. 2012;3(1):9-15.

© 2020 Al-Ghamdi et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:
The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/60477>