

# A comprehensive evaluation of safety and awareness in eyebrow microblading: a cross-sectional study

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## Abstract

The importance of eyebrows in facial aesthetics has long been recognized, and eyebrows restoration is carried out by carefully depositing pigments into the epidermis. This cosmetic procedure is known as microblading, and it is very popular because of the progress made on social media platforms. This study was designed to determine the awareness of eyebrow microblading, complication and laser removal in general population of Saudi Arabia. This was a cross-sectional study conducted in four different regions in Saudi Arabia (Asir, Qasim, Jawf, and Eastern province), from June 2023 to December 2023. Only females were included, and an online questionnaire was distributed. A convenient non-probability sampling method was adopted to gather data from participants. Data analysis was performed using SPSS version 21. A total of

705 participants were included in the study, with the majority, 281 (39.9%), falling into the age group >35 years, and the mean age was 29.1±11.9 years. The study revealed a moderate level of awareness (65%) among participants regarding eyebrow microblading. However, alarming gaps regarding hygiene practices in microblading setups still exist. Notably, facing complications during the surgery was identified as a statistically significant factor associated with a higher level of awareness (p=0.049). Of the participants, 17.4% had undergone eyebrow microblading with friends being the source of advice for 39.5% of them. More than 60% of microblading recipients chose laser removal, and varying degrees of pleasure and satisfaction were reported. Eyebrow microblading is a successful cosmetic procedure with aesthetic advantages. However, this study also emphasizes the necessity for extensive public education regarding microblading, including its associated risks, restrictions, and appropriate practices. Stringent laws and licensing for certified professionals are also deemed essential to ensure safe and ethical practices.

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## Introduction

Permanent cosmetics have been deemed as a fashion statement by many since ancient times. Eyebrows have been leading the way when it comes to the permanent makeup industry. In recent years, the use of eyebrow makeup, both semi-permanent and permanent, has become much more popular. Microblading of eyebrow restoration has become a popular cosmetic procedure due to the demand for finely defined eyebrows.<sup>1-3</sup> For people who want bolder, fuller brows, this tattoo technique employs fine needles to inject pigment into the skin, producing a semi-permanent solution.<sup>4-6</sup> Microblading as a cutting-edge procedure benefits individuals with alopecia totalis, trichotillomania, madarosis in hypothyroidism, hypotrichosis brought on by chemotherapy, and other conditions in addition to cosmetic enhancement.<sup>5-9</sup>

The mounting popularity of microblading has unfortunately brought with it an increase in unskilled individuals and uneven settings for performing these procedures; as a result, several functional and cosmetic complications arise.<sup>1,10-12</sup> Complications related to cosmetics include brow form abnormalities, pigment discoloration, and asymmetry.<sup>1,2,4</sup> Functional complications such as allergic responses, discomfort, itching, infection, and scarring can also occur.<sup>1-4,13</sup> Likewise, there is a chance that microblading won't produce the desired outcomes, such as an uneven pigment distribution, asymmetry, or an improper brow shape. Inadequate execution may result in scarring, and tiny clusters of inflammatory tissue called foreign body granulomas may develop around the pigment.<sup>14,15</sup>

Laser treatment is the gold standard for the removal of tattoo pigments.<sup>12</sup> Laser removal offers a potential remedy for those who find their microblading outcomes unsatisfactory even after taking

great care and detailed investigation.<sup>16</sup> But it's important to understand its limitations. Usually requiring several sessions, laser removal has a minimal chance of leaving scars, particularly if it's done by a trained expert. Red and yellow pigments may be more difficult to remove using lasers, and the procedure itself can be costly and time-consuming.

This research article aims to provide a comprehensive evaluation of eyebrow microblading, focusing on awareness among individuals undergoing the procedure and the success of laser removal as a corrective measure. By examining these factors in detail, we seek to contribute to the body of knowledge surrounding microblading and to inform both practitioners and individuals considering this cosmetic enhancement about its benefits, risks, and potential avenues for resolution.

## Materials and Methods

This was a cross-sectional observational study. The research was conducted in four different regions of Saudi Arabia (Asir, Qasim, Jawf, and Eastern province), from June 2023 to December 2023. Both male and female, Saudi residents aged >18 years were included. This study was approved by the institutional review board (IRB) of King Khalid University's Research Ethics Committee.

The research utilized an online self-administered questionnaire distributed through Google Form. The questionnaire link was randomly disseminated across multiple social media platforms, including Facebook, WhatsApp, Telegram, and Twitter. The study's objectives were clearly outlined in the interface, and a convenient non-probability sampling method was adopted to gather data from participants.

The questionnaire utilized in this study encompassed three main sections aimed at gathering comprehensive data on participants' demographic information, awareness levels, practices and behaviors related to eyebrow microblading, and experiences with laser removal. The demographic section included questions pertaining to age, gender, and education level. The section on awareness consisted of seven questions designed to assess participants' knowledge of the risks and benefits associated with eyebrow microblading. Following this, the practice and behavior section comprised eleven questions focused on participants' habits, preferences, and decision-making processes regarding microblading procedures. Lastly, the laser removal section encompassed six questions aimed at capturing participants' experiences and satisfaction levels with laser removal as a corrective measure for microblading.

Overall awareness level regarding eyebrow microblading was assessed by summing up discrete scores for different correct awareness items. The overall awareness score was categorized as a poor level if the participants' score was less than 60% of the overall score, and a good level of awareness was considered if the participants' score was 60% or more of the overall score.

The collected data was processed using Statistical Package for Social Sciences version 21 (SPSS: An IBM Company). Percentages were given for qualitative variables, and the mean (SD) was given for quantitative variables. The Chi-square test was used to compare categorical data. A  $p \leq 0.05$  was considered statistically significant in all statistical analyses.

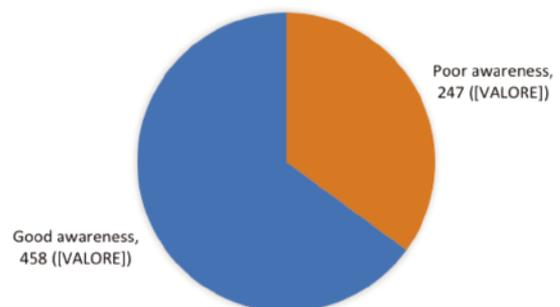
## Results

A total of 705 eligible participants completed the study questionnaire. Participants' ages ranged from 18 to more than 35 years, with a mean age of  $29.1 \pm 11.9$  years old. Exact of 281 (39.9%) aged over than 35 years while 258 (36.6%) aged 18 to 24 years (Table 1).

Exact 597 (84.7%) believe there are risks associated with undergoing eyebrow microblading, 550 (78%) are aware of the practice associated with eyebrow microblading, 550 (78%) know that laser is one of the methods for removing eyebrow microblading, and 546 (77.4%) think there are complications with laser removal of eyebrow microblading. Only 178 (25.2%) think the places and instruments used for eyebrow microblading are always safe in terms of health and hygiene, and 459 (65.1%) know that it is possible to completely remove eyebrow microblading. The overall awareness score ranged from 0 to 7 with a mean score of  $4.8 \pm 1.3$  out of 7 (Table 2).

A total of 458 (65%) of the study adults had an overall good awareness about microblading and associated risks while only 247 (35%) had poor awareness level (Figure 1).

Exact 123 (17.4%) of the study adults had eyebrow microblading, 86 (69.9%) of them were advised to do it mainly by their friends (39.5%), physician (23.3%), social media (22.1%), and Cosmetic specialist (15.1%). The most reported reasons for cosmetic eyebrow tattooing (microblading) were for cosmetic reasons (58.5%), eyebrow hair loss (18.7%), and for burns (2.4%). As for associated behaviors with microblading, 91 (74%) signed informed consent before undergoing eyebrow microblading, 83 (67.5%) were informed about the risks related to such practices, 89 (72.4%) were informed whether the eyebrow microblading is temporary or permanent, and 98 (79.7%) informed if the eyebrow microblading can be removed later. Also, 113 (91.9%) reported that the operator used sterile/disposable instruments, and only 20



**Figure 1.** Overall adult participants' awareness about microblading and associated risks.

**Table 1.** Age distribution of the study participants (n=705).

Age in years	n	%
18-24	258	36.6%
25-34	166	23.5%
35+	281	39.9%
Mean $\pm$ SD	$29.1 \pm 11.9$	

(16.3%) experienced complications during or after the eyebrow microblading procedure. A total of 43 (7.4%) of adults who did not do microblading consider getting one in the future mainly for cosmetic reasons (92.9%) (Table 3). Exact 78 (63.4%) had laser removal of eyebrow microblading, 27 (34.6%) had only 1 session, 25 (32.1%) needed 2 sessions, and 17 (21.8%) needed 3 sessions. Of those who used laser, 52 (66.7%) had microblading completely removed after laser sessions, 18 (23.1%) experienced complications, and 58 (74.4%) were satisfied with the result of laser removal of eyebrow microblading. Also, 25 (32.1%) will recommend laser surgery to remove cosmetic tattoos (Table 4). Among all included factors, only those who experienced complications during or after the eyebrow microblading procedure have a good awareness level than others who did not (75% vs. 62.1%, respectively;  $p=0.049$ ) (Table 5). Exact of 25.9% of adults aged 25-34 years old undergone eyebrow microblading versus 17.8% of those who aged 18-24 years and only 12.1% of others aged more than 35 years ( $p=0.001$ ) (Figure 2).

## Discussion

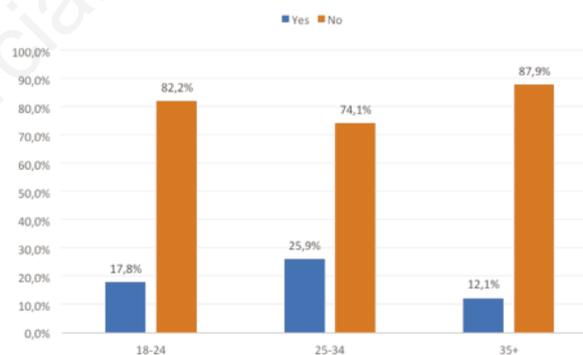
According to the International Society of Aesthetic Plastic Surgeons (ISAPS), Saudi Arabia ranks among the top 25 countries worldwide in terms of the frequency of cosmetic procedures and is also among the top 30 countries with the highest number of plastic surgeons.<sup>17</sup> As the importance of eyebrows in facial aesthetics is widely acknowledged, the popularity of microblading has surged.

In our study, we found that the awareness of eyebrow microblading among participants was 65%. This indicates a moderate level of awareness among the surveyed population regarding this cosmetic procedure. Factors such as the increasing presence of microblading in social media, beauty industry promotions, and word-of-mouth recommendations may have contributed to this level of awareness observed in our study. No prior studies were identified in the existing literature for comparison with our findings, as this study represents the inaugural investigation aimed at determining the awareness of microblading within the general population.

Notably, our findings underscored concerning gaps in hygiene practices within microblading setups, emphasizing the imperative for improved standards in this regard. To ensure the safety of their customers and themselves, practitioners must adhere to strict hygiene protocols and implement appropriate safety protocols.<sup>18,19</sup>

Overall, participants showed a moderate level of information about laser removal and microblading, with a mean score of 4.8 out of 7. However, there are still gaps in their understanding, particularly concerning cleanliness, with only 25% of respondents believing microblading procedures are usually followed by safe practices. This highlights the need for a multifaceted strategy to ensure safe practices and well-informed decision-making before undergoing eyebrow microblading. Similarly, a concerning minority reported not knowing about alternatives for removal or permanence, despite the majority reporting informed consent, risk disclosure, and good hygiene procedures as encouraging indicators. This implies a lack of thorough understanding even among those who had the surgery, underscoring the need for a multifaceted strategy. Public education efforts are essential for bringing attention to microblading, including its presence as well as associated risks, restrictions, and ethical practices.

Laser removal presents its own risks and is not a guaranteed solution for the removal of pigments.<sup>16,20,21</sup> While it may be an option for individuals dissatisfied with their microblading results, it is crucial to recognize its limitations. Multiple sessions are often necessary, and the procedure itself can present challenges. Additionally, certain pigment colors may prove more difficult to remove. More than 60% of microblading recipients opt for laser removal, with a majority requiring two to three sessions. While two-thirds of these patients achieve complete removal following laser treatment, a quarter experience complications, and overall satisfaction is not always achieved.



**Figure 2.** Prevalence of undergoing eyebrow microblading in age group.

**Table 2.** Study adult participants' awareness about microblading and associated risks.

Awareness items	No		Yes	
	n	%	n	%
Are you aware of the practice associated with eyebrow microblading?	155	22.0%	550	78.0%
Do you believe there are risks associated with undergoing eyebrow microblading?	108	15.3%	597	84.7%
Do you believe that eyebrow microblading can transmit diseases?	192	27.2%	513	72.8%
Do you think the places and instruments used for eyebrow microblading are always safe in terms of health and hygiene?	527	74.8%	178	25.2%
Is it possible to completely remove a eyebrow microblading?	246	34.9%	459	65.1%
Do you know that laser is one of the methods for removing eyebrow microblading?	155	22.0%	550	78.0%
Do you think there are any complications with laser removal of eyebrow microblading?	159	22.6%	546	77.4%
Overall score				
Range	0-7			
Mean ± SD	4.8 ± 1.3			

**Table 3.** Adults practice and associated behaviors towards eyebrow microblading.

Practice & behaviors	n	%
Have you ever had an eyebrow microblading?		
Yes	123	17.4%
No	582	82.6%
When you decided to undergo eyebrow microblading, did you seek someone's advice? (n=123)		
Yes	86	69.9%
No	37	30.1%
From who you were advised to do? (n=86)		
Friend	34	39.5%
Physician	20	23.3%
Social media	19	22.1%
Cosmetic specialist	13	15.1%
What is the reason for cosmetic eyebrow tattooing (microblading)? (n=123)		
Cosmetic reason	72	58.5%
Eyebrow hair loss	23	18.7%
For burns	3	2.4%
Others	25	20.3%
Did you sign any informed consent before undergoing eyebrow microblading? (n=123)		
Yes	91	74.0%
No	32	26.0%
Were you informed about the risks related to such practices? (n=123)		
Yes	83	67.5%
No	40	32.5%
Have you been informed whether the eyebrow microblading is temporary or permanent? (n=123)		
Yes	89	72.4%
No	34	27.6%
Have you been informed if the eyebrow microblading can be removed later? (n=123)		
Yes	98	79.7%
No	25	20.3%
Did the operator use sterile/disposable instruments? (n=123)		
Yes	113	91.9%
No	10	8.1%
Did you experience any complications during or after the eyebrow microblading procedure? (n=123)		
Yes	20	16.3%
No	103	83.7%
If you don't have an eyebrow microblading, would you consider getting one in the future? (n=582)		
Yes	43	7.4%
No	539	92.6%
If yes, why?		
Cosmetic reason	13	92.9%
New trial with satisfactory results	1	7.1%

**Table 4.** Laser removal practice and associated complications with satisfaction among adults did microblading (n=123).

Laser removal practice	n	%
Have you ever had laser removal of eyebrow microblading?		
Yes	78	63.4%
No	45	36.6%
Number of laser sessions needed		
1	27	34.6%
2	25	32.1%
3	17	21.8%
5+	9	11.5%
Is microblading completely removed after laser sessions? (n=78)		
Yes	52	66.7%
No	26	33.3%
Did you experience any complications with laser removal of eyebrow microblading (n=78)		
Yes	18	23.1%
No	60	76.9%
Were you satisfied with the final result of laser removal of eyebrow microblading? (n=78)		
Yes	58	74.4%
No	20	25.6%
Do you recommend laser surgery to remove cosmetic tattoos? (n=78)		
Yes	25	32.1%
No	53	67.9%

**Table 5.** Factors associated with adult's awareness about eyebrow microblading.

Factors	Overall awareness level				p
	Poor		Good		
	n	%	n	%	
Age in years					.971
18-24	91	35.3%	167	64.7%	
25-34	59	35.5%	107	64.5%	
35+	97	34.5%	184	65.5%	
Have you ever had a eyebrow microblading?					.850
Yes	44	35.8%	79	64.2%	
No	203	34.9%	379	65.1%	
Were you informed about the risks related to such practices?					.781
Yes	29	34.9%	54	65.1%	
No	15	37.5%	25	62.5%	
Have you been informed whether the eyebrow microblading is temporary or permanent?					.233
Yes	29	32.6%	60	67.4%	
No	15	44.1%	19	55.9%	
Have you been informed if the eyebrow microblading can be removed later?					.797
Yes	35	35.7%	63	64.3%	
No	9	36.0%	16	64.0%	
Did you experience any complications during or after the eyebrow microblading procedure?					.049*^
Yes	5	25.0%	15	75.0%	
No	39	37.9%	64	62.1%	
Have you ever had laser removal of eyebrow microblading?					.970
Yes	28	35.9%	50	64.1%	
No	16	35.6%	29	64.4%	

P: Pearson X<sup>2</sup> test; ^Exact probability test; \*p<0.05 (significant).

This study has some limitations, such as the study used an online questionnaire, people without an internet connection, or people who are not familiar with online surveys were unable to participate, which could have resulted in selection bias. Self-reported data, which is subject to recall bias, was used in the study. Besides, the study's exclusive emphasis on Saudi Arabian adults limited the findings' applicability to other demographics and geographic areas. Microblading is still a common cosmetic treatment, but before committing, make sure you understand the risks and limits involved.

## Conclusions

In conclusion, this study reveals a moderate level of awareness (65%) regarding microblading but also highlights gaps in hygiene practices within microblading setups. Moreover, this study emphasizes the necessity for extensive public education regarding microblading, including its associated risks, restrictions, and appropriate practices. To ensure safe and ethical practices, stringent laws and licensing for certified professionals are also deemed essential.

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