Defining Skin Glow: Global Consumer Insights and Clinical Testing Interpretation

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Abstract:

Background

The benefit of 'skin glow' is popular across all types of cosmetic products but no set standard or value for any clinical instrumentation techniques currently exists. The present study aimed to explore global consumer definitions of 'skin glow' and expectations for 'skin glow' product performance. In addition, we aimed to translate these insights from a clinical testing perspective.

Methods

Consumer Insights - qualitative discussions and in-depth interviews were conducted with global consumers to evidence interpretation of skin glow and cosmetic product expectations.

Clinical Investigation - global consumer insights were translated into a novel clinical testing approach to assess skin glow product performance.

Results

Consumer Insights - 'skin glow' was defined as a combination of attributes including shine, hydration, youthful and healthy-looking skin. Skin glow products should deliver an appropriate level of radiance to the skin, alongside an even looking skin tone and overall perception of skin-health.

Clinical Investigation - facial shine thresholds were established for a matte, glowy or oily skin appearance to allow assessment of cosmetic product performance.

Conclusion

Skin Glow is a very trendy term, yet not clearly defined. Qualitative discussion and in-depth interview insights evidenced consumer interpretation of skin glow. Light interaction with the skin was regarded as crucial and thus was the center of a clinical investigation to assess 'skin glow', achieving the optimum level of light reflection from the skin.

Keywords: Make-up, skin care, glow, radiance, skin health

Introduction:

'Skin glow' is a popular cosmetic benefit claimed across a variety of products, from traditional skincare to make-up and body care. Most often, the benefit of skin glow is linked to a hero hydrating ingredient, which facilitates the products' ability to reveal glowing, youthful looking skin. It is also synonymous with terms such as 'luminous', 'radiance' and 'brightening' to name but a few. Although the concept of skin glow has featured across the cosmetic industry for quite some time, skin-friendly/hybrid cosmetics are continuing to focus on glow in 2022, associated with phrases such as 'dewy' or 'glass-like' [1]. Gen-Z consumers are also chasing an 'ethereal' look inspired by social media trends and popular TV shows [2].

Despite skin glow having a strong foothold in the cosmetics industry, it is very much a subjective product benefit, meaning different things to different groups of consumers. Mintel acknowledged the variance of skin glow definitions in a 2021 report but base their current definition on an improvement in skin quality, including improved radiance, smaller pores, even skin tone, moisturisation, not dull/flaky and without hyperpigmentation [3]. In contrast, an article from C&T has expressed an alternative definition, pinning skin dryness as the main culprit preventing skin glow, with the need to strengthen the stratum corneum to

reduce TEWL at the forefront [2]. A consensus from 10 dermatologists/aesthetic physicians rather pointed out attributes related to light: radiance, luminosity, brightness, vibrancy and complexion [4]. When asked directly, consumers have traditionally suggested that lifestyle factors such as sleep and nutrition are also essential for skin glow and that perhaps a balance from 'within' is needed alongside external factors [5]. From a perception point of view, facial radiance was shown to positively influence attractiveness, especially when perceptible on both cheeks and T-zone [6]. What is clear, however, is that skin glow is intertwined with a variety of beauty concepts and a natural look.

Additionally, there is no set consensus on a method for clinical evaluation of glow/radiance, but rather a multitude of different approaches. From an expert scoring perspective, a multi-factor grading approach was developed a few years ago, including olive and light-pink balance, luminosity and brightness assessment [7]. Instrumental approaches have been focusing on a variety of principles: concomitant measurement of specular and diffuse reflectance, subsurface reflection and distribution of surface reflection [8], spatial distribution of specular pixels [9] and probes capturing the specular reflection from the skin [10].

In the present study, we aimed to explore global consumer definitions of 'skin glow' to understand regional differences in cosmetic product expectations when a skin glow claim is promised. We deep dived into relevant skin glow product types, ingredients, terminology and skin result ideals. In addition, we aimed to translate these global consumer insights into a clinical testing perspective, to deliver a relevant approach for evaluating skin glow product performance which could be applicable cross-category.

Materials and Methods:

Consumer Insight Study:

- Qualitative discussions were conducted with 179 women across 18 countries to explore consumer interpretation of skin glow and how this varies across different

global markets. This activity invited consumers to give spontaneous feedback on the concept of skin glow, by exploring what glowing skin looks like, cultural nuances and understanding associated language and terminology. In addition, we invited consumers to share websites, products and photos with us which they feel depict glowing skin and explored what is/isn't relevant to them in these scenarios. See

- Table I below for a breakdown of participants per country and age groups:

Table I - Breakdown of participants per country and age groups

Countries	Total sample per market	Age group				
		18-30	31-40	41-50	51+	(Blank)
Mexico	44	8	10	14	6	6
Indonesia	27	12	8	5		2
China	27	5	15	7		
United Kingdom	20	6	8	4	2	
India	16	7	6	3		
Portugal	12	4	3	3	2	
Sweden	5		1	1	3	
Turkey	4	2		2		
Czech Republic	3	1	1	1		
Colombia	3	2	1			
Romania	3	1	2			
Spain	3	2			1	
Nigeria	3		2		1	
Ireland	2		1		1	
Poland	2			2		
Chile	2		1		1	
Vietnam	2		1	1		
Peru	1			1		
Total	179	50	60	48	17	8

- In-depth interviews were also conducted with 4 consumers per key market (India, Indonesia, Mexico, China, UK), and 6 consumers in Russia to deep dive further into the importance of skin glow in these markets, ingredients associated with skin glow and explored future skin glow ideals.

<u>Clinical Study:</u>

- Preparation of blends with various refractive indexes

From a formulation perspective, different blends of raw materials were created to generate an incremental level of shine when applied on the skin. Raw materials were selected according to their refractive index; the higher the refractive index, the shiner the blend/product would be. Raw material selection was inspired by looking at competitors' products featuring glow claims substantiated clinically. The study of the product's INCI identified Glycerin and Polyglyceryl-3 Polyricinoleate to be selected and blended with water under various ratio (see Table II). This was to allow for gradual increase of light reflection, creating different finishes on skin, ranging from matte to oily.

Table II - Blends composition and refractive index

	Composition (%)					
	Baseline	Blend 1	Blend 2	Blend 3	Blend 4	Blend 5
Aqua		85	70	65	60	50
Polyglyceryl-3 Polyricinoleate				5	10	20
Glycerin		15	30	30	30	30
Theoretical Refractive Index		1.351	1.372	1.378	1.385	1.398
Scale	0	1	2	3	4	5

- Image acquisition & analysis of faces under various shine conditions

A panel of 8 women with skin type ranging from I to V were recruited in the Oriflame clinical facility (Bray, Ireland). Panellists were instructed to not apply any product the morning of the appointment and following an acclimatisation period of 20 min, a baseline front image was taken using the Visia CR (Canfield Scientific Inc., Fairfield, NJ, USA), under a standard White light mode Subsequent images of the panellists were collected when wearing the various blends (Table II) and a finished product (Table III), taking care to remove each products in between acquisition using wipes. Shine levels were quantified for each image on cheeks and forehead using an image analysis software (Image- Pro Plus 7, Media Cybernetics Inc., Rockville, MD, USA).

Table III – Characteristics of the finished product included in the clinical test

Formulation Type: Oil in water emulsion	**Main Visual Effect:** #nofilter effect, instantly blur uneven skin tones, smooth out skin texture and give skin a flawless, barely-there base
INCI: AQUA, C12-15 ALKYL BENZOATE, PROPYLENE GLYCOL, GLYCERIN, MICA, PROPANEDIOL, BIS-PEG-12 DIMETHICONE, BORON NITRIDE, SODIUM ACRYLATES COPOLYMER, PENTYLENE GLYCOL, LACTOCOCCUS FERMENT EXTRACT, LACTOBACILLUS/BRASSICA NIGRA SEED FERMENT EXTRACT, QUERCUS PETRAEA FRUIT EXTRACT, HYDROXYACETOPHENONE, LECITHIN, POLYACRYLATE CROSSPOLYMER-6, SYNTHETIC FLUORPHLOGOPITE, AMYLOPECTIN, CALCIUM LACTATE, TIN OXIDE, XANTHAN GUM, CITRIC ACID, DISODIUM EDTA, SODIUM BENZOATE, CI 77891, CI 77491	

- Images assessment by consumer from various markets

For each panellist, a gallery containing 7 images (baseline and 5 blends) was created. 82 participants from Russia, China, Mexico and Indonesia, evenly spread in various age brackets, were recruited and asked to establish which images look matte, glowy/radiant or shiny/oily. Questions in relation to glow (e.g. how would you describe glow? Is it associated with pigmentation?) were also asked.

- Statistics

Bar charts with standard deviation were used to plot the average shine levels for each image condition (Baseline, blend 1, etc.). Pearson correlations were used to identify the degree of association between the mean refractive index and facial shine measurements of the various blends. Answers from open ended questions were firstly pre-processed: tokenization, removal of stop words, stemming and synonym grouping. The resulting 19 qualitative variables were further analysed using correspondence analysis.

Results:

Global Consumer Insights Study:

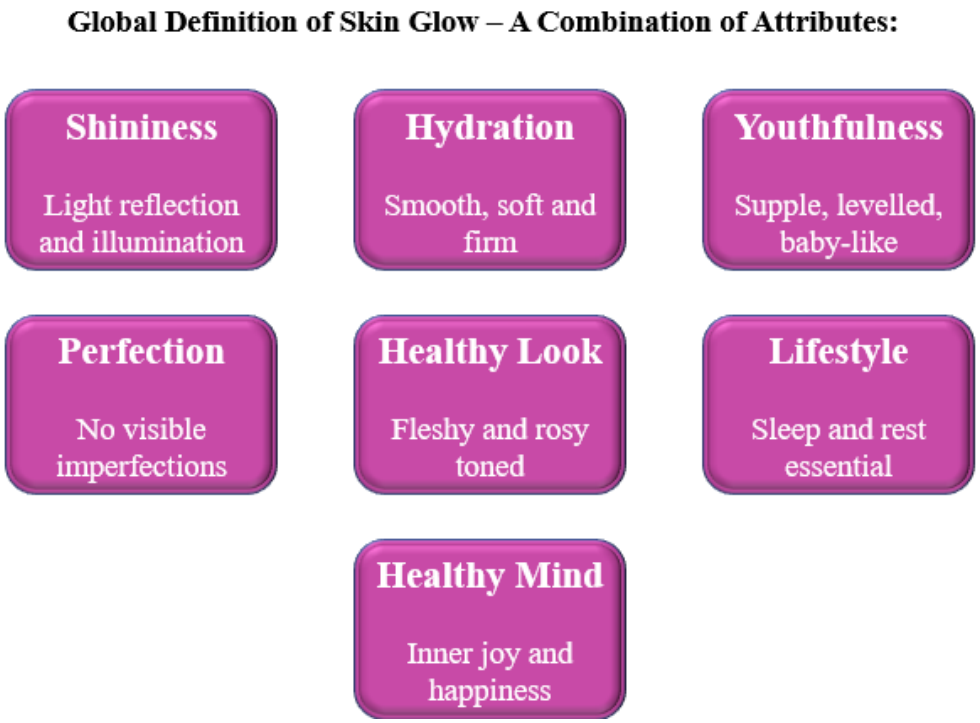

Figure 1 – Global Definition of Skin Glow

Across all markets, we can see that skin glow is defined by a combination of attributes, including the right level of shine (not oily), hydration, youthful, healthy and perfected looking skin. Consumers in India and Indonesia believe that skin unevenness., pigmentation and blemishes are significant inhibitors of skin glow, placing increased importance on perfected skin in these regions. Consumers in Mexico and China are more focused on a healthy body, mind and lifestyle when considering skin glow, favouring a more holistic, well-being approach. In contrast, consumers in the UK and Russia believe that skin glow can be created from the outside instantly with particular emphasis on make-up. However, looking good without make-up whilst accomplishing true health and well-being can be considered the ultimate consumer goal when it comes to skin glow.

Global Communication of Skin Glow:

Figure 2 - Global Communication of Skin Glow

Across all markets, the terms in Figure 2 above were most often associated with skin glow. Consumers felt that a 'skin glow' claim could be interchangeable with terms such as skin 'radiance' and 'brightness'. In Russia and China, however, it appeared that consumers had higher expectations of skin glow ideals, expecting skin to look more beautiful, more impactful and more energised immediately after product use. In China, consumers also associate the skin glow claim with fewer signs of pigmentation and a whiter/fairer complexion, despite a progressive shift away from whitening claims in some regions.

Figure 3 – Global Product Expectations for Skin Glow Claim

Cosmetic products promising to deliver a 'skin glow' effect were expected to deliver an appropriate level of luminosity/radiance to the skin (typically *via* hydration), alongside an even looking skin tone and overall perception of skin-health/youthfulness. In addition, some consumers expect skin glow products to reduce visibility of signs of ageing, particularly wrinkles, as well as improved skin softness. In relation to what product types are most appropriate for delivering skin glow, consumers feel that this can be divided by the desired results. For example, exfoliant products can be used to buff or peel away rough/dull skin for improved smoothness, whereas moisturisers or serums can be used to boost hydration with anti-ageing benefits.

Interestingly, consumers did display doubts regarding product safety, credibility and ingredient selection when it comes to skin glow products. Confusion was also evident when it comes to product usage and frequency. Natural ingredients such as Vitamin C were perceived to be safer and more effective, with concern surrounding ingredients that sound more 'chemical'. Additionally, as consumers have varying skin types and concerns when it comes to skin glow, personalised products were considered more trustworthy/believable versus a 'one size fits all' approach.

Clinical Investigation:

Following image analysis, a clear incremental shine effect was observed as blends with a gradual refractive index were applied to the skin. Shine measurements from image analysis were strongly correlated with the refractive index (Figure 4).

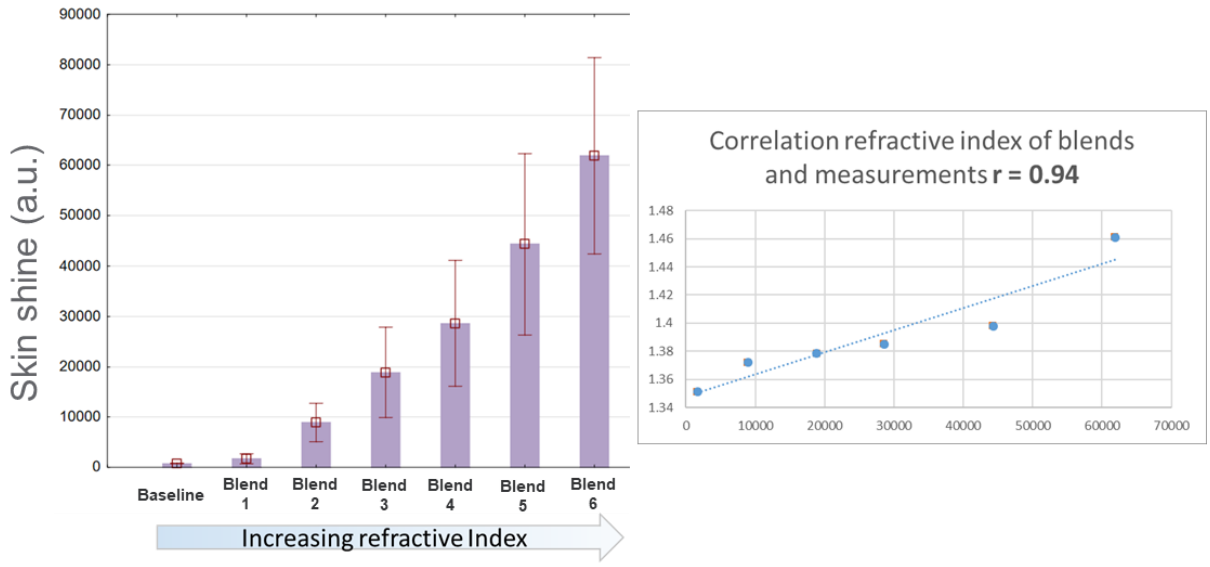

Figure 4 - Mean skin shine measured on both cheeks and forehead (Left) and correlation between refractive index versus mean shine measurements on the panel

When combining shine measurements from image analysis and their perception by participants from Russia, China, Mexico and Indonesia, it was possible to establish quantitative shine ranges for either a "Matte", "Glowy/Radiant" or an "Oily/Shiny" perception. The tested finished product did fall within the Glowy/Radiant, meaning that the shine imparted was visible enough while not being overwhelming and giving an undesirable perception of oily skin.

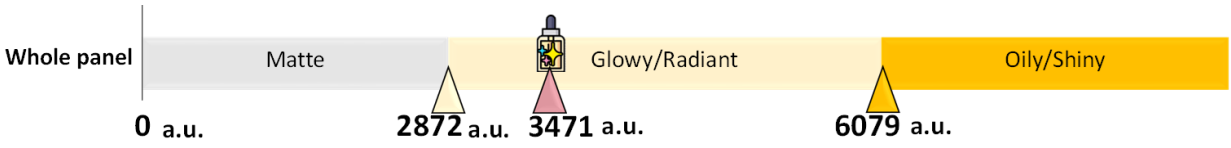

Figure 5 - Required shine ranges to elicit a Matte, Glowy/Radiant or Oily/Shiny perception among all participants, including the score of the finished product tested (pink cursor)

When separating the participants according to their country, some distinct patterns could be observed. Russia had the narrowest band for Glow and the lowest threshold of all countries to perceive a skin as oily. In contrast, China had the highest threshold for both noticing glow and an oily skin. Both Indonesia and Mexico displayed a dynamic range for a glowy/radiant skin but was more tolerant with regards to shine and oily appearance.

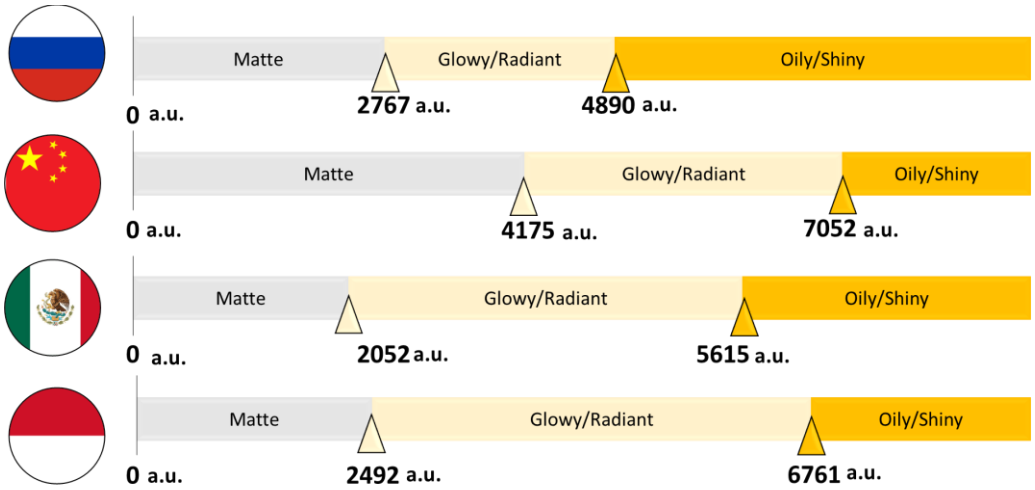

Figure 6 - Required shine ranges to elicit a Matte, Glowy/Radiant or Oily/Shiny perception among participants from Russia, China, Mexico and Indonesia

There was a clear distinction between the four countries when asking if there is any association between pigmentation and glow/radiance (Figure 7Figure 6). While there was a consensus for "Yes" in China and to a lower extent in Indonesia, Mexican participant were rather divided about this statement and Russians clearly ruled out the association.

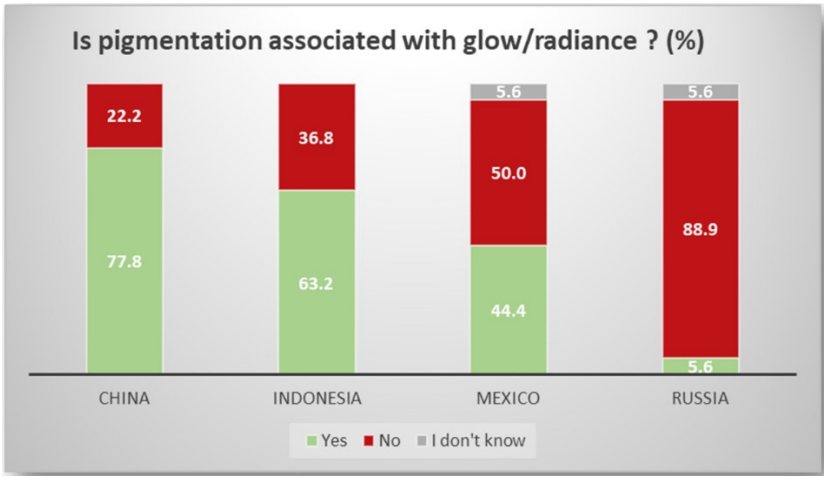

Figure 7 - Answers to the question "Is pigmentation asscoated with glow/radiance"

In terms of verbatim to spontaneously describe glow, there was shared attributes between countries such as “with light”, “glossy”, “healthy”, “hydrated” and “not oily”. There was, however, more exclusive terms (Figure 8) :

- “From inside” and “pink colour” for Russia
- “Whitening”, “Transparent” and “clear” for China
- “Natural” and “smooth” for Mexico
- “Bright”, “not dull”, “clean” and “soft” for Indonesia

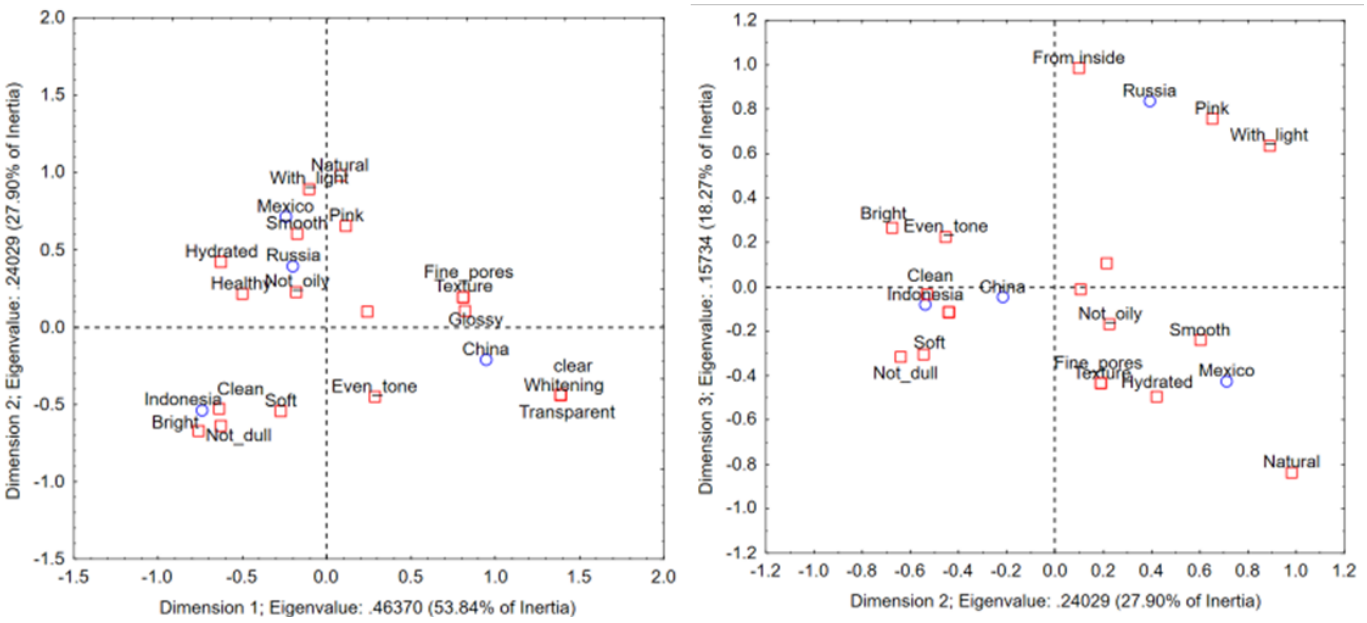

Figure 8 – Correspondence analysis maps of verbatim used to describe glow in China, Russia, Mexico and Indonesia

Discussion:

The present investigation, which combined consumer insights and clinical elements, allowed us to gain a more thorough understanding of skin glow, the different sensibilities of participants from various countries and a measuring approach based on global consumer perception.

Skin glow is a popular claim across the cosmetic industry and will continue to grow throughout 2022 and beyond. Consumer insights revealed that skin glow is achieved through a multitude of factors and not just one simple action. Shine and hydration were seen as critical

factors in determining skin glow, but lifestyle factors such as sleep, and happiness are equally important. In terms of specific skin attributes, pigmentation and other visible imperfections such as pores/roughness/dullness don't prevent skin glow but do lessen its impact. Nuances between skin glow perception in different regions is also visible, both in terms of verbatim used and thresholds for skin shine, thus presenting an opportunity for brands to tailor skin glow product development per region, if desired.

Despite the UK and Russia preferring make-up for an instant glow effect, skin glow is favored as a benefit to be achieved overtime, perhaps with a more robust skincare routine for more trustworthy and longer lasting results. Make-up can be used as more of a quick fix, but true glow from within takes more time to achieve. With consumers preferring personalised solutions for achieving skin glow, brands have an opportunity to optimise product design in a manner which will be more credible/trustworthy for consumers with different skin concerns.

A global gap exists regarding consumer understanding of skin glow. There is a fear of the unknown when it comes to ingredients which are not perceived as natural, and consumers are also increasingly worried about product safety and side effects. Thus, an opportunity exists for cosmetic brands to educate consumers when it comes to skin glow to help reassure and build consumer understanding. Through clear communication and ingredient explanations, brands can support consumers who feel uncertain in this territory and ultimately inspire sales of their products. This could also be tied to the shift away from whitening products in certain regions, offering alternative communication with similar skin ideals.

It is likely that other cosmetic categories will continue to explore the benefits of skin glow as we move forward in 2022, giving opportunity to translate this clinical approach further than just skincare/makeup [3]. An opportunity also exists to link skin glow closer to wellness products with a more holistic view rather than a singular product benefit.

Conclusion:

Skin glow can be considered the culmination of accomplishing true health and well-being, reflecting a healthy, balanced lifestyle alongside the use of skincare products for long term results. Skin glow can be defined as a combination of attributes including shine, hydration, youthful and perfect-looking skin. Lifestyle factors such as quality rest time and sleep are also essential for achieving skin glow on the outside from within.

Conflict of Interest Statement:

None.

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