"Mole removal" on Instagram Hashtags: A Cross-sectional Analysis: Nevus Treatment Methods on Instagram

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ABSTRACT

Introduction: With the increase in the use of social media, there is a steady increase in demand for medical, surgical, and cosmetic procedures. Dermatologists and other physicians are leaving their cosmetic practice to non-physician service providers to keep up with the growing demand for cosmetic procedures.

Objectives: To examine the gender, professions, and the method of nevi treatment of the profiles using #bensilme and #moleremoval hashtags on Instagram and to investigate the extent of cosmetic procedures comparing Turkey's situation with other countries.

Methods: In Instagram, the most frequently used hashtags about nevus treatment were scanned by two dermatologists. We recorded profession, gender, country of origin, and the treatment method of nevi of profiles sharing the related posts.

Results: The countries with the highest share of the #moleremoval hashtag were the United Kingdom (15%), India (12%), and the United States of America (10.5%), and the proportion of physicians in these countries was 16.7%, 100%, and 71.4%, respectively. In the non-physician group, plasma pen method in our country is the most used method (Turkey: 97.9%, world: 75% respectively), but the use of radiofrequency cautery (world: 12.5%, Turkey: 1% respectively) and cryo pen (world: 7.5%, Turkey: 0.0%) methods were significantly more abroad.

Conclusions: We demonstrated that non-physicians mostly perform nevus destruction procedures. Physicians must use social media more actively to share educational, quality, and accurate information. We suggest that the hashtags used by physicians in their social media posts should be chosen from the words used in the folk language.

Introduction

Instagram is a free social networking service for sharing photos and videos [1]. The number of daily users reached 500 million on the platform, which reached 1 billion active users per month in the last month of 2018 [2,3]. Hashtags are keywords those social media users utilize to tag their posts. They are used to organize the share content, search and collect data [4,5]. More than 40% of people in the United States use social media to get health information. Many people decide to receive healthcare services based on their social media posts [5].

With the increase in social media usage, there is a steady increase in demand for medical, surgical, and cosmetic procedures. This has increased in people applying to non-physicians for cosmetic procedures and aesthetic medical treatments. Dermatologists and other physicians leave cosmetic procedures to non-physician service providers to keep pace with the growing demand for cosmetic procedures. Non-physician groups (aestheticians, nurses, doctor assistants, nurse assistants, make-up experts, hairdressers, etc.) harass the specialty of medical science. This situation is directly related to patient health and safety. In addition, patients treated by non-physicians experience more burns and pigmentation problems than patients treated by physicians [6]. This situation is beyond the development of blemishes and burns. Melanoma, which is evaluated and destroyed by non-physicians as a simple nevus, can shorten the patient's life span and increase the treatment costs significantly [7].

While using Instagram, we observe non-physicians also do that nevus destruction in our searches related to nevus treatment. We anticipate that such practices performed in incompetent hands may endanger patient health and safety. Therefore, we aimed to evaluate the professions of the profile owners and methods by using the most two hashtags related to nevus treatment on Instagram.

Objectives

We want to examine the gender, professions, and the method of nevi treatment of the profiles using #bensilme and #moleremoval hashtags on Instagram and to investigate the extent of cosmetic procedures comparing Turkey's situation with other countries. In particular, we wanted to investigate the rate of non-physician practices in this regard.

Methods

Study Design
On May 01, 2021, two dermatologists scanned the most frequently used hashtags for nevus treatment on Instagram. The most shared hashtags related to nevus treatment. were selected in Turkish and English One hundred posts using the #bensilme hashtag in Turkish and 100 posts using the #moleremoval hashtag, which may have an English equivalent, were planned to be examined. The analysis was started from current posts to old-dated posts, and especially melanocytic nevus-looking posts were examined. The compatibility of the shared images with melanocytic nevus was determined by the joint decision of the two dermatologists. We ended the study when we reached 100 posts from each hashtag. Information on profession, gender, country of origin were collected from the profiles that shared them. The profession information specified in the profiles that share related posts was taken as a basis for the distinction between physicians and non-physicians and for the determination of other professions. In order to determine the professions of the profile owners who did not have information of professions and gave their own website information in their profiles we reached their websites. If information of profession is specified in the "about us" section of the website, we have recorded it. The information on the nevus destruction method used by the practitioners was obtained from the related posts. In data entry, we classified dermatologists and plastic surgeons as physicians. We defined the other specialists as doctors. Approval for this study was obtained from the Ethics Committee of Maltepe University Faculty of Medicine (Approval number: 2021/900/69).

Inclusion and Exclusion criteria
Melanocytic nevi, which have photos or videos both before and after destruction, were selected from publicly accessible posts. The selected posts included gender, profession, and destruction method information in the practitioner's profile and posts. Duplicate profiles and posts missing at least one of the above information were not included in the study.

Statistical Analysis
We used the Shapiro-Francia test to evaluate the compatibility of univariate data to normal distribution. According to quantitative data, the Mann-Whitney U test was used together with Monte Carlo results to compare two independent groups with each other. Pearson Chi-Square, Fisher Exact, and Fisher-Freeman-Holton tests were tested with the Monte Carlo Simulation technique to compare categorical variables. In addition, column proportions were compared and expressed according to Benjamini-Hochberg corrected P value results. Quantitative variables were represented in the tables as mean (± standard deviation) and median (25° and 75° percentile). Categorical variables were shown as n (%). Variables were analyzed at a 95% confidence level, and a P value of less than 0.05 was considered significant. SPSS 27.0 (IBM Corporation) program was used to analyze variables.

Results

There were 21,711 posts in the #bensilme hashtag and 47,085 posts in the #moleremoval hashtag. The countries with the highest share of the #moleremoval hashtag in the world were the United Kingdom (15%), India (12%), and the United States of America (10.5%) (Table 1).

In our country, 21% of practitioners were male, and 79% were female. Abroad, this rate was similar to our country (30% and 70% respectively). We compared physician and non-physician groups in terms of gender. The number of male physicians in the world was significantly higher than in our country (respectively 93.3%-19.0%, P <0.001). There was no physician among female practitioners in our country.

Table 1. Demographic Data

	n	%
Gender		
Male	51	25.5%
Female	149	74.5%
Profession		
Esthetician	108	54.0%
Dermatologist	28	14.0%
Doctor	21	10.5%
Hairdresser	18	9.0%
Plastic Surgeon	15	7.5%
Nurse	5	2.5%
Masseur	4	2.0%
Make-up artist	1	0.5%
Physician / Non-physician		
Physician	64	32.0%
Non-physician	136	68.0%
Method		
Plasmapen	136	68.0%
Surgical excision	23	11.5%
Radiofrequency cautery	18	9.0%
Laser	16	8.0%
Electrocautery	4	2.0%
Cryopen	3	1.5%
Country		
Turkey	100	50.0%
United Kingdom	30	15.0%
India	24	12.0%
United States of America	21	10.5%
Australia	7	3.5%
Malaysia	4	2.0%
Pakistan	3	1.5%
Indonesia	2	1.0%
Venezuela	1	0.5%
Philippines	1	0.5%
Canada	1	0.5%
Nepal	1	0.5%
Russia	1	0.5%
Spain	1	0.5%

Table 1 continues

Table 1. Demographic Data *(continued)*

	n	%				
Albania	1	0.5%				
Iran	1	0.5%				
Egypt	1	0.5%				
Turkey / World						
Turkey	100	50.0%				
World	100	50.0%				
	Mean (SD)	Min	q1	q2	q3	Max
Follower	8842.03 (23025.14)	59	930	2612	###	2E+05

SD=Standard deviation; q1=percentile 25; q2=percentile 50(median); q3=percentile 75.
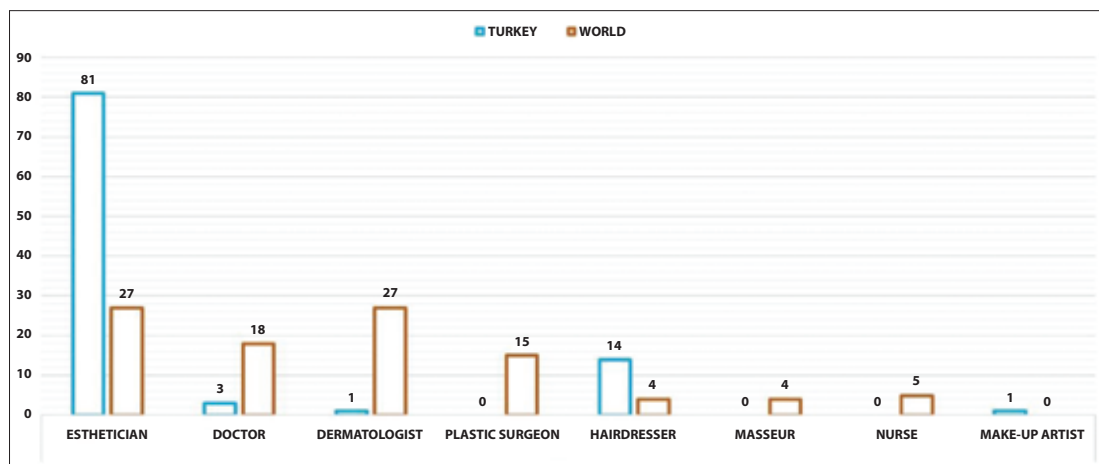

Figure 1. Distribution of the professions we have identified in Turkey and in the world. (numbers indicate percentages).

In the non-physician group, the proportion of men in our country was significantly higher than abroad (respectively 81.0%-6.7%, P < 0.001). In the non-physician group, the rate of women in our country was also significantly higher than abroad (100%-54.3%, respectively) (P < 0.001) (Table 2).

When physicians and non-physicians were compared, 96% of the practices in our country were performed by non-physicians and only 4% were performed by physicians (P < 0.001). Abroad, this rate was 60% and 40%, respectively (Table 2) (Figure 1). The countries that have the most shares of the #moleremoval hashtag abroad were UK, India, and the USA, and the proportion of physicians in these countries was 16.7%, 100%, and 71.4%, respectively (Table 3).

Considering the professions, the rate of estheticians and hairdressers in our country was significantly higher than abroad (81%-27% for estheticians, 14%-4% for hairdressers, respectively). Abroad, rate of doctors (18%-3% respectively), dermatologists (27%-1% respectively), plastic surgeons (15%-0.0% respectively), masseurs (4%-0.0% respectively) and nurses (5%-0.0% respectively) were significantly higher than our country (P < 0.001) (Table 2), (Figure 2).

In terms of the method of destruction, plasma pen was significantly higher in our country compared to abroad (96% - 40%, respectively). Abroad, rate of laser (14%-2%, respectively), surgical excisions (22%-1%, respectively), radiofrequency cauterizations (17%-1%, respectively), and electrocauterizations (4%-0%, respectively) were significantly higher than in our country (Table 2), (Figure 3).

The methods used by the physicians were similar in our country and abroad without significant difference (P = 0.577). In the non-physician group, plasma pen usage is more frequent in our country (Turkey: 97.9%, world: 75.0% respectively), but abroad radiofrequency cautery (World: 12.5%, Turkey: 1% respectively) and cryo pen (World: 7.5%, Turkey: 0.0% respectively) usage were significantly more (p<0.001) (Table 2).

Discussion

We wanted to examine the Instagram accounts using #bensilme in Turkish and #moleremoval hashtags in English regarding gender, professions, and method of destroying nevus of profile owners. We planned this study to

Table 2. Statistical Analysis

	Turkey (n=100) n (%)	World (n=100) n (%)	P
Gender			0.194 c
Male	21 (21.0)	30 (30.0)	
Female	79 (79.0)	70 (70.0)	
Physician / Non-physician			<0.001 c
Physician	4 (4.0)	60 (60.0) A	
Non-physician	96 (96.0) B	40 (40.0)	
Male			<0.001 c
Physician	4 (19.0)	28 (93.3) A	
Non-physician	17 (81.0) B	2 (6.7)	
Female			<0.001 c
Physician	0 (0.0)	32 (45.7) A	
Non-physician	79 (100.0) B	38 (54.3)	
Profession			<0.001 ff
Esthetician	81 (81.0) B	27 (27.0)	
Doctor	3 (3.0)	18 (18.0) A	
Dermatologist	1 (1.0)	27 (27.0) A	
Plastic Surgeon	0 (0.0)	15 (15.0) A	
Hairdresser	14 (14.0) B	4 (4.0)	
Masseur	0 (0.0)	4 (4.0) A	
Nurse	0 (0.0)	5 (5.0) A	
Make-up artist	1 (1.0)	0 (0.0)	
Methods used by physician's			0.577 ff
Plasmapen	2 (50.0)	10 (16.7)	
Laser	1 (25.0)	13 (21.7)	
Surgical excision	1 (25.0)	22 (36.7)	
Electrocautery	0 (0.0)	3 (5.0)	
Radiofrequency cautery	0 (0.0)	12 (20.0)	
Methods used by non-physician's			<0.001 ff
Plasmapen	94 (97.9) B	30 (75.0)	
Laser	1 (1.0)	1 (2.5)	
Electrocautery	0 (0.0)	1 (2.5)	
Radiofrequency cautery	1 (1.0)	5 (12.5) A	
Cryopen	0 (0.0)	3 (7.5) A	
Summary of methods			<0.001 ff
Plasmapen	96 (96.0) B	40 (40.0)	
Laser	2 (2.0)	14 (14.0) A	
Surgical excision	1 (1.0)	22 (22.0) A	
Electrocautery	0 (0.0)	4 (4.0) A	
Radiofrequency cautery	1 (1.0)	17 (17.0) A	
Cryopen	0 (0.0)	3 (3.0)	
Follower	**median (q1/q3)**	**median (q1/q3)**	
	3313 (1850.5 / 7021)	1372 (550 / 8197.5)	**0.007 U**

c=Pearson Chi-Square Test (Monte Carlo); ff=Fisher Freeman Halton test (Monte Carlo); u= Mann Whitney U Test (Monte Carlo); q1=percentile 25; q3=percentile 75. A=significance in the world population compared to Turkey, B=significance in the Turkish population compared to world.

Table 3. Distribution of Physicians and Non-Physicians in the World

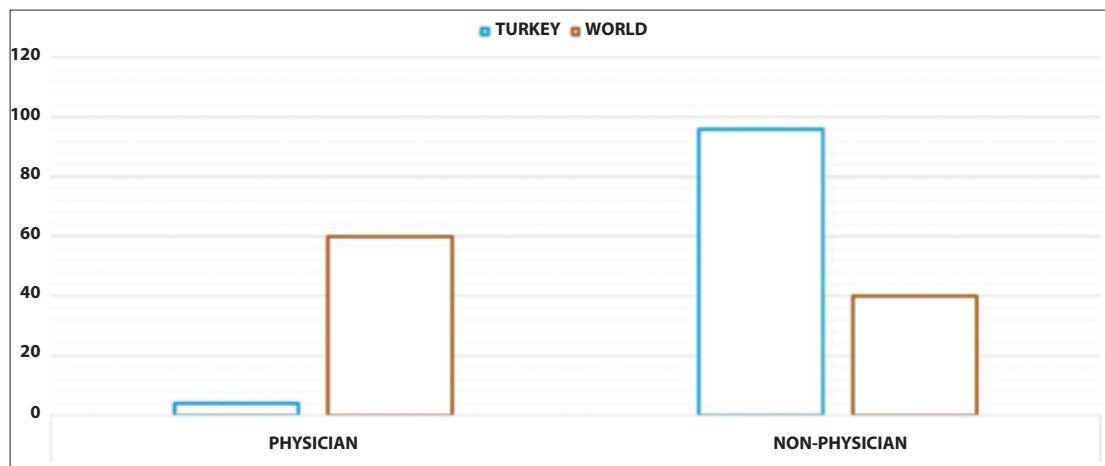|	United Kingdom	India	United States of America	Other countries
n (%)				
Physician	5 (17)	24 (100)	15 (71)	16 (64)
Doctor	4 (13.4)	1 (4.2)	4 (19)	9 (36)
Dermatologist	1 (3.3)	18 (75)	4 (19)	4 (16)
Plastic Surgeon	0	5 (20.8)	7 (33.3)	3 (12)
Non-Physician	25 (83)	0	6 (29)	9 (36)
Esthetician	17 (56.6)	0	3 (14.3)	7 (28)
Hairdresser	4 (13.4)	0	0	0
Masseur	1 (3.3)	0	2 (9.6)	1 (4)
Nurse	3 (10)	0	1 (4.8)	1 (4)

Figure 2. Distribution of physicians and non-physicians we have identified in Turkey and in the world. (numbers indicate percentages).
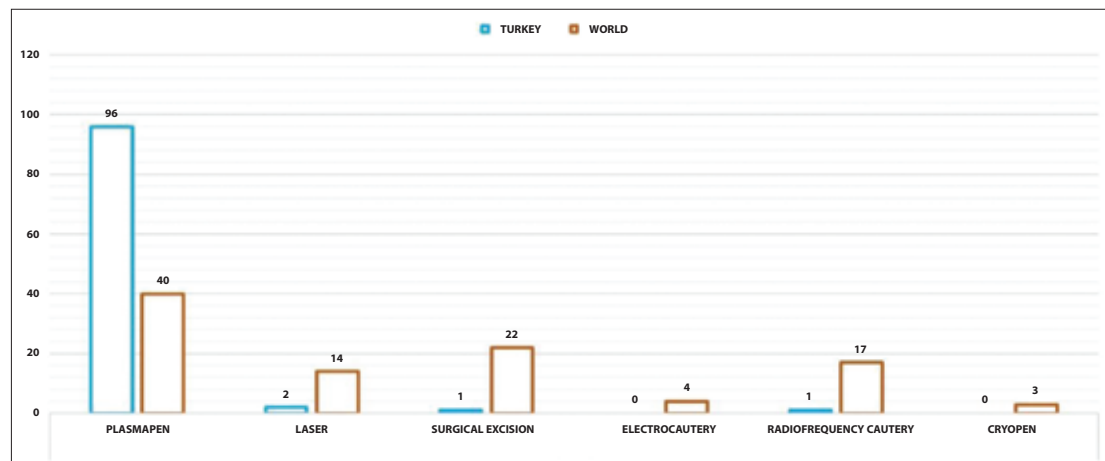

Figure 3. Distribution of destruction method we have identified in Turkey and in the world. (numbers indicate percentages).

investigate the extent of non-physician practices and to compare the situation in our country with abroad. As a result of our research, we found that high rates of non-physician practices are performed in our country and overseas to treat nevi.

Nevus treatment options include total surgical excision, shave excision, lasers, radiofrequency, electrocautery, and cryotherapy. However, the possibility of recurrence is high after non-specific thermal or cold damage methods, and recurrent lesions are confused with atypical melanocytic nevi

or melanoma. Due to the cosmetic appearance, it is necessary to eliminate the risk of dysplasia and melanoma in the nevus before starting nevus treatment. Thus, dermoscopy is a good tool in skilled hands, but it is still a more reliable method to biopsy in doubtful cases. In general, it is accepted that all nevi should be examined histologically as medicolegal. An average of 2.3% of melanocytic nevi considered to be clinically benign was reported as microscopic malignant [8-10]. While methods in which pathological examination cannot be performed are controversial for nevus treatment, it is unacceptable for non-physicians to treat nevus.

In terms of professions, the high number of estheticians and hairdressers in our country and in the UK may be because this group uses social media more actively or may prefer #bensilme and #moleremoval hashtags than physicians. On the other hand, the low rate of physicians in our country and the UK may be because physicians in these countries do not use social media actively, or it may also be since the doctor group in these countries use hashtags containing medical words instead of the more preferred hashtags in the spoken language.

We have seen that dermatologists produce a small portion of the #bensilme and #moleremoval hashtags posted on Instagram. However, in India, no one except the doctor used the #moleremoval disease. This may be since estheticians use more local languages than English, or India has provided this with its laws. There were only physician shares in Albania, Canada, Egypt, Iran, Nepal, and Pakistan, where 1 to 3 shares were examined, but no comment could be made because the number was low.

Plasma pen use was common in the non-physician group, especially in our country. This may be due to the fact that plasma pen devices are easily accessible, inexpensive, and practical to implement. However, it can also be caused by such devices not being recognized as medical devices. As a result of the application made by the Turkish Society of Dermatology Association to our Ministry of Health, the use of these devices in our country has been legally restricted to physicians only.

It is essential to get medical information on social media from reliable sources. Because people mainly apply to social media to make a treatment decision. Information from unqualified sources can lead to misdirection, unnecessary treatment, and potential harm. For this reason, it is crucial for dermatologists, plastic surgeons, and other physicians to share quality content [11]. Some studies in recent years show that Instagram is a very suitable platform for educating audiences around the world. It is even recommended that dermatologists be active on social media platforms in order to access evidence-based education resources. However, dermatology specialization programs still do not use social media actively enough [12-15].

Wong et al have compiled some suggestions for physicians on how create a professional Instagram account. These are as follows: must be an official account, the content must be short and precise, supported with images and videos, must be online frequently, stories and posts must be share regularly, a disclaimer must be prepared for followers with medical concerns, a good patient consent form should be prepared to share patient information [2].

Conclusions

We have demonstrated that non-physicians widely use nevus destruction procedures. However, wrong only disappears when the right turns out. Therefore, we think physicians must use social media more actively and share quality and accurate information. We suggest that physicians in Turkey use #bensilme and other related tags in their social media posts on this issue, which may fill the gap in this area. In addition, physicians must share quality information on social media for educational purposes that tissue destruction devices are medical devices and must be used by physicians.

Data Availability Statement: Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

Transparency Statement: The lead author (Semih Güder), affirms that this manuscript is an honest, accurate, and transparent account of the study being reported that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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