DECODING CONSUMER'S PERCEPTION OF SKIN GLOW AND CHARACTERIZATION OF DIVERSE WOMEN SKIN TONES AND TYPES ACROSS EMERGING MARKETS OVERVIEW OF THE METHODOLOGY

SC_298

Sajun, Mohammedali[1]*; Agrawal, Divya[1]; Kelkar, Rashmi[1]; Sirkek, Neha[1]; Khan, Shiraz Ali[1]; Farias, Juliana Battochio[2]; Mercurio, Daiane Garcia[2]; Clemente, Dáphine Antônia[2]; Miranda, Nickole[2]; Gichuri, Julia[3]; Sewraj, Poonam[3]; Ncube, Abigail[3]; Molamodi, Kwezikazi[3]; Muller, Benoit[4]; Flament, Frederic[4]

1. L'Oréal Research and Innovation, Mumbai, India 2. L'Oréal Research and Innovation, Rio de Janeiro, Brazil 3. L'Oréal Research and Innovation, Johannesburg, South Africa
4. L'Oréal Research and Innovation, Paris, France

1 INTRODUCTION

Glowing skin is an aspiration for women across the world. Across age groups there is a growing trend of glow seekers, and the use of various skin care products and routines are constantly evolving amongst these women. Emerging markets have a diverse population in terms of skin tones and types owing to their vast geographical differences. And with their growing aspirational skin care needs, there is a requirement to have a clear categorization of their skin tones and types while also decoding this diverse population's perception of glowing skin. This would help us cater to the specific needs of the consumers in these markets.

The pursuit of glowing skin however is complex since it relies mostly on the consumer's perception. This creates limitations in attempts to quantify glow or radiance since it includes physiological and psychological traits [3]. Coupled with consumer perception, digital image analysis and expert evaluations are required to quantify glow, where even tone and complexion are cited as the primary focus areas to achieve what is perceived by consumers as glowing skin [1,3]. To understand consumer's perception of glow and to quantify it using instrumental measurements a systematic review of available internal methods was done. Many of these were then deployed in a strategic understanding study across diverse population of 3 countries in emerging markets – Thailand, South Africa & Brazil, results of which are now being compiled.

2 MATERIALS AND METHODS

A multi-country hybrid consumer-instrumental study was conducted by recruiting women, across age groups and socio-economic backgrounds while also ensuring a good representation of skin tones and skin type diversity within each country. The key recruitment criteria was that these women were seekers of glowing skin and are users of skincare or photoprotection products. Consumers were probed to decode their perception of skin glow using subjective questionnaires having categorical scales and objective questionnaires having linear scales as well as group discussions. Later the sub representative - set of these consumers were participated in objective assessment using different instruments to capture data on skin attributes.

Instrument	Parameter	Area of measurements	Timepoint
Sebumeter	Skin sebum / Oil	Forehead, Body	CL, SER, T0, Timm
Corneometer	Skin Hydration	Cheek, Body	T0, Timm
Lightcam	Skin Shine	Forehead, Cheek, Body	T0, Timm
Spectrophotometer	Skin Color (L*, a*, b*, C*, h*, ΔE)	Forehead, Cheek, Jaw, Chin, Body	T0, Timm
Visia CR	Images (STD, CP, PP, UV)	Full face (Front, Left & Right)	T0, Timm
Head Scan	Images (STD,CP,PP)	Décolleté	T0, Timm

Table 1: *Instruments used to capture various attributes at different time points and areas across Face and Body*

The instrumental evaluation protocol was aligned across the 3 countries to ensure the same instruments locally available were used to capture skin parameters at a harmonized level. The consumers were recruited and called at a central locations in each country. After 30min acclimatization in standard conditions (temperature = 21 ± 1°C & RH = 45 ± 5%), baseline measurements were carried out. The consumers then followed their own routine which gives them the glow that they seek, and post that, same instrumental measurements were repeated to capture the effect produced. An exhaustive dataset of bare skin and post application skin instrumental measurements was created with the ambition to categorize the diverse skin tones into the Global Skin tone clusters [5] (Image 1) and types seen in Emerging markets along with the type of glow they like to achieve.

The last part of the study includes a correlation of consumer and instrumental outputs. Also, the Visia CR standard images from each of the country were analyzed using the fractal analysis to better characterize glow by considering the spatial heterogeneity of pixel intensities as well as color evenness. A simulated image library (nine images) from very dull to very bright was created using bare face images. These images will then be used to run a paired comparison using a digital tool in each of the country to understand the consumer likeability of glow [4]. The images from Visia CR were also further analyzed for skin texture and skin tone homogeneity to understand the instrumental shift in these parameters for consumers who achieve the glow they desire.

3 RESULTS & DISCUSSION

RESULTS

The investigations allowed us to understand the top characteristics presented on consumer's skin by following consumer qualitative and quantitative evaluation methodology (Table 2). Concerning the routine, this study was also important to understand their habits, the average of products presented on their routine as well as which routine is the most common during the morning, afternoon, and night.

	South Africa	Brazil	Thailand
Sample Size for Quantitative phase	131	1000	1000
Sample size for Qualitative phase	18	800	24
Sample size for Instrumental phase	101	166	100
Age groups	18-45	18-55	18-45
SEC/LSM	6-10 (LSM)	A/B/C1 (SEC)	A/B/C/D (SEC)
Fieldwork Timelines	October 2020 to February 2021		

Table 2: *Distribution of consumers across countries in different phases of evaluation*

We were also able to define the percentage of the population who seek different benefits from their skin care routine as well as a deep dive on consumers vocabulary around glow, the ideal glow type and what glow means to them. Each subject was her own control (comparison between before and after application). The measurements from the bare skin allowed us to objectively classify the skin type and to correlate the classification based the different assessment methods: casual level, secretion rate and self-perception. Finally, the measurements performed after the products application allowed us to understand what glow is from the instrumental point of view.

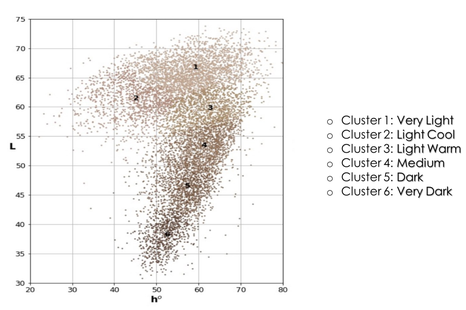

Image 1: *Global Skin tone Cluster [5]*

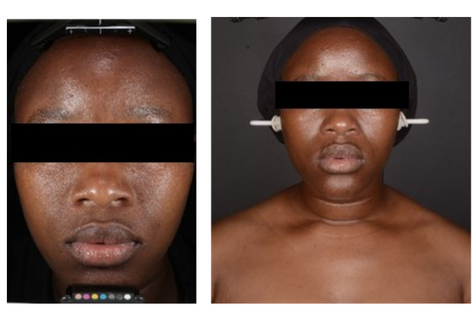

Image 2: *Images of women face taken on the Visia CR and body images taken using the head scan using the standard lighting mode*

DISCUSSION

This study helped with an understanding of consumers & their skincare routines across the emerging markets. The insights on their beauty regimes, type of effects they expect from a cosmetic product to deliver the end benefit, attributes related to facial glow will help us create suitable products for this evolved market. For the next steps, It will be important to decode if skin glow perception differs according to time of the day.

4 CONCLUSIONS

The methods used in the study can help answer to glow evaluation and product screening. This study can also help us to create products that can give the ideal glow expected by consumers. We now know about their bare skin color and type which is beneficial to design the suitable products & regimes. This understanding on glow perception and skin characterization can support product development, designing and claim substantiation.

L'ORÉAL
RESEARCH
& INNOVATION

References:

[1] Dlova NC, Hendricks NE, Martincgh BS. Skin-lightening creams used in Durban, South Africa. Int J Dermatol. 2012 Nov;51 Suppl 1:51-3, 56-9.
[2] Rootman C, Oosthuizen N, Mabuyana B. Selected product variables and consumer buying behaviour in the South African skin care industry. The Southern Africa Institute for Management Scientists Conference proceedings 2019; 444-462.
[3]Baret M, Bensimon N, Coronel S, Ventura S, Nicolas-Garcia S, Korichi R, Gazano G. Characterization and quantification of the skin radiance through new digital image analysis. Skin Res Technol. 2006 Nov;12(4):254-60.
[4] Morteza Haeri, Theresa Phamduy, Nina Cafone, Kubra Turkileri & Diane Velkov. Novel digital image analysis using fractal dimension for assessment of skin radiance.; wileyonlinelibrary.com/journal/srt
[5] Yue Qiao, Anke Hadasch, Mohammedali Sajun, et.al.; Developing the most inclusive and relevant liquid foundation ranges for multicultural consumers; The IFSCC Congress 2020 Yokohama