

Adaptive Cosmetic Assessment Across Diverse Skin Phototypes: A Narrative Review with Professional Observational Evidence

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Abstract

The increasing diversity of skin phototypes, physiological skin characteristics, and aesthetic expectations has significantly increased the need for individualized cosmetic assessment in professional makeup practice. Although contemporary cosmetic science has introduced substantial advances in formulation technology and complexion products, practical cosmetic outcomes continue to depend largely on individual physiological characteristics rather than cosmetic products alone. Consequently, standardized makeup protocols frequently fail to achieve reproducible aesthetic results across heterogeneous client populations. This review integrates current scientific knowledge with professional observational evidence collected during routine aesthetic practice to present an adaptive approach to cosmetic assessment. Particular attention is devoted to the influence of Fitzpatrick skin phototypes, skin physiology, hydration status, barrier integrity, sebum production, pigmentation characteristics, undertone compatibility, and foundation behavior on cosmetic performance. To illustrate the practical application of individualized assessment, professional observations obtained from 1,728 cosmetic applications performed during a twelve-month period are discussed as observational evidence supporting adaptive cosmetic decision-making. Based on these observations and current literature, the Adaptive Cosmetic Assessment Framework is proposed as a structured professional model designed to support individualized skin evaluation, product selection, skin preparation, and continuous cosmetic assessment throughout the application process. Rather than replacing existing cosmetic science, the framework translates contemporary scientific knowledge into a reproducible methodology applicable in routine professional cosmetology. The proposed approach may contribute to improving cosmetic compatibility, foundation stability, aesthetic consistency, and professional education while providing a practical foundation for further research in personalized cosmetology and adaptive cosmetic science.

Keywords: adaptive cosmetic assessment; personalized cosmetology; Fitzpatrick skin phototypes; skin physiology; foundation performance; individualized cosmetic assessment.

Received: 6/1/2026

Accepted: 8/1/2026

Published: 8/10/2026

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1.Introduction

Contemporary aesthetic cosmetology has evolved far beyond traditional decorative makeup techniques. Modern professional practice requires simultaneous consideration of physiological skin characteristics, ethnic diversity, environmental influences, cosmetic formulation behavior, and individual aesthetic expectations. As professional makeup increasingly serves clients representing diverse Fitzpatrick skin phototypes and skin conditions, individualized cosmetic assessment has become an essential component of evidence-informed aesthetic practice rather than an optional preparatory procedure [2-4]. Although remarkable progress has been achieved in cosmetic formulation science, pigment technology, and long-wear foundation systems, routine professional experience demonstrates that identical cosmetic products frequently produce substantially different aesthetic outcomes when applied to individuals with different physiological characteristics. Skin hydration, transepidermal water balance, barrier integrity, sebum production, pigmentation patterns, surface texture, erythema, and undertone composition collectively influence product adhesion, oxidation, finish quality, and cosmetic longevity [5-11]. Consequently, cosmetic compatibility depends not only on foundation shade selection but also on comprehensive physiological assessment performed before product application.

Current scientific literature extensively describes individual aspects of cosmetic performance, including skin physiology, barrier function, formulation chemistry, pigmentation biology, and cosmetic ingredients. However, comparatively few publications integrate these variables into a unified professional assessment strategy applicable during everyday cosmetic practice. Most investigations evaluate isolated mechanisms under laboratory conditions, whereas routine professional observations simultaneously involve multiple interacting variables that influence cosmetic performance in real-world settings. Professional cosmetic practice therefore represents an important source of observational evidence. Continuous interaction with heterogeneous client populations enables practitioners to recognize recurring patterns linking physiological skin characteristics with cosmetic compatibility, product behavior, and aesthetic outcomes. Although such observations should not be interpreted as clinical evidence, they provide valuable practical information that complements existing cosmetic science and contributes to evidence-informed professional decision-making [3,4,18,19].

The present review combines contemporary scientific literature with professional observational evidence obtained during 1,728 cosmetic applications performed over a twelve-month period. Rather than presenting these observations as experimental clinical data, they are incorporated as illustrative professional evidence demonstrating how individualized physiological assessment can improve cosmetic compatibility and support reproducible aesthetic outcomes across diverse client populations. The aim of this review is to synthesize current knowledge regarding physiological factors influencing cosmetic performance and to present the Adaptive Cosmetic Assessment Framework—a structured professional approach integrating Fitzpatrick skin phototype classification, individualized skin assessment, adaptive skin preparation, product selection, and continuous professional evaluation into a coherent methodology supporting personalized cosmetic decision-making.

2.Physiological Factors Influencing Cosmetic Performance

Successful cosmetic application is determined by a complex interaction of physiological, anatomical, and

environmental variables that influence product compatibility after contact with the skin. Although decorative cosmetics are often selected according to visible skin color, contemporary cosmetic science demonstrates that aesthetic performance depends on considerably broader physiological mechanisms involving epidermal hydration, barrier integrity, sebum production, pigmentation characteristics, surface microrelief, vascular reactivity, and individual biochemical variability [4–9]. From a professional perspective, cosmetic compatibility should therefore be considered a dynamic interaction between the cosmetic formulation and the biological characteristics of the skin rather than a simple process of foundation shade matching. Variations in physiological skin condition directly affect product adhesion, oxidation behavior, pigment stability, wear resistance, and the overall visual appearance of the completed makeup.

2.1 Fitzpatrick Skin Phototypes and Cosmetic Adaptation

The Fitzpatrick Skin Phototype Classification remains one of the most widely accepted systems for evaluating cutaneous response to ultraviolet radiation and pigmentation characteristics [1,12]. Although originally developed for dermatological purposes, the classification has become increasingly relevant in professional cosmetology because melanin distribution, erythema susceptibility, and pigmentation intensity substantially influence cosmetic product behavior. Professional cosmetic assessment should therefore consider Fitzpatrick phototype as one component of a broader individualized evaluation rather than an isolated determinant of product selection. Clients sharing identical phototypes frequently demonstrate markedly different physiological characteristics, hydration levels, barrier conditions, and undertone compositions that require different cosmetic strategies despite similar visible complexion.

During routine professional observations incorporated into the present review, Fitzpatrick phototypes I and II represented the largest proportion of the observed population, whereas phototypes III–VI provided additional diversity illustrating the necessity of adaptive cosmetic protocols capable of accommodating multiple pigmentation profiles. These observations further support recommendations that professional assessment should integrate physiological evaluation with phototype classification rather than relying exclusively on visible skin color. Figure 1 illustrates the distribution of Fitzpatrick skin phototypes observed during routine professional practice.

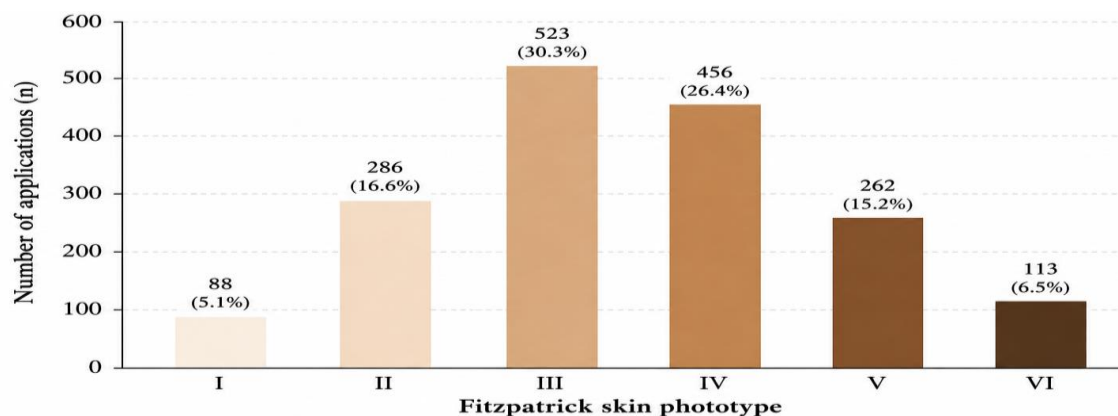


Figure 1: Distribution of Fitzpatrick skin phototypes among 1,728 professional cosmetic applications

2.2 Physiological Skin Characteristics as Determinants of Cosmetic Compatibility

Current literature consistently indicates that physiological skin condition exerts a greater influence on cosmetic performance than complexion alone [5-11]. Hydration status affects foundation flexibility and pigment dispersion, while barrier integrity determines product adhesion and the stability of decorative formulations throughout wear.

Professional observations demonstrated that dry skin was frequently associated with enhanced visibility of surface texture, localized product accumulation, and reduced foundation uniformity. In contrast, increased sebum production contributed to accelerated cosmetic oxidation, surface shine, pigment migration, and reduced product longevity. Sensitive skin often required simplified preparation protocols emphasizing preservation of barrier function, whereas combination skin required regional adaptation of cosmetic techniques because different facial areas exhibited distinct physiological behaviors. These observations support contemporary recommendations advocating individualized skin assessment before cosmetic application rather than universal preparation protocols. Evaluation of physiological characteristics before product selection allows professional adaptation of cosmetic formulations, application techniques, and skin preparation according to the specific needs of each client. Figure 2 presents the distribution of predominant physiological skin characteristics identified within the observational population.

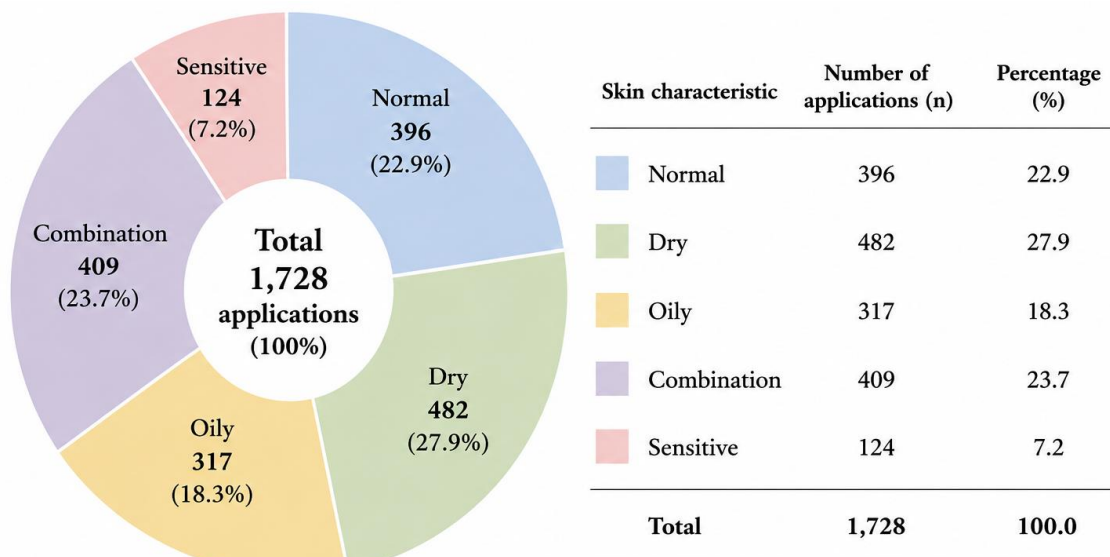


Figure 2: Distribution of predominant physiological skin characteristics observed during routine professional cosmetic practice

2.3 Skin Preparation as the Foundation of Cosmetic Performance

Professional skin preparation represents one of the most influential stages of cosmetic application because it establishes the physiological conditions under which decorative products subsequently interact with the epidermis. Despite advances in formulation technology, inappropriate preparation frequently limits cosmetic performance even when technically appropriate products are selected.

Current evidence emphasizes that preparation protocols should not be standardized for every client. Instead, hydration optimization, barrier support, and physiological adaptation should be individualized according to the observed characteristics of the skin. Such an approach improves product compatibility while reducing visible texture irregularities, excessive oil breakthrough, localized dehydration, and premature cosmetic deterioration.

Professional observations collected during routine practice illustrated these tendencies. Adaptive preparation protocols were associated with visibly improved cosmetic integration among clients presenting with dry skin, while barrier-conscious preparation contributed to improved cosmetic balance in individuals with increased sebum production. Importantly, these observations should be interpreted as professional cosmetic outcomes rather than therapeutic effects, emphasizing optimization of cosmetic appearance instead of clinical treatment.

Collectively, both the scientific literature and professional observational evidence indicate that skin preparation should be regarded as an integral component of individualized cosmetic assessment rather than a routine preliminary procedure performed identically for all clients [7-11,16,17]

3.Adaptive Cosmetic Assessment In Professional Practice

Although contemporary cosmetic science provides extensive information regarding skin physiology and cosmetic formulations, professional practitioners must integrate numerous variables simultaneously during routine consultations. Cosmetic decisions are rarely based on a single physiological characteristic. Instead, practitioners evaluate the interaction between skin phototype, hydration status, barrier integrity, sebum production, pigmentation, undertone, anticipated wear conditions, environmental exposure, and the client's aesthetic expectations before selecting cosmetic products.

Routine professional practice therefore requires a flexible assessment strategy capable of adapting cosmetic decisions to the physiological characteristics of each individual rather than applying standardized cosmetic protocols. Such an adaptive approach reduces the likelihood of cosmetic incompatibility while improving product stability and aesthetic consistency throughout professional wear.

Unlike laboratory investigations performed under controlled experimental conditions, everyday cosmetic consultations expose practitioners to highly heterogeneous populations in which multiple physiological variables interact simultaneously. These observations provide valuable practical evidence that complements controlled scientific investigations and contributes to evidence-informed cosmetic decision-making [18-22].

3.1Professional Observational Evidence

To illustrate the practical application of individualized cosmetic assessment, professional observations collected during routine aesthetic practice over a continuous twelve-month period were analyzed descriptively.

During this period, 1,728 professional cosmetic applications were completed. Among these clients, 1,500 individuals (86.8%) returned for subsequent professional services, allowing repeated observation of cosmetic compatibility following individualized product selection and adaptive skin preparation. Although these

observations do not constitute experimental clinical evidence, they provide an important illustration of recurring professional tendencies observed under authentic cosmetic practice conditions.

The observational population represented considerable physiological diversity. Fitzpatrick phototypes I and II accounted for the largest proportion of professional consultations, whereas phototypes III–VI contributed additional variation that demonstrated the necessity of individualized cosmetic adaptation across different pigmentation profiles.

Similarly, physiological skin characteristics varied substantially throughout the observed population. Normal skin represented the most frequently encountered condition, followed by dry, oily, sensitive, and combination skin. This diversity emphasized that successful cosmetic application depends on individualized physiological assessment rather than reliance on complexion alone.

3.2Recurring Professional Observations

Repeated professional observations demonstrated that several cosmetic compatibility challenges occurred consistently regardless of the cosmetic brand or specific foundation formulation selected.

The most frequently encountered observations included uneven foundation integration associated with physiological skin characteristics; visible undertone incompatibility despite acceptable shade selection; accelerated cosmetic oxidation in clients presenting with increased sebum production; reduced product flexibility on dehydrated skin; localized product accumulation over compromised barrier regions; and a visually inconsistent complexion finish resulting from inappropriate skin preparation.

Importantly, these cosmetic challenges frequently occurred simultaneously. Professional assessment therefore required simultaneous evaluation of multiple physiological characteristics rather than isolated correction of individual cosmetic imperfections.

These recurring observations further support the concept that successful cosmetic performance depends primarily on comprehensive physiological assessment performed before product selection.

3.4Illustrative Outcomes of Adaptive Cosmetic Assessment

Professional observations further suggested that individualized cosmetic preparation contributed to improved cosmetic compatibility across diverse physiological skin conditions.

Among clients presenting with dry skin, individualized hydration-oriented preparation was associated with visibly improved foundation integration in approximately **25%** of observed applications. Adaptive preparation protocols for clients with increased sebum production contributed to visibly improved cosmetic balance in approximately **16%** of cases during routine professional wear.

Professional observations also indicated improved cosmetic longevity following individualized product selection

based on physiological assessment. Approximately **41%** of cosmetic applications demonstrated prolonged foundation stability after adaptive product selection compared with previous consultations performed before implementation of the individualized assessment approach.

Furthermore, incorporation of barrier-supportive preparation together with SPF-compatible cosmetic protocols contributed to approximately 50% improvement in the visual masking of pigmentation among clients presenting with dry or combination skin. These observations describe cosmetic appearance under professional makeup conditions and should not be interpreted as therapeutic improvement of the underlying skin condition.

Collectively, these recurring observations support the practical value of individualized cosmetic assessment while illustrating how physiological evaluation may improve cosmetic compatibility under routine professional conditions.

3.5 Practical Implications for Contemporary Cosmetology

The integration of current cosmetic science with systematic professional observation suggests that individualized assessment should become a routine component of contemporary cosmetology. Rather than emphasizing cosmetic products as the principal determinant of successful makeup application, professional decision-making should prioritize physiological evaluation before formulation selection.

Such an approach may improve consistency of cosmetic outcomes, facilitate professional education, support evidence-informed product selection, and promote standardized decision-making while preserving sufficient flexibility for individualized client care.

The recurring observations presented in this review served as the practical basis for developing the Adaptive Cosmetic Assessment Framework, described in the following section.

4. Adaptive Cosmetic Assessment Framework

Analysis of contemporary cosmetic literature together with repeated professional observations demonstrates that successful makeup application should be approached as a structured decision-making process rather than a sequence of isolated technical procedures. Individual physiological characteristics continuously interact with cosmetic formulations throughout application and wear, requiring adaptive professional judgment at every stage of the cosmetic procedure.

Based on this integration of scientific evidence and professional observations, the Adaptive Cosmetic Assessment Framework (ACAF) is proposed as a structured professional methodology supporting individualized cosmetic assessment before, during, and after makeup application. The framework does not replace existing cosmetic science; instead, it provides a practical organizational model that translates scientific knowledge into routine professional decision-making [3,4,18,19]. Unlike traditional makeup protocols, which frequently emphasize product selection according to visible complexion alone, the proposed framework begins with comprehensive physiological assessment and continues through adaptive preparation, individualized formulation selection,

continuous evaluation during application, and post-application quality assessment. Each stage contributes additional information supporting subsequent professional decisions and improving cosmetic compatibility.

The framework consists of four sequential but interconnected stages that together create a continuous adaptive assessment cycle (Figure 3).

Stage 1. Comprehensive Skin Assessment

Professional assessment begins before any cosmetic product is selected.

Evaluation includes:

- Fitzpatrick skin phototype;
- physiological skin type;
- hydration status;
- barrier integrity;
- sebum production;
- pigmentation characteristics;
- erythema or visible sensitivity;
- undertone identification;
- expected environmental conditions;
- anticipated duration of cosmetic wear.

Professional observations repeatedly demonstrated that omission of this assessment frequently resulted in reduced cosmetic compatibility despite technically correct foundation shade selection. These findings emphasize that physiological evaluation represents the principal determinant of individualized cosmetic planning.

Stage 2. Adaptive Skin Preparation

Following physiological evaluation, preparation protocols are individualized according to the observed characteristics of each client rather than standardized across all cosmetic applications.

Adaptive preparation may include:

- hydration-oriented protocols for dehydrated skin;
- barrier-supportive preparation for sensitive skin;
- oil-balancing strategies for increased sebum production;
- localized preparation for combination skin;
- pigmentation-conscious preparation before complexion correction.

Professional observations collected during routine practice demonstrated that individualized preparation improved cosmetic integration in approximately 25% of clients presenting with dry skin while visibly improving cosmetic

balance among approximately 16% of clients with increased sebum production. These observations illustrate the importance of physiological preparation in optimizing cosmetic performance.

Stage 3. Individualized Product Selection

Selection of cosmetic formulations is guided by the combined physiological profile identified during assessment rather than by visible skin color alone.

Professional decision-making considers:

- formulation composition;
- finish characteristics;
- hydration compatibility;
- oxidation tendency;
- pigmentation intensity;
- expected wear duration;
- environmental exposure;
- compatibility between skin physiology and cosmetic formulation.

Professional observations indicated that individualized formulation selection contributed to improved foundation stability in approximately 41% of observed cosmetic applications. Furthermore, adaptive preparation protocols incorporating SPF-compatible products were associated with approximately 50% improvement in the visual masking of pigmentation among clients presenting with dry and combination skin. These observations describe cosmetic appearance achieved under professional makeup conditions and should not be interpreted as therapeutic effects.

Stage 4. Continuous Professional Evaluation

The final stage recognizes cosmetic application as a dynamic process requiring continuous reassessment rather than completion after product placement.

Throughout application, professional evaluation focuses on:

- product integration;
- oxidation behavior;
- texture compatibility;
- barrier response;
- complexion uniformity;
- aesthetic harmony;
- foundation stability.

Continuous assessment allows immediate adaptation of cosmetic techniques whenever incompatibility becomes

evident during the application process. This dynamic approach improves consistency while preserving sufficient flexibility to accommodate individual physiological variation.

Consequently, cosmetic assessment becomes a continuous professional process extending from the initial consultation through final aesthetic evaluation rather than a single preparatory procedure.



Figure 3: Adaptive Cosmetic Assessment Framework illustrating the continuous relationship between physiological assessment, adaptive skin preparation, individualized product selection, cosmetic application, and post-application evaluation. Source: own elaboration

Integration into Professional Education

Beyond routine cosmetic practice, the proposed framework has potential educational value. Contemporary training programs frequently emphasize technical makeup application and color harmony, whereas comparatively limited attention is devoted to structured physiological assessment before product selection.

Incorporating adaptive assessment algorithms into cosmetology education may improve professional decision-making, reduce common cosmetic incompatibilities, and promote greater consistency among students and practicing professionals. Because the framework integrates current scientific evidence with reproducible professional observations, it may also serve as a practical educational tool supporting evidence-informed cosmetic practice.

5. Discussion

The present review demonstrates that individualized cosmetic assessment has become an increasingly important component of contemporary aesthetic cosmetology. Although numerous publications have investigated isolated aspects of skin physiology, cosmetic formulations, pigmentation biology, and barrier function, comparatively few studies have attempted to integrate these variables into a unified professional decision-making approach applicable during routine cosmetic practice.

The literature consistently indicates that successful cosmetic performance depends on considerably more than foundation shade selection alone. Physiological factors—including epidermal hydration, barrier integrity, sebum production, pigmentation characteristics, surface texture, and undertone composition—collectively determine cosmetic compatibility, product stability, oxidation behavior, and overall aesthetic appearance. Consequently,

professional cosmetic assessment should be regarded as a multidimensional analytical process rather than a purely technical procedure [2-16,18-20].

Previous studies have primarily examined individual determinants of cosmetic performance. Research on skin hydration and barrier function has demonstrated that epidermal water balance, transepidermal water loss, and stratum corneum integrity influence surface smoothness, flexibility, and product interaction [5,7-11,16,17]. Other investigations have emphasized the relevance of pigmentation, skin color variation, undertone characteristics, and objective skin-color assessment for cosmetic foundation selection [1,12,14,20,21]. Studies addressing cosmetic formulations and personalized skincare have also supported the need for individualized product selection based on physiological skin characteristics rather than visible complexion alone [3,4,6,18,19]. However, these areas are often discussed separately, and limited attention has been given to their simultaneous application during routine professional cosmetic practice.

An important contribution of the present review is therefore the integration of published scientific evidence with extensive professional observational experience accumulated during routine aesthetic practice. Professional observations obtained from 1,728 cosmetic applications illustrated recurring practical tendencies that were consistent with contemporary scientific understanding of skin physiology and cosmetic formulation behavior. Although these observations do not constitute experimental clinical evidence, they provide valuable practical insight into the everyday challenges encountered by professional cosmetologists working with heterogeneous client populations.

The professional observations also clarify how several physiological variables may interact during a single cosmetic application. For example, dehydration may increase the visibility of surface texture and reduce foundation flexibility, while compromised barrier function may contribute to localized product accumulation and uneven integration. Increased sebum production may simultaneously accelerate oxidation, surface shine, and pigment migration. These combined effects help explain why correction of only one variable, such as foundation shade, may be insufficient to achieve stable and visually consistent results. The findings therefore support a comprehensive assessment model in which hydration, barrier condition, sebum production, pigmentation, undertone, and expected wear conditions are evaluated together before product selection.

One of the most consistent professional observations concerned the influence of individualized skin preparation on cosmetic compatibility. Scientific literature has repeatedly emphasized the importance of maintaining epidermal hydration and preserving barrier integrity before cosmetic application [7-11,16,17]. Professional observations described in this review support these concepts by demonstrating that adaptive preparation strategies may improve cosmetic integration, reduce visible texture irregularities, and enhance foundation stability without increasing product coverage. The approximately 25% improvement observed among clients with dry skin should therefore be interpreted as a practical cosmetic outcome associated with improved surface preparation rather than as evidence of therapeutic skin change.

Similarly, recurring observations concerning cosmetic longevity suggest that physiological compatibility between the skin and cosmetic formulation may exert greater influence on long-wear performance than foundation

selection based exclusively on visible complexion. Individualized product selection following comprehensive physiological assessment was associated with improved cosmetic stability in approximately 41% of observed applications. This finding supports previous work emphasizing the relationship between skin physiology and formulation performance [3,18,20], while also illustrating how such scientific knowledge may be translated into routine professional decision-making.

The observed improvement in pigmentation masking among clients with dry and combination skin further indicates that visual correction may depend on preparation quality and formulation compatibility rather than product thickness alone. Barrier-supportive preparation and SPF-compatible cosmetic protocols may improve surface uniformity and pigment distribution, thereby allowing more even complexion correction without excessive coverage. This interpretation is consistent with previous studies concerning skin color variation, pigmentation assessment, hydration, and cosmetic foundation behavior [12,14,15,20,21]. However, the result should be understood as an improvement in visual masking under professional makeup conditions, not as a reduction in the underlying pigmentation itself.

The proposed Adaptive Cosmetic Assessment Framework extends previous knowledge by organizing these physiological determinants into a practical professional workflow. Rather than replacing established dermatological classifications or cosmetic science, the framework integrates them into a structured sequence of physiological assessment, adaptive preparation, individualized product selection, continuous application monitoring, and post-application evaluation. Its principal value lies in translating separate areas of scientific knowledge into a reproducible professional decision-making process applicable during routine cosmetic consultations.

Another important aspect highlighted by the present review concerns professional education. Current cosmetology training frequently emphasizes technical application skills, color harmony, and decorative techniques. However, considerably less attention is devoted to structured physiological assessment preceding cosmetic application. Integration of adaptive assessment strategies into educational curricula may improve analytical thinking, facilitate individualized product selection, and reduce recurrent cosmetic incompatibilities encountered by inexperienced practitioners. The framework may therefore serve not only as a practical consultation model but also as an educational structure for teaching evidence-informed cosmetic decision-making.

The proposed framework may provide practical value for professional cosmetologists by supporting more systematic cosmetic consultations, individualized product selection, and reproducible application protocols. In addition to routine salon practice, the framework may also serve as an educational model for cosmetology training and continuing professional education.

6.Study Limitations

Several limitations should be acknowledged. The professional observations presented in this review were collected during routine aesthetic practice and therefore represent descriptive observational evidence rather than controlled clinical experimentation. Cosmetic outcomes were evaluated through standardized professional

assessment without instrumental dermatological measurements, blinded assessment, randomized comparison, or formal statistical modeling. Consequently, the observations should be interpreted as illustrative examples supporting practical professional decision-making rather than as evidence establishing causal physiological relationships.

The observational data were obtained within a single professional practice context and may therefore reflect the characteristics of the specific client population, practitioner experience, cosmetic products, environmental conditions, and consultation methods used during the observation period. The unequal distribution of Fitzpatrick skin phototypes and age groups may also limit the generalizability of the findings to broader populations. In addition, some clients returned for repeated services, meaning that the 1,728 cosmetic applications do not necessarily represent 1,728 completely independent individuals.

The reported improvements in hydration appearance, cosmetic balance, pigmentation masking, and foundation longevity were based on professional visual evaluation rather than validated instrumental measurements. No corneometry, sebumetry, transepidermal water loss assessment, standardized colorimetry, digital image analysis, or controlled wear-testing system was used. Therefore, the reported percentages should be interpreted as descriptive professional observations rather than objective clinical effect estimates.

Future investigations should expand the current knowledge by incorporating multicenter observational datasets, objective biophysical skin measurements, digital image analysis, standardized cosmetic outcome assessment, and clearly defined comparison groups. Comparative evaluation across different geographic regions, age groups, skin phototypes, and ethnically diverse populations may further validate adaptive cosmetic assessment strategies while contributing to the development of evidence-based personalized cosmetology. Overall, the present review supports the concept that contemporary cosmetic practice should increasingly integrate scientific evidence with structured professional assessment. Such an interdisciplinary approach may improve reproducibility of cosmetic outcomes while promoting individualized aesthetic care adapted to the physiological diversity of modern client populations.

7.Summary

The present review summarizes current scientific knowledge regarding physiological factors influencing cosmetic performance while integrating professional observational evidence obtained during routine aesthetic practice. Contemporary literature consistently demonstrates that successful cosmetic application depends on the interaction of multiple physiological variables, including skin hydration, barrier integrity, pigmentation characteristics, sebum production, undertone compatibility, and cosmetic formulation behavior. Professional observations obtained from 1,728 cosmetic applications further illustrate the practical importance of individualized physiological assessment before cosmetic product selection. These observations support the concept that adaptive preparation strategies and personalized formulation selection may improve cosmetic compatibility, foundation stability, visual harmony, and overall aesthetic consistency under routine professional conditions.

Based on the integration of scientific evidence and professional practice, the Adaptive Cosmetic Assessment

Framework is proposed as a structured methodology supporting individualized cosmetic decision-making. The framework provides a practical model for professional cosmetology, educational programs, and future research aimed at advancing evidence-informed personalized cosmetic care.

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