

Full Length Research Paper

Acquaintance of Botox: A cross-sectional survey among female students in Karachi, Pakistan

Shahlla Imam^{1*}, Wajiha Iffat², Sadia Shakeel², Ambreen Qamar³ Najaf Usman⁴, Nuzhat Sultana⁵ and Faisal Muhammad Khan¹

¹Institute of Pharmaceutical Sciences, Jinnah Sindh Medical University, Karachi – Sindh-Pakistan.

²Dow College of Pharmacy, Dow University of Health Sciences, Karachi – Sindh-Pakistan.

³Department of Physiology, Institute of Oral Health Sciences, Dow University of Health Sciences, Pakistan.

⁴Faculty of Pharmacy, Jinnah University for Women, Karachi Pakistan.

⁵Department of Pharmacology, Faculty of Pharmacy and Pharmaceutical Sciences, University of Karachi, Pakistan.

Received 7 June, 2019; Accepted 15 October, 2019

The cosmetic treatment strategies have been considerably popular over the last few decades among the population with respect to age, gender, and ethnicity. These procedures are easily accessible safer, minimally invasive, and more precise. Botox therapy is one of the most common non-surgical cosmetic treatment. Thus, the current study was accomplished to assess the knowledge of female students towards Botox therapy for beautification as well as for therapeutic purposes. The study was conducted from June 2018 to December 2018 in different medical colleges and universities of Karachi-Pakistan. Overall, three hundred and eighty-six female students participated in the study. Descriptive statistics were used to reveal the students' demographic information. Pearson's chi-squared test was carried out to estimate the relationship between independent variables and responses. The response rate was 77.2%. The mean age of study participants was 26.44±3.33 years. The findings of the present study revealed that 58.3% of the participants were aware of Botox therapy and found it effective in cosmetology. The unexpected side effects, high procedure costs, and lack of cosmetologists were thought to be the main reasons that limit people from using Botox in Karachi-Pakistan.

Key words: Botox, cross sectional survey, knowledge, Karachi, Pakistan.

INTRODUCTION

Cosmetic treatments have been very popular around the world, among men and women. The increasing demand for cosmetic procedures in recent years could be attributed to higher disposable incomes, and media portrayal reduced the stigma of cosmetic procedures. The period underway emphasizes an accelerated development in cosmetics trade with accessibility of

marketed product for beautifying women. The majority of cosmetic procedures performed were nonsurgical, with laser hair removal, chemical peels, microdermabrasion and botulinum toxin type A injection (Lee and Lee, 2016). Botulinum toxin, also called, "miracle poison," is one of the most noxious natural substances known to mankind. It is produced by anaerobic fermentation of the bacterium

*Corresponding author. E-mail: shahlla.imam@jsmu.edu.pk.

Clostridium botulinum, an anaerobic, gram-positive, spore-forming rod commonly found on plants, like vegetables, fruits, and seafood. Numerals of different strains of *C. botulinum* have been recognized, including seven immunologically distinct serotypes (type A–G) (Archana, 2016; Dutta et al., 2016; Awan, 2017; Mya et al., 2019). Aesthetic use of botulinum toxin type A is one of the most widely studied formulation for cosmetic and therapeutic purposes (Sundaram et al., 2016; Satriyasa, 2019). The U.S. Food and Drug Administration has approved Botox (Botulinum toxin-A) treatment for alleviating eye-muscle disorders and improving the appearance of frown lines between the eyebrows (Al-Ghamdi et al., 2015; Batisti et al., 2017; Dayan et al., 2018). The literature findings suggested the efficacy of Botox in treatment of spasmodic dysphonia, essential voice tremor, headache, cervical dystonia spasmodic torticollis, masticatory myalgia, sialorrhoea, temporomandibular joint disorders, bruxism, blepharospasm (eyelid closure), hemifacial spasm and nasal allergy and allergic rhinitis. It also has remarkable effects in treating chronic pain, disorders of localized muscle spasms, migraine and neuropathic pain (Dutta, et al., 2016). Some adverse reactions reported to the FDA include respiratory problems, dysphagia, seizure, flulike syndrome, facial, muscle weakness, ptosis and bruising or swelling at the site of injection (Yiannakopoulou, 2015). The current study was accomplished to assess the knowledge, attitude of female students towards Botox therapy for beautification as well as for therapeutic purposes.

MATERIALS AND METHODS

A cross sectional study was conducted from June 2018 to December 2018 in different medical colleges and universities of Karachi including both private and public sector. The questionnaire was developed after an extensive literature survey on the use of Botox injections in cosmetology (Yiannakopoulou, 2015; Awan, 2017; Mya et al., 2019; Kattimani et al., 2019). The questionnaire was examined by professionals and researchers to ensure the validity of the questions content. The study population comprised female undergraduate Pharmacy, Science and Medical students aged 20–34 years whose knowledge towards the use of Botox injection was assessed through a 25-items questionnaire. The paper-based questionnaire was distributed to the participants who participated in the study. Overall, three hundred and eighty-six undergraduate and graduate female students participated in the study. Some basic information was given to the respondents and all information collected from the study was kept strictly confidential.

Data analysis

Statistical Package for the Social Sciences (SPSS, version 20; SPSS Inc., Chicago, IL, USA) software was used for data analysis. Descriptive statistics were used to reveal students' demographic information. Pearson's chi-squared non-parametric test was carried out to estimate the relationship between socio-demographic factors and miscellaneous questions included in the questionnaire. The

results were described in terms of frequencies, percentages, and means. *P* value < 0.05 was considered as significant.

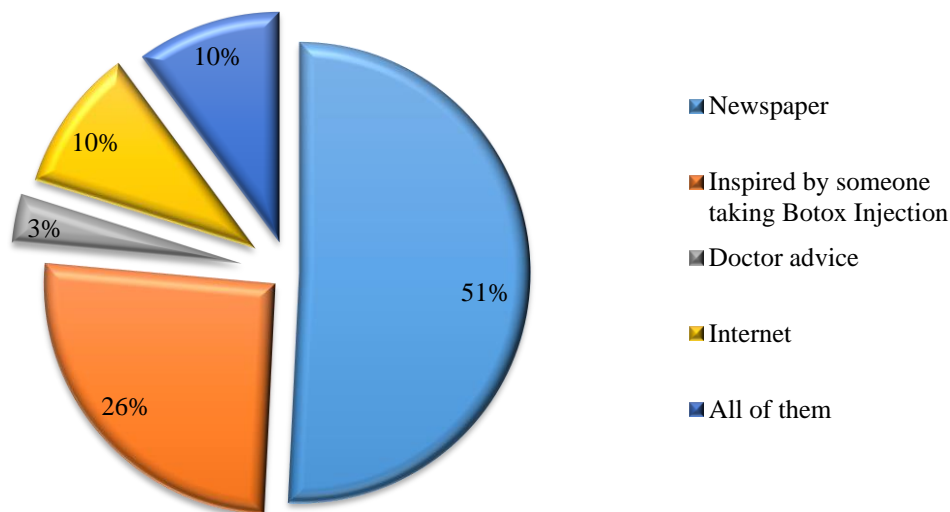
RESULTS

The questionnaire relied on self-reported responses from the participants. Out of the 500 survey forms, 386 participants successfully completed and returned the questionnaires, helping to achieve 77.2% response rate. Significant association ($p < 0.05$) was observed between the independent variable and responses of the respondents. The females who participated in the study were undergraduate and graduate medical (46.6%), pharmacy (33.4%) and science (19.9%) students. The mean age of study participants was 26.44 ± 3.33 years with minimum age being 20 years and maximum age 34 years. The demographic information of the respondents is presented in Table 1. Around 70% of the respondents opined that people should be conscious about beauty. Approximately 58.3% of the participants were aware of Botox injection and half of the population opined that the use of Botox in cosmetology is correct and 63.5% of participants believed that Botox is FDA approved. The majority of the respondent (64.0%) thought that Botox can be used without surgery and merely (32.4%) agreed that Botox can be used as an OTC drug. The majority of population (60.6%) believed that Botox injection may cause serious/unknown reactions and the participants (66.6%) sided against the use of Botox during pregnancy or breast feeding. The mass population (70.2%) agreed that Botox is an expensive therapy whereas 72.5% opined that female prefers Botox injections more as compared to male. The knowledge of students regarding Botox is illustrated in Table 1. As regards students' source of acquisition of information about Botox injection, more than half (50.8%) of the study population considered print and electronic media as major sources of knowledge. Figure 1 shows the other commonly prevailed source of knowledge about Botox therapy.

Nearly about 37.3% considered that Botox should be used above 40 years of age. Around 61.7% knew that Botox is used for skin treatment whereas 21.0% considered it to be used in overactive bladder or for any other medical purpose. The effect of Botox lasts for about 1 - 4 months (23.8%), 5 - 8 months (34.7%) and 9 - 12 months (41.5%) according to the opinion of the participants. Participants thought that time taken by Botox to produce its full effects is 3-7 days (43.3%), 1-2 days (23.6%) and more than 7 days (33.2%). Half population (53.6%) thought that Botox injection temporarily paralyzes the muscles whereas 26.4 and 19.9% thought that Botox injection partially and permanently paralyzes the muscles respectively. When respondents were asked about the expected price of Botox treatment, 13.0% opined above 15,000 rupees, 31.1% above 25,000 rupees whereas 56.0% thought more than 50,000 rupees. A mere 19.4% thought that Botox treatment should be

Table 1. Demographic characteristics of the study population (N=386).

Characteristics	N (%)
Age groups (years)	
20 – 24	139 (36)
25 -29	194 (50.3)
30 - 34	53 (13.7)
Educational Institute	
Public sector	150 (38.9)
Private sector	236 (61.1)
Educational Field	
Medical	180 (46.6)
Pharmacy	129 (33.4)
Science	77 (19.9)

**Figure 1.** Students' sources of information about Botox Injection.

given more awareness in our country as cosmetology. The restricted use of Botox according to students' perceptions were down to unexpected side effects (41.5%), expensive (28.5%), lack of awareness (21.5%) and lack of cosmetologists in Karachi, Pakistan (8.5%) as the main reasons that limit people from using Botox. Figure 2 depicts the respondents' opinion about health professionals who qualified to use Botox injection.

DISCUSSION

Botox injections, facial fillers, face-lifts, and eye-lid surgery, to name a few aesthetic facial procedures, have become a magic potion for several women (Mya et al.,

2019). Several women apply the procedures to amplify their physical beauty and self-worth, some observed the procedures as extremely risky, and still some disagreed that the procedures stemmed from the social deflation of later on life (Chang et al., 2016). The present study assessed the knowledge about cosmetic surgery and perceived satisfaction with Botox therapy among female students in Karachi, Pakistan. In the current study, half of the population accepted the cosmetic procedures because of the multiple aspects of facial appearance including youthfulness, and attractiveness. The vast majority (70%) of the respondents opined that people should be conscious about beauty and they would like to pay an amount on beauty or skin care for better looking. The participants had a sound knowledge of cosmetic

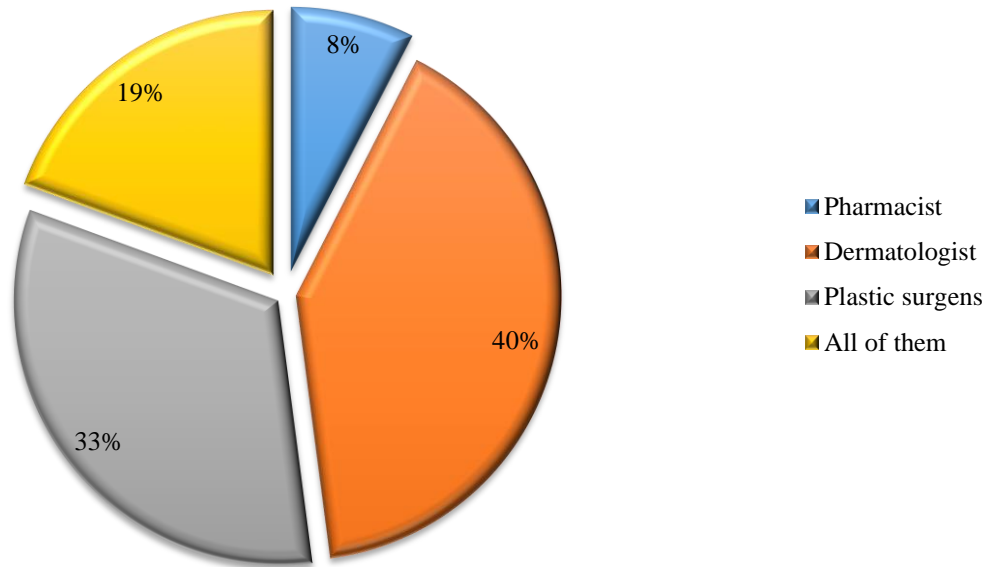


Figure 2. Students' opinion about the professionals qualified to use Botox injection.

Table 2. Knowledge of students with regards to use of Botox therapy (N=386).

Variable (Statement)	Responses N (%)		P-value
	Yes	No	
Should people be conscious about beauty?	269 (69.7)	117 (30.3)	0.007
Will you like to pay amount on your beauty or skin care?	252 (65.3)	134 (34.7)	0.028
Are you aware of Botox injection?	225 (58.3)	161 (41.7)	0.025
Do you think the use of Botox in cosmetology is correct?	194 (50.3)	192 (49.7)	0.053
Should people get complete information about Botox before therapy?	255 (66.1)	131 (33.9)	0.039
Do you think that Botox is FDA approved?	245 (63.5)	141 (36.5)	0.008
Do you think Botox can be used without surgery?	247 (64.0)	139 (36.0)	0.010
Do you think that Botox injection is a new drug therapy?	232 (60.1)	154 (39.9)	0.034
Do you agree that Botox can be used as an OTC drug?	125 (32.4)	261 (67.6)	0.862
If doctor advice you for Botox therapy will you prefer to use it?	161 (43.0)	220 (57.0)	0.261
Do you think Botox injection affects areas away from site of application?	237 (61.4)	149 (38.6)	0.107
Do you think Botox injection may cause serious / unknown reactions?	234 (60.6)	152 (39.4)	0.038
Do you think that Botox can be used during pregnancy or breast feeding?	129 (33.4)	257 (66.6)	0.334
Do you think Botox is an expensive therapy?	271 (70.2)	115 (29.8)	0.008

Statistical significance was analyzed with Pearson chi-square test. *P<0.05.

surgery and awareness regarding Botox injection. Although a large proportion of the respondents (60.6%) have awareness about the risks associated with cosmetic surgery, they believed that Botox injection may cause harmful/unwanted reactions. It has been reported that there are some issues regarding side effect and complication following the Botox injection (Satriyasa, 2019). The knowledge of students regarding Botox is illustrated in Table 2.

Since self-perceived knowledge of cosmetic procedures could play a key role in influencing the choices of potential

cosmetic therapy, people should get complete information about Botox before therapy (Kwolek and Block, 2019). Even though Botox is a prescription medication injected into muscles for several cosmetic and medical purposes, it was noted that just over thirty (32.4%) agreed that Botox can be used as an OTC drug. The study population demonstrated that it could be used without surgery. The study indicated that females prefer to use Botox injections more as compared to male. It was also found that the influence of print and electronic media including television, internet, newspaper, and magazine reporting

of women's health and age-related illnesses forced women to use the non-surgical treatments (Figure 1). A reported study indicated that considerable interest in undergoing cosmetic surgery simply based on the information that they had obtained from television shows and magazines influenced the female attitudes towards cosmetic surgery (Ng et al., 2014). Although it was found that the majority of the respondents did not intend to undergo Botox procedures, less than 50% considered Botox should be used above 50 years of age. The finding of the present study also revealed that around 61.7% of participant agreed that Botox used for skin treatment is generally acceptable if indicated. The cosmetic procedures involved the face, including skin resurfacing and facial lesion. Several studies confirmed the effectiveness of Botox in the treatment of cosmetic and dermatological diseases (Satriyasa et al., 2019; Awan 2017).

Though Karachi-Pakistan has seen growing interest in the past few years in cosmetic procedures, the findings of the present study revealed that the participant's knowledge and attitude towards cosmetic surgery were reasonable while, receiving cosmetic surgery was not common in current study population. Nonetheless, there is a lack of sound information awareness and cost has slowed down the growth of cosmetic surgery as well as the risks associated with these procedures. There is limited data available on the number of cosmetic procedures performed on different age groups in Karachi-Pakistan. Figure 2 depicts the respondents' opinion that dermatologist and plastic surgeons were believed to be the most qualified professionals.

Conclusion

The present study proposes some insights into the attitudes and extent of knowledge on cosmetic and aesthetic procedures among students in Karachi, Pakistan. This study analyzed the students-reported outcomes following effective and aesthetic Botox treatment and concluded that dermatologists and cosmetologists should work to boost up the general awareness towards the spectrum of cosmetic and clinical applications of Botox. It would be a step towards personal care problems in Karachi-Pakistan and will ultimately improve the skin and overall health of society. Hence, future studies should be conducted to investigate the amount of information available to consumers regarding new cosmetic treatments that are emerging with technological advancements.

ACKNOWLEDGEMENT

The authors explicit sincere gratitude go to all students from various universities around Karachi, Pakistan for

allotting their time and support in order to fill the survey questionnaire.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

REFERENCES

- Al-Ghamdi AS, Alghanemy N, Joharji H, Al-Qahtani D, Alghamdi H (2015). Botulinum toxin: Non cosmetic and off-label dermatological uses. *Journal of Dermatology and Dermatologic Surgery* 19:1-8. <http://dx.doi.org/10.1016/j.jdds.2014.06.002>.
- Archana MS (2016). Toxin yet not toxic: Botulinum toxin in dentistry. *The Saudi Dental Journal* 28(2):63-69. <http://dx.doi.org/10.1016/j.sdentj.2015.08.002>.
- Awan KH (2017). The therapeutic usage of botulinum toxin (Botox) in non-cosmetic head and neck conditions-An evidence based review. *Saudi Pharmaceutical Journal* 25(1):18-24. <http://dx.doi.org/10.1016/j.jsps.2016.04.024>.
- Batisti JPM, Kleinfelder ADF, Galli NB, Moro A, Munhoz RP, Teive HAG. (2017). Treatment of hemifacial spasm with botulinum toxin type A: effective, long lasting and well tolerated. *Arq Neuropsiquiatr* 75(2):87-91. <http://doi.org/10.1590/0004-282X2060191>.
- Chang BL, Wilson AJ, Taglienti AJ, Chang CS, Folsom N, Percec I. (2016). Patient Perceived Benefit in Facial Aesthetic Procedures: FACE-Q as a Tool to Study Botulinum Toxin Injection Outcome. *Aesthetic Surgery Journal* 36(7):810-820.
- Dayan SH, Newberry CI, Cerrati EW, Ashourian N (2018). Complications of Botulinum Toxin A: A Comprehensive Review. *Scholarly Journal of Otolaryngology* 1(1):13-20.
- Dutta SR, Passi D, Singh M, Singh P, Sharma S, Sharma A (2016). Botulinum toxin the poison that heals: A brief review. *National Journal of Maxillofacial Surgery* 7(1):10-6.
- Kattimani V, Tiwari RV, Gufran K, Wasan B, Shilpa PH, Khader AA. (2019). Botulinum toxin application in facial esthetics and recent treatment indications (2013-2018). *Journal of International Society of Preventive and Community Dentistry* 9(2):99-105.
- Kwolek MS, Block JE (2019). Maximizing botulinum toxin injections for cosmetic and therapeutic applications with a single use, disposable, exact dose injection assist Device. *Clinical Cosmetic and Investigational Dermatology* 12:35-46. <https://doi.org/10.2147/CCID.S189595>.
- Lee M, Lee M (2016). Body Satisfaction and Attitudes toward Cosmetic Surgical vs. Nonsurgical Procedures. *International Journal of Humanities and Social Science* 6(10):34-39.
- Mya NK, Tat YB, Yeoh BS, Tin W, Aung T, Hayati F (2019). Botox: The Deadly Beauty. *Forensic Medicine and Anatomy Research* 7:13-17. <https://doi.org/10.4236/fmar.2019.71003>.
- Ng JH, Yeak S, Phoon N, Lo S (2014). Cosmetic procedures among youths: a survey of junior college and medical students in Singapore. *Singapore Medical Journal* 55(8):422-426.
- Satriyasa BK (2019). Botulinum toxin (Botox) A for reducing the appearance of facial wrinkles: a literature review of clinical use and pharmacological aspect. *Clinical, Cosmetic and Investigational Dermatology* 12:223-228.
- Sundaram H, Signorini M, Liew S, Trindade de Almeida AR, Wu Y, Braz AV, Fagien S, Goodman GJ, Monheit G, Raspaldo H (2016). Global aesthetics consensus: botulinum toxin type A-evidence-based review, emerging concepts, and consensus recommendations for aesthetic use, including updates on complications. *Plastic and Reconstructive Surgery* 137(3):518-529.
- Yiannakopoulou E (2015). Serious and long-term adverse events associated with the therapeutic and cosmetic use of botulinum toxin. *Pharmacology* 95(2):65-69.