

Skin reactions to the diode laser 805 nm application among groups of various ethnicity.

Izabela Zaleska MSc, PhD, The Section of Professional Cosmetology, The Faculty of Motor Rehabilitation, University of Physical Education in Krakow, Poland
Magdalena Atta-Motte MSc, MPH, FRSPH , 5th Avenue Medical Clinic, London, UK

INTRODUCTION:

Patients who decide to undergo a permanent hair removal course of treatments put the effectiveness of the method and a fast and long-lasting result as their priority. For the therapist patient safety should be most important. Patients may expect redness, skin irritation, erythema, postoperative hypersensitivity and possible burns manifested by blisters and scabs. It is also possible to experience pigmentary changes such as hyperpigmentation. Less frequently described cases are scarring, purpura, folliculitis, cyanobacteria, pruritus or urticaria.

The available literature describes the effectiveness of the diode laser as a method for all skin types according to the Fitzpatrick scale hair removal but the question of patient safety and minimization of side effects and postoperative complications remains unanswered. In diode laser, the hair removal principle of selective photothermolysis applies, where the chromophore is melanin, which is found in the hair shaft itself and the bulge, however, the same chromophore can be found as skin pigment.

Therefore getting the best results in the pubic area - as one of the most popular treatments - is difficult but it is one of the most popular diode-assisted hair removal treatments in aesthetics.

STUDY AIM:

To examine skin reactions including the effectiveness and side effects of pubic area's Diode laser (805 nm) hair removal in groups of participants with various ethnicity and skin type I-VI (according to the Fitzpatrick scale) 6 weeks after the course of six treatments.

MATERIAL AND METHOD:

A group of 215 participants qualified for the course of 6 Diode laser (805 nm) hair removal treatments. Participants were divided into ethnic groups according to Census 2001. The effectiveness was analysed as a percentage of hair reduction in objective and subjective assessments. Patient Satisfaction Level was indicated. Side effects were noted when observed. The STATISTICA 12 PL tool licensed by the Jagiellonian University of Krakow was used for statistics.

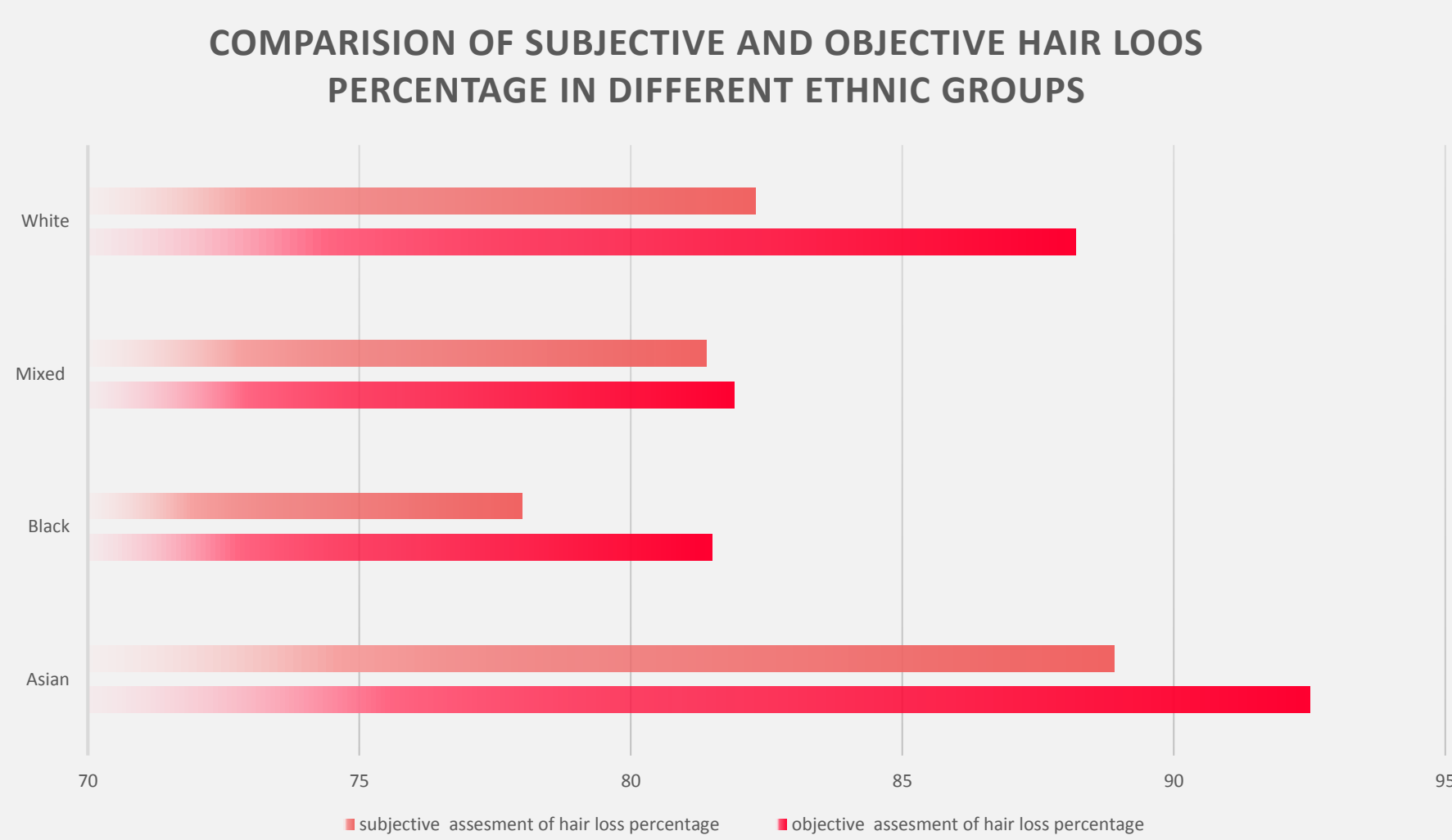
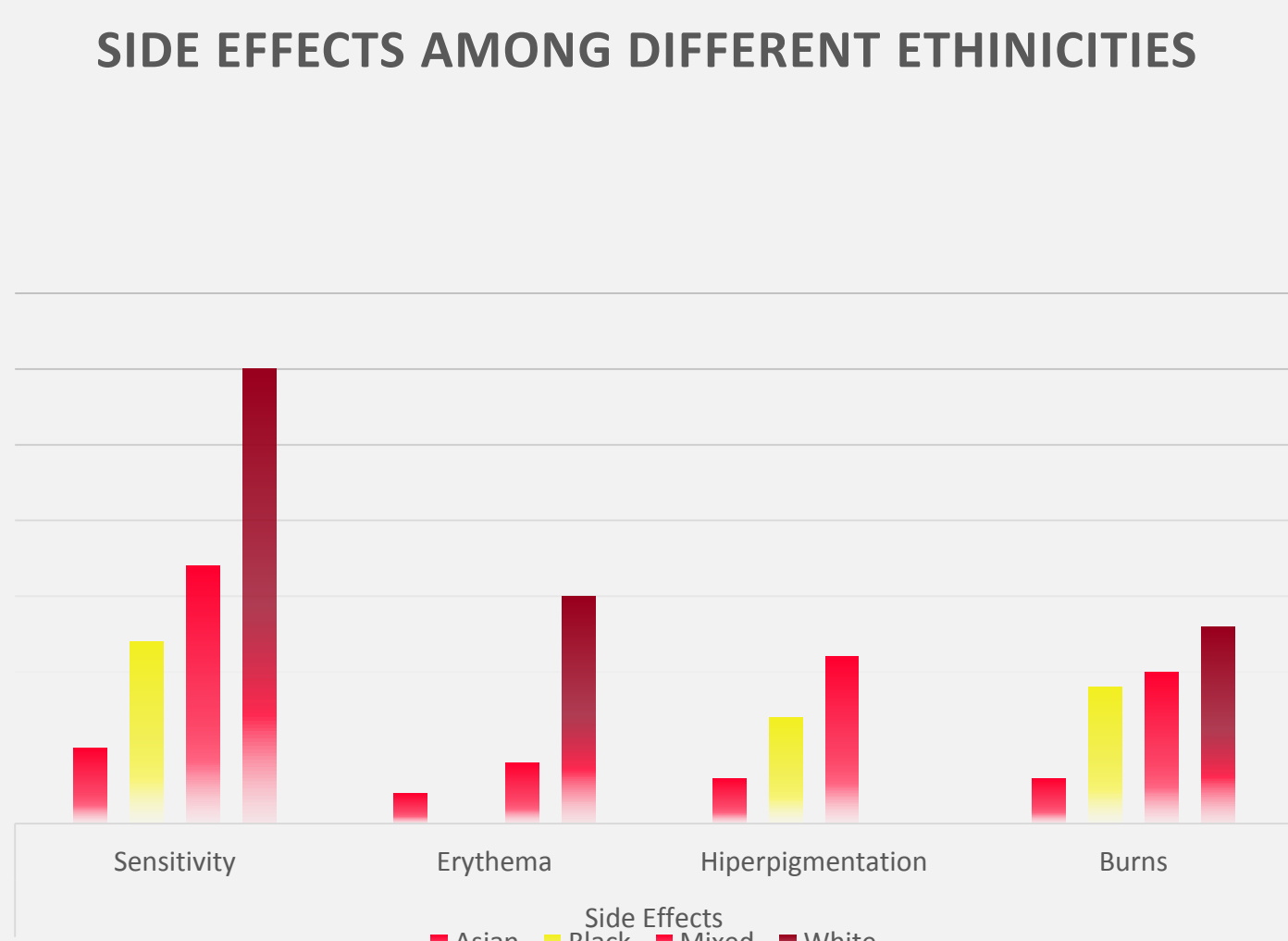
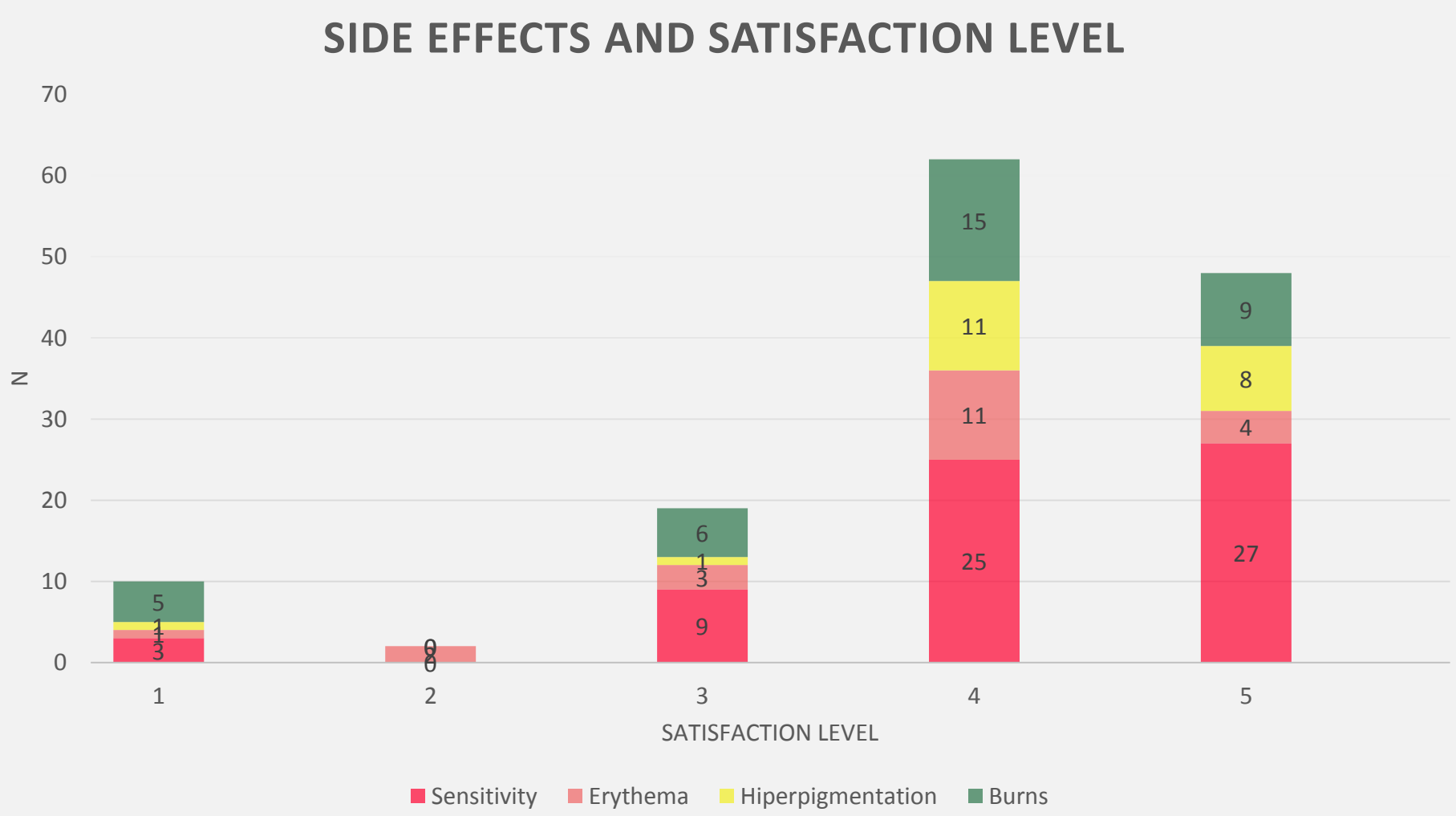
RESULTS:

The level of satisfaction after six treatments correlates with the objectively assessed percentage hair loss and side effects occurrence.

The level of satisfaction after six treatments correlates with ethnicity.

The occurrence of sensitivity, hyperpigmentation and burns depends statistically significantly on ethnicity. Ethnicity had no significant effect on the occurrence of erythema.

The subjective assessment of the hair loss percentage statistically significantly varies from the objective assessment.



The subjective and objective assessment of hair loss for patients with observed side effects was lower than with patients for whom these effects did not occur. The observed phenomenon was statistically insignificant in case of hyperpigmentation and erythema for subjective assessment, and insignificant in case of hyperpigmentation for objective assessment. No adverse skin reaction was observed.

Side effects occurrence and subjective hair loss percentage assessment								
Side effects	occurrence	n	Subjective hair loss percentage					
			mean	STD	Me	min	max	p
Sensitivity	no	151	85,4	13,3	90,0	20,0	99,0	p=0,011
	yes	64	80,2	15,0	85,0	20,0	99,0	
Erythema	no	194	84,2	14,2	90,0	20,0	99,0	NS
	yes	21	80,5	11,3	85,0	40,0	95,0	
Hyperpigmentation	no	194	84,4	13,5	85,5	20,0	99,0	NS
	yes	21	78,8	17,1	85,0	20,0	95,0	
Burns	no	180	85,8	10,9	90,0	20,0	99,0	p<0,001
	yes	35	73,9	21,8	85,0	20,0	95,0	

Side effects occurrence and objective hair loss percentage assessment								
Side effects	occurrence	n	Objective hair loss percentage					
			Mean	STD	Me	min	max	p
Sensitivity	no	147	89,9	8,9	91,0	22,0	100,0	p=0,004
	yes	61	86,0	7,9	88,0	70,0	100,0	
Erythema	no	188	89,2	8,9	91,0	22,0	100,0	p=0,022
	yes	20	84,5	6,7	85,0	72,0	94,0	
Hyperpigmentation	no	188	89,1	8,7	91,0	22,0	100,0	NS
	yes	20	85,2	9,1	88,0	70,0	98,0	
Burns	no	178	89,3	8,7	91,0	22,0	100,0	p=0,018
	yes	30	85,2	8,9	87,0	60,0	98,0	

CONCLUSIONS:

- Diode laser 805 nm hair removal is safe and effective for all skin types hair removal treatments.
- Hair removal results depend of the ethnicity of participants and is the highest among Asians.
- The objective assessment of hair loss percentage varies from subjective hair loss assessment and is significantly higher.
- The participant's satisfaction level correlates to the ethnicity, hair loss percentage assessment and side effects occurrence.
- The side effects occurrence affects the effectiveness of treatments in objective and subjective assessments of hair loss percentage.
- No adverse skin reactions was observed.

Recent Publications

A. Tremaine and M. Avram: FDA MAUDE data on complications with lasers, light sources, and energy-based devices., Lasers Surg Med., pp. 47(2):133-40., 2015.
P. Ormiga, C. Ishida, A. Boechat, E. Ramos and M. Silva: Comparison of the effect of diode laser versus intense pulsed light in axillary hair removal., Dermatol Surg., pp. 40(10):1061-9, 2014.
B. Koo, K. Ball, A. Tremaine and C. Zachary: A comparison of two 810 diode lasers for hair removal: low fluence, multiple pass versus a high fluence, single pass technique. Lasers Surg Med., pp. 46(4):270-4., 2014.

R.-H. Hayder, Z. S. Anmar and A. R. Zahra, Evaluation of Effectiveness of Diode Laser System (808 nm) versus Intense Pulse Light(IPL) in the Management of Unwanted Hair: A Split Face Comparative Study. International Journal of Medical Physic, International Journal of Medical Physics, Clinical Engineering, and Radiation Oncology, pp. 4, 41-48, 2015.
S. J. Jo, J. Kim, J. Ban, Y. Lee, O. Kwon and W. Koh: Efficacy and Safety of Hair Removal with a Long-Pulsed Diode Laser Depending on the Spot Size: A Randomized, Evaluators-Blinded, Left-Right Study., Ann Dermatol, pp. 27(5):517-22, 2015.



✉ izalesska@icloud.com



✉ magda.atta.motte@consultant.com