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Challenge of Aesthetic's Toll: A Review of Biosemiotics Perspective

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Abstract: *The concept of beauty has been analysed from various perspectives, including biosemiotics, cultural standards, media influence, historical contexts, and philosophical theories. While some studies emphasise the subjective nature of beauty as a cognitive construct or product of cultural and media influences, others point to the possibility of objective standards such as symmetry and proportion, which may underlie our perceptions of beauty. This study aims to explore the concept of beauty from multidisciplinary perspectives, highlighting the complexity and multidimensionality of aesthetic experiences. Beauty is a fundamental aspect of human life that influences behaviour and societal expectations. Cultural standards of beauty are complex constructs influenced by a variety of sociocultural and digital factors. To comprehensively understand the cultural standards of beauty, it is essential to examine the interplay of these factors and their influence on perceptions of beauty. These standards are not static and can vary significantly across different cultural and ethnic backgrounds, as well as between genders and age groups. The social impact of beauty standards, including their role in advertising and their potential to break these standards, is a significant area of discussion. Social media platforms are widely recognised as powerful influencers in shaping beauty ideals, often promoting unattainable standards. These platforms not only distribute but also create beauty trends, with content creators playing a crucial role in their dissemination. Further research is needed to investigate the psychological and emotional alterations in patients who remain perpetually dissatisfied with their physical appearance, regardless of the number of aesthetic interventions they undergo.*

Keywords: *beauty concept; biosemiotics; cultural standards; media influence; body dysmorphic disorder.*

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1. Introduction

This study examines the concept of beauty from various disciplinary perspectives, emphasising the intricate and multifaceted nature of aesthetic experiences.

The concept of beauty has been a topic of interest to researchers across various disciplines for centuries. Understanding diverse perspectives and interpretations of beauty is crucial for fostering cross-cultural communication and appreciation. Exposure to different cultural expressions of beauty can broaden our understanding and enhance respect for varied human experiences. Previous research in biosemiotics, cultural studies, media analysis, historical examination, and philosophical inquiry has yielded valuable insights into the nature of beauty (Figure 1).

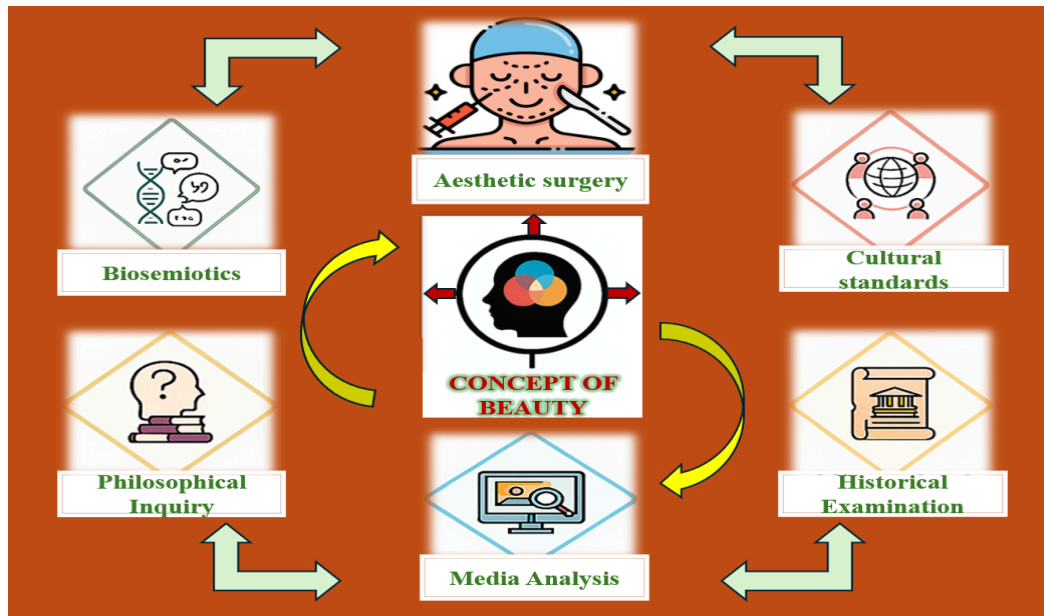


Figure 1. *Interdisciplinary Approaches to the Concept of Beauty*

The perception of beauty extends beyond a mere subjective experience; it is fundamentally anchored in specific neural processes that synthesise sensory input, emotional resonance, and cognitive evaluation. Neuroaesthetics, a discipline situated at the confluence of neuroscience and aesthetics, has identified consistent patterns of brain activation when individuals encounter stimuli they perceive as beautiful.

2. Biosemiotics

Biosemiotics and beauty is an interdisciplinary field that merges biology with semiotics, examining sign processes or semiosis within living systems. It extends the concept of semiosis beyond human communication to include all life forms, from single cells to complex organisms—suggesting that these are fundamental components of life. This field has developed through various theoretical frameworks, including physical biosemiotics, zoosemiotics, code biosemiotics, and hermeneutic biosemiotics, each offering a distinct model of semiosis (Barbieri, 2008). Biosemiotics incorporates biological entities and speculatively extends its scope to inorganic matter within the biosphere (Sharov, 2016).

Biosemiotics, which studies how living organisms use signs and symbols, offers unique insights into the understanding of beauty by revealing how biological processes influence our perception of aesthetic qualities. It is characterised by a rich diversity of theoretical approaches and applications, reflecting its interdisciplinary nature and ongoing discourse regarding its scientific identity and scope (Musso, 2020). The development of the field is marked by a synthesis of ideas from different disciplines, contributing to a deeper understanding of the semiotic aspects of life and

its evolution (Witzany, 2006). Biosemiotics has the potential to revolutionise our understanding of life and how we study biological systems by integrating semiotic principles into the analysis of living organisms. Biosemiotics has already initiated a transformation in biological research, and this discipline is anticipated to continue to expand and develop in the forthcoming years, thereby contributing to further advancements in our comprehension of life and biological systems. Understanding semiotic processes within biological entities provides a foundational perspective that can enrich our exploration of the cultural standards of beauty, highlighting the interconnectedness of life and aesthetics (Olteanu & Campbell, 2023).

3. Cultural standards

Understanding the biological basis of semiosis enriches our grasp of the cultural standards of beauty, which are themselves biological expressions shaped by societal evolution. Cultural standards of beauty are not static and can vary significantly across different cultures and ethnic backgrounds as well as between genders and age groups. To comprehensively understand the artistic standards of beauty, it is essential to examine the interplay of these factors and their influence on perception of beauty (Hicks & Thomas, 2020). For example, although Dove's "Campaign for Real Beauty" aimed to challenge restrictive beauty ideals, it has been criticised for unintentionally perpetuating conventional standards. This observation underscores the importance of challenging and expanding traditional beauty standards to better represent and include diverse perspectives and experiences. Contradictions become apparent when analysing the global homogenisation of beauty ideals, a phenomenon that originated in the 19th century but is currently experiencing a revival of diverse beauty standards (Silalahi et al., 2023).

The role of cosmetic surgeons as intermediaries in the transnational circulation of beauty ideals demonstrates the dynamic nature of these standards and the selective incorporation of local tastes. The intricate interplay between beauty perceptions and identity variables, such as ethnicity and socioeconomic status, highlights the complicated nature of cultural beauty standards, which are influenced by a variety of social factors and subject to change over time and across different cultural settings. Older women, for instance, contest prevailing ideals by emphasising the importance of inner beauty and rejecting the notion that attractiveness is synonymous with youth (Su, 2024).

The role of AI and the beauty industry in shaping and reflecting these standards further complicates the landscape, necessitating a nuanced understanding of the cultural, ethnic, and individual variations in beauty perception (Arian et al., 2023). It is essential to promote inclusivity and diversity to ensure that beauty standards are representative of the full human spectrum.

Cosmetic surgeons operate within the context of transnational beauty exchanges, adapting beauty ideals to suit local preferences and promote pan-ethnic beauty standards (Kenig et al., 2023). The idea of ethnic beauty in Asian cultures is influenced by a number of factors, including social, cultural, and historical aspects. Sociocultural models propose that the adoption of Western beauty ideals can lead to body dissatisfaction and disordered eating among Asian women, with racial discrimination, ethnic identity, and racial or ethnic teasing being important factors in this process (Cheng, 2014). As new aesthetic standards arise from the blending of many ethnic groups, the increasing diversity of the US population calls into question the applicability of conventional beauty standards (Faderani et al., 2023).

Cosmetic surgeons skillfully negotiate a variety of beauty standards, such as "Asian," "Indian," "Western," and "Korean," in order to satisfy regional preferences and the global exchange of beauty standards (Menon, 2019). These results highlight the importance of considering both traditional and modern influences when examining the ethnic beauty standards. A culture's standards of beauty are shaped by the intricate interactions of social, political, and economic elements. Different cultural and historical contexts have an impact on these standards, resulting in a range of interpretations, compromises, and degrees of resistance among people and communities.

4. Media Influence on Beauty Standards

Social media are complex structures shaped by a wide range of social, cultural, and digital elements. They have been acknowledged as important influences in the formation of beauty ideals, frequently encouraging unrealistic standards. Influencers are crucial to the development and dissemination of beauty trends on platforms like Instagram, YouTube, and TikTok. These platforms not only distribute but also create beauty trends, with influencers playing a crucial role in their dissemination. Such media exposure is not without consequences, as it has been associated with body dissatisfaction, low self-esteem, and mental health issues among women (Gaikwad & Upagna, 2024). While the negative effects of media on body image are widely acknowledged, there is also a recognition of the potential for positive change. Digital activism and feminist movements on social media challenge harmful narratives and advocate body positivity and inclusivity (Kushwaha, 2024). The intersectionality of beauty perceptions with identity factors such as gender, ethnicity, and socioeconomic status is crucial for understanding the diverse experiences of individuals influenced by media representations of beauty. While media, particularly social media, have a significant impact on the propagation of beauty ideals, they also offer a platform for counter-narratives that promote a broader and more inclusive definition of beauty (Rollero, 2022). In the context of beauty, personal agency plays a crucial role, with beauty advocacy, scepticism, and revisionism offering different perspectives on the interplay between individual choices and societal standards, redefining beauty ideals (Palawat et al., 2023). Despite the pervasive influence of cultural beauty standards, there is evidence of resistance and the formation of alternative ideals. The interplay between global trends and local tastes further influences beauty standards, suggesting a dynamic and evolving concept of beauty across cultures (Lang & Ye, 2024).

5. Historical and Philosophical Perspectives

Historical perspectives on beauty reveal that beauty ideals have long been influenced by cultural, social, and philosophical factors. In antiquity, female hairstyles were not merely a matter of fashion but reflected the philosophical views and aesthetic ideals of the era, as evidenced by the influence of ancient Greek goddesses on the formation of the ideal of female beauty (Harrar et al., 2018). Similarly, the historical exploration of the body in sport demonstrates that body image ideals have evolved, reflecting societal norms and impacting athletic identity. These ideals have been transmitted through cultural products such as art, literature, and films. While some beauty standards, such as youthfulness and specific physical features, appear to be universally accepted across cultures, the impact of social media and globalisation has introduced new dimensions to beauty ideals, influencing perceptions and reinforcing existing standards (Laughter et al., 2023). Historical perspectives on beauty demonstrate that beauty ideals are not static but shaped by a complex interplay of cultural, social, and philosophical influences. While certain aspects of beauty have remained influential over time, modern factors such as media and globalisation continue to modify and disseminate these ideals, with implications for individual identity and societal norms (Speer, 2010).

The philosophical theories of beauty have been a subject of contemplation and debate across various cultures and historical periods. The study of aesthetics, which includes the nature of beauty, has produced diverse theories ranging from objective standards to subjective experiences. Classical, modern, and Kantian philosophies offer different perspectives, with some suggesting that beauty may have an objective basis in properties such as symmetry and proportion. In contrast, others emphasise the subjective and sensory aspects of aesthetic experience.

Despite historical and cultural variances, there is evidence that classical ideas of beauty may still have an impact on modern minds, suggesting a potential objective standard within contemporary society (Yeon, 2022). This is contrasted by the shift from rationalistic explanations to the recognition of sensuality in aesthetic experience seen in medieval natural theology and the moral orientation of beauty in ancient philosophy, where it is intimately associated with the concepts of the soul, body, and good (Meskin et al., 2017). Some theories emphasize the objective basis for beauty, while others highlight the subjective and experiential nature of aesthetic

appreciation. The cultural and historical contexts can be greatly influenced by aesthetic preferences and judgments.

The concept of beauty exaggeration encompasses the amplification of beauty standards from different societal and cultural viewpoints. Beauty is a central aspect of human life that influences behaviour and social expectations. The universal characteristics of beauty, such as symmetry and youthfulness, are frequently highlighted; however, perceptions of beauty continue to vary among many cultures and ethnicities (Laughter et al., 2023). Contradictions emerge in the context of beauty exaggeration when considering the media's impact. While some studies have revealed no significant variations in beauty standards portrayed by media characters, others have emphasized the negative effects of exposure to unattainable beauty standards, including body dissatisfaction and the internalisation of these ideals (Ishizu & Zeki, 2011). The exaggeration of beauty standards is a complex phenomenon impacted by historical perceptions, cultural diversity, and the pervasive role of social media (Kushwaha, 2024).

6. Aesthetic Aspects of Mathematical Structures.

The aesthetics of mathematical structures are recognised as an essential aspect of mathematical cognition and appreciation. Ibrahim (2022) highlights the role of mathematics in aesthetic cognition and encourages the integration of mathematical sciences to understand and create aesthetic phenomena by drawing on historical and contemporary theories. Breitenbach (2013) offers a Kantian perspective, suggesting that beauty in mathematics arises from a nonconceptual response to the creative process of mathematical reasoning. Meng et al. (2022) discuss the quantification of aesthetic features in visual arts and explore the aesthetic assessment of visual patterns through information theory. Contradictions arise when considering the beauty of mathematical structures in contrast to the subjective experience of beauty. Redies (2014) emphasised beauty as a formal property capable of eliciting pleasure through sensory stimulation. In contrast, Vessel et al. (2022) suggested that aesthetic appeal is a complex interaction between the stimulus and observer, involving both perceptual and cognitive processes. The aesthetics of mathematical structures encompass both objective and subjective elements. Theories range from the inherent harmony and beauty of mathematical forms to the individual's creative and cognitive engagement with mathematics.

7. Symmetry and Harmony in Category Theory

Symmetry and harmony are often considered essential for the perception of beauty. The concept of symmetry encompasses various forms, such as point groups, space groups, and translation, and transcends any single discipline, acting as a bridge between the humanities, sciences, and arts. In mathematics, symmetry is precise, whereas in everyday life, it is more flexible, allowing for a broad interpretation that unites reality with imagination. Empirical evidence indicates that the relationship between symmetry and beauty is complex; although symmetry involves regularity, it does not inherently equate to beauty or to simplicity. The preference for symmetry varies from a universal tendency to an obsessive compulsion (Bertamini et al., 2020). Harmony, often associated with symmetry, represents a fundamental element of beauty, as evidenced in architectural compositions, and is regarded as aesthetically pleasing. Symmetry and harmony are complex and culturally nuanced concepts in the realm of beauty. While symmetry is recognised for its role in aesthetics and pattern recognition, its relationship with beauty has not been unequivocally established. Harmony, in conjunction with symmetry, contributes to the perception of beauty, encompassing balanced elements that are both pleasing and culturally significant (Starikova, 2017). The appreciation of beauty, as it relates to symmetry and harmony, extends beyond mere regularity and encompasses a broader spectrum of aesthetic and cultural dimensions.

8. Abstract Concepts and the Philosophy of Beauty

The philosophy of beauty has been explored across various cultures and philosophical traditions. The abstract nature of beauty has led to diverse interpretations ranging from objective standards to subjective experiences. While classical conceptions of beauty emphasise objective properties, such as symmetry and proportion, modern and Kantian theories offer more subjective viewpoints (Yeon, 2022). Despite the historical and cultural variability in the understanding of beauty, contemporary studies appear to lean towards classical aesthetics, indicating a possible objective underpinning in the perception of beauty within modern society. Feminist philosophy's engagement with aesthetics, particularly natural beauty, reveals a complex relationship influenced by various factors, including reluctance to associate women with beauty and nature. The intersection of big data and aesthetics presents a contemporary challenge to traditional notions of beauty, as artistic data visualisations blend the sublime and beautiful (Heinrich, 2016). The philosophy of beauty encompasses many ideas that cannot be easily categorised as purely objective or subjective. Ancient philosophers such as Aristotle and Plato contributed to the moral orientation of beauty, integrating it with concepts of the soul and the good. Aesthetics, rooted in metaphysics and theology, reflects the divine origin of beauty and art, underscoring the importance of revisiting and revitalising this heritage (Cheng et al., 2021). Philosophy and neuroscience converge in demonstrating that beauty is both a subjective experience and a biologically grounded phenomenon, rooted in cognitive harmony and neural reward systems. Neuroscience supports this notion by showing that beauty activates brain regions involved in integration, valuation, and emotional resonance, suggesting that aesthetic pleasure reflects a neural harmony. The ongoing dialogue between these diverse philosophical traditions continues to shape our understanding of the abstract concepts related to the philosophy of beauty.

9. The Standards of Beauty

Beauty standards are significantly influenced by the fashion industry, which promotes a narrow ideal often centered on being thin and achieving a specific body type, leading to health sacrifices and increased plastic and aesthetic surgeries. These standards are shaped by Western ideals and are transmitted globally through colonialism and the media. Kim (2007) identifies a prevailing standard in Japan, where clean and luminous white skin is highly valued, and this ideal is perpetuated through beauty advertisements. Similarly, Kathuria et al. (2023) describe a societal norm defining beauty through a slim hourglass-shaped silhouette as perceived by an Indian adolescent girl. Carneiro et al. (2013) address how Western beauty ideals are globally transmitted, impacting beauty ideals in various cultures, highlighting Black American beauty standards, and emphasising hair aesthetics and body image as key areas. Malik et al. (2023) investigated the impact of ideal beauty standards on the marriage prospects of Pakistani females, uncovering the detrimental effects of societal pressures on both mental and physical health. They also explored how societal norms, cultural values, and digital media shape teenagers' perceptions of beauty, influencing their body image and self-esteem.

While some cultures emphasise skin color or body shape, others focus on broader definitions that include diversity and individual attitudes. Beauty standards are complex constructs that vary widely across societies and cultures. They are influenced by historical, cultural, and media representations and can have significant psychological and social implications for individuals striving to meet these ideals. These studies collectively suggest that while specific beauty standards remain prevalent, there is a growing awareness and acceptance of diversity in beauty. Globalisation and social media have the power to spread foreign beauty cultures and change traditional stereotypes. Social media platforms have been instrumental in disseminating and challenging beauty standards, as influencers promote diverse beauty trends and encourage the acceptance of different body types (Gaikwad & Upagna, 2024). Efforts to break conventional beauty standards demonstrate a societal shift towards embracing diversity. While certain physical traits are widely regarded as attractive, there is a growing awareness and acceptance of beauty diversity, driven by media and

societal movements. This evolution reflects a broader understanding of beauty as subjective and inclusive rather than a rigid, universal ideal.

10. Material and Method

This review was conducted to identify and analyse the existing literature on the topic of beauty, including biosemiotics, cultural studies, media analysis, historical examination, and philosophical inquiry, using research in PubMed, Embase, Web of Science, Google Scholar, and Cochrane Library, in accordance with PRISMA guidelines. The keywords used were: beauty concept, **biosemiotics**, cultural standards, media influence, body dysmorphic disorder, cosmetic interventions, and quality of life.

Although not applied in the present study, a bibliometric analysis assisted by artificial intelligence (AI) or natural language processing (NLP) could offer valuable insights into the evolution of aesthetic theory across disciplines. Such tools can map citation networks, detect semantic shifts in the usage of "beauty" and "semiotic fitting," and identify emerging trends in neuroaesthetics and biosemiotics.

11. Eligibility Criteria

11.1. Inclusion Criteria

- Studies were included if they focused on the idea of beauty using a multidisciplinary approach (e.g., biosemiotics, philosophy, psychology, art history, cultural studies, neuroscience, and aesthetic surgery).
- Works that explicitly addressed the concept of beauty, including its definitions, interpretations, or implications.
- Publications dated between 2000 and 2025 were included to ensure contemporary relevance while accommodating foundational texts.
- Only articles available in full text were included..
- Only articles written in English were considered eligible.

11.2. Exclusion Criteria

- Articles not available in full text or written in other languages were excluded.
- Non-scholarly sources: blog posts, opinion pieces, and commercial content lacking academic rigour were excluded
- Studies focusing solely on aesthetic preferences in marketing, fashion, or product design without deeper conceptual engagement were excluded.
- Sources unavailable in full text or lacking sufficient abstracts or data for analysis were excluded.
- Duplicate studies: repetitive publications or reprints that do not offer new insights were excluded.
- Publications before 2000 were excluded.

12. Data Synthesis

The collected data were analysed using a comprehensive approach that incorporates a qualitative method to gain a deeper understanding of the diverse viewpoints and interpretations of beauty explored in the current research. This article offers a comprehensive and interdisciplinary explanation of the idea of beauty, providing a logical framework for discussing the complex and varied knowledge of beauty. The application and consequences of this research are pertinent to a variety of sectors, including art, design, media, and culture, as it provides a deeper understanding of the concept of beauty and its function in shaping perceptions and experiences. The topic of beauty

is significant because it has been a subject of interest for centuries, and its understanding has evolved, reflecting changing cultural, social, and political contexts. The study examined various interpretations of beauty from a variety of perspectives, highlighting the similarities and discrepancies, while emphasising the contradictions and debates surrounding the concept— such as the connection between beauty and ugliness and the role of subjectivity and objectivity in determining aesthetic value. Globalisation has contributed to the homogenisation of beauty ideals, but there is a growing appreciation for diversity. This study examines how cultural diversity, spanning from Eastern to Western societies, influences the development and perception of aesthetic standards.

13. Results

A total of 394 articles were identified in the database, of which 92 studies were selected based on the eligibility criteria. The novelty of this study lies in its interdisciplinary approach, which combines different perspectives and contributions from various fields of study to provide a comprehensive understanding of the concept of beauty from multiple standpoints, enabling a more nuanced and inclusive exploration of this concept. The purpose of this research is to investigate how various viewpoints contribute to a comprehensive understanding of beauty by analysing the interplay between biological, cultural, and psychological elements.

Multimodality Aesthetic Skin Rejuvenation (MMASR) is an approach that integrates various technologies and techniques to address the diverse clinical skin problems presented by patients seeking aesthetic improvement. This approach is tailored to individual needs, considering factors such as patient preferences, cost, and expectations. It may include the combination of skin rejuvenation techniques with surgical procedures for comprehensive results (Gentile, 2005). Although dermal fillers and botulinum toxin A are popular, practitioners are encouraged to consider a broader spectrum of treatments to enhance their practice and patient outcomes (Kunde, 2019). Literature and clinical experience indicate that a combination of various non-invasive and minimally invasive techniques can be performed safely and effectively.

13.1. The Beauty of Lips

Lips are often considered a key element of facial attractiveness, contributing significantly to a youthful appearance. Ideal lip proportions vary across ethnicities and genders, with fuller lips usually perceived as more attractive in females (Kar et al., 2018). The influence of lips on the overall facial appeal is not absolute and can differ based on ethnic background. The techniques for lip augmentation have evolved, with a focus on understanding lip anatomy and aesthetics to achieve successful outcomes. Physical features do not solely determine the perception of beauty but are also influenced by personality and cultural background (Miller & Determan, 2019). The attractiveness of lips is linked to smiling, a key element in social interactions. Evaluations of lip attractiveness can vary among different groups, with preferences for lip volume differing after aesthetic procedures. In the context of e-commerce, the attractiveness of an individual's lips can significantly impact consumer behaviour (Dall Magro et al., 2019). The beauty of the lips is recognised for its contribution to facial attractiveness and is subject to individual and cultural variations. Lip augmentation procedures, especially those using hyaluronic acid, are widely used to enhance lip aesthetics, considering the influence of ethnic and gender variations on ideal lip characteristics. The perception of lip beauty extends beyond physical attributes, encompassing psychological and social dimensions, that influence both interpersonal and commercial interactions. The lips are considered a central feature of facial attractiveness and youthfulness, with full, well-defined lips often associated with beauty. The ageing process can lead to thinner lips and less defined borders, which may affect one's appearance and emotional expression (Wollina & Goldman, 2020).

13.2. The Concept of Nasal Beauty

Building on the understanding of cultural beauty standards, the concept of nasal beauty further illustrates how aesthetic preferences can vary significantly across different racial and ethnic

groups. While traditional aesthetic ideals often emphasise specific proportions, lines, and angles, such as nasofrontal and nasolabial angles, these ideals are evolving. They must be applied with caution because of the subjective and changing views of beauty and ethnic diversity (Krane et al., 2017). Despite the importance of objective measurements, patient satisfaction with nasal appearance after rhinoplasty does not always correlate with facial proportions, indicating that beauty is a subjective experience (Groyecka et al., 2017). In the context of Chinese beauty standards, a slender face with a pointed chin and specific nose and lip characteristics is considered attractive. Chinese aesthetic practitioners also prefer specific facial shapes and features, which inform their approach to cosmetic procedures (Patel & Most, 2020). The centrality of the nose in facial aesthetics is highlighted by the impact of septum deformities on the aesthetic appearance of the nose and the importance of septorhinoplasty in managing these effects. Cultural, ethnic, and individual factors influence nasal beauty. The concept of nasal beauty, with its emphasis on specific proportions, underscores the complexity and variability of beauty standards across cultures. While specific objective measures can guide aesthetic procedures, the subjective nature of beauty and patient satisfaction must also be considered (Minh Trieu & Truong Thinh, 2023). Practitioners in the aesthetics field recognise and understand the various standards and preferences that exist to meet the expectations of their patients effectively.

13.3. The Concept of Breast Beauty

Breast beauty encompasses both subjective and objective assessment. Studies have sought to quantify and understand the factors that contribute to the perception of breast attractiveness. For instance, the development of the Breast Beauty Subjective Assessment System (BBSAS) has facilitated the evaluation of breast beauty, revealing a correlation between perceived beauty and specific breast measurements, such as the side-view profile (Sun et al., 2011). Breast ptosis has been shown to influence perceptions of age and attractiveness, with more ptotic breasts associated with older age and decreased attractiveness across different cultures. Younger participants and individuals with lower education levels tended to rate breasts as less attractive, whereas married and wealthier individuals reported higher attraction levels (Pazhoohi et al., 2020). Although both breast size and shape are significant factors, true ptosis—encompassing the contour of the breast and the position of the nipple—is more critical for attractiveness than glandular ptosis, where the nipple remains forward-oriented (Benahmed & Ouchelh, 2023). Breast beauty is a complex construct influenced by a combination of objective features such as size, shape, and subjective cultural and demographic factors. The consistency in findings across different populations suggests some universal standards of breast attractiveness, although individual preferences can vary widely. Further research into the environmental and personal factors that affect breast aesthetics could provide deeper insights into this subjective concept. Understanding these factors is not only of academic interest but also has practical implications for aesthetic and reconstructive breast surgery (Pietruski et al., 2019).

13.4. The Concept of Buttocks Beauty

Buttock beauty encompasses the cultural, ethnic, and individual preferences that influence the perception of attractiveness in this region of the body. The gluteal region is considered an essential aspect of physical beauty across different cultures and ethnicities, with a growing demand for aesthetic procedures aimed at enhancing its appearance. These procedures include lipografting and the use of biostimulators to address concerns such as volume, shape, and skin irregularities (Perc, 2020). Although the aspiration for an aesthetically pleasing gluteal region is widespread, the specific attributes that define beauty in this area vary significantly among different cultural and ethnic groups. The size of the buttocks and the waist-to-hip ratio are morphometric factors, with preferences for these attributes showing high ethnic diversity. Moreover, the influence of social media and portrayals of beauty standards in mass media can affect individuals' perceptions of their body image (Ali, 2011). The concept of buttock beauty is complex and is influenced by a variety of

factors, including cultural and ethnic standards, societal influences, and individual preferences. While aesthetic procedures can enhance the appearance of the buttocks, it is essential to consider the diverse standards of beauty and the potential psychological impact associated with pursuing an idealized body image, without overlooking the presence of skin scars following the cosmetic procedures. The emotional experience associated with posttraumatic and postoperative scars is distinct for each individual and is shaped by various factors, including the origin of the scar, its visibility, and the individual's perception (Stanescu et al., 2024). In certain instances, scars may lead to negative self-perceptions and a potential decline in mental well-being. Educating patients and healthcare providers about the most recent research findings on wound healing and scar revision can facilitate the development of more effective treatment strategies and enhance patient outcomes. Therefore, the risk of depression among patients with scars should not be ignored (Stanescu et al., 2025).

14. Discussions

This article reflects diverse viewpoints about what constitutes beauty. The framework offers a comprehensive approach to discussing the complex and diverse understandings of beauty, incorporating insights from biosemiotics, cultural studies, media analysis, historical examination, and philosophical inquiry. It also delves into the impact of biosemiotics on cultural standards and media influence, which can contribute to the development of body dysmorphic disorder, affecting the psychoemotional quality of life.

14.1. The Concept of Exaggerated Beauty

The underlying theme of beauty standards and their impact on self-perception and mental health is essential. The pursuit of exaggerated beauty features, such as fuller lips, can be seen as a manifestation of broader societal pressure to conform to certain beauty ideals. These pressures are often amplified by social media and the prevalence of digitally altered images, which can lead to unrealistic beauty aspirations (MacCallum & Widdows, 2018). Unrealistic beauty standards increase body dissatisfaction and negatively affect mental health. The impact of cultural phenomena on beauty standards suggests that media exposure can shape beauty perceptions. The pursuit of these ideals can have detrimental psychological consequences and contribute to a skewed perception of oneself, thereby underscoring the necessity for a more comprehensive and varied portrayal of beauty (Suresh & Floranza, 2022). This is supported by research showing that exposure to narrow and unrealistic beauty standards can lead to increased body dissatisfaction and lowered self-esteem (Wiratno & Callula, 2024). The multidimensional nature of beauty, as presented in fashion magazine advertisements and music videos, suggests that these media forms contribute to the cultural construction of beauty ideals, which may include exaggerated representations. The fusion of media forms could lead to a blending of beauty standards that accentuates certain features to an exaggerated extent (Reiter & Giger, 2018).

14.2. The Connection Between Body Image Disturbances and Psychoemotional Changes

Anxiety may manifest through physiological symptoms that affect an individual perception of their body and overall health. Nord & Garfinkel (2022) discussed how disruptions in interoception—the process by which the brain interprets signals from the body—may contribute to anxiety and other mental health conditions. The literature suggests a complex interplay between anxiety and body disturbances, with brain-body pathways and interoceptive processes playing significant roles (Kedia et al., 2014). Biofeedback constitutes a promising intervention for anxiety, although its efficacy may be contingent on physical health issues (Alneyadi et al., 2021). Disturbances in body image during adolescence can predict future mental health issues, such as anxiety (Linardon et al., 2021). These findings underscore the importance of considering both physiological and psychological factors in the management and treatment of anxiety related to body disturbances.

Nikandish et al. (2024) explore the relationship between aesthetic sensitivity and psychological wellbeing. This suggests that an individual's awareness and appreciation of beauty, which may include the outcomes of aesthetic procedures, can contribute positively to psychological well-being. While not explicitly about the exaggeration of aesthetic procedures, studies imply that there could be a complex interplay between aesthetic enhancements and psychoemotional states. A positive correlation exists between aesthetic appreciation and psychological wellbeing, which may extend to the outcomes of aesthetic procedures that can potentially lead to negative psychoemotional changes (Cerea et al., 2021).

14.3. Body Dysmorphic Disorder

Body dysmorphic disorder (BDD) is a psychiatric condition where individuals are preoccupied with perceived defects in their appearance, often leading them to seek aesthetic procedures. Despite the high prevalence of BDD among those seeking cosmetic surgery, the outcomes for these individuals are frequently poor, with BDD symptoms rarely improving and often worsening post-procedure (Sarwer & Crerand, 2017). Screening tools such as the Body Dysmorphic Disorder Questionnaire-Dermatology Version (BDDQ-DV) and the Dysmorphic Concern Questionnaire (DCQ) (Figure 2) have been psychometrically validated in cosmetic settings, highlighting the need for reliable screening in this population (Picavet et al., 2011).

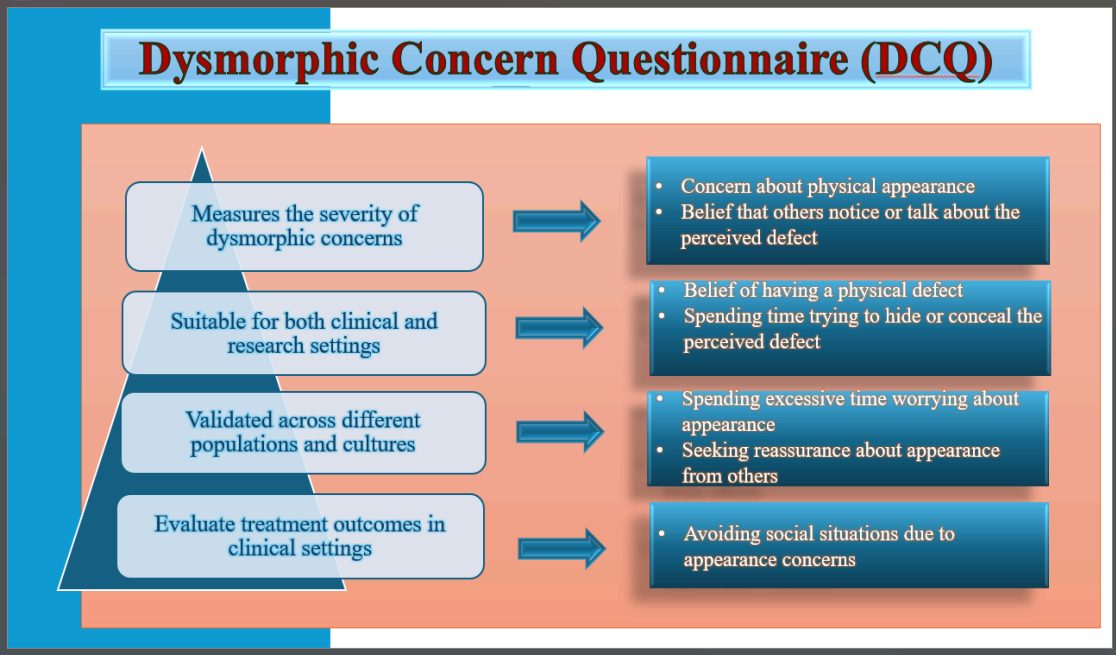


Figure 2. The Dysmorphic Concern Questionnaire (DCQ) comprises seven items designed to assess an individual's preoccupation with their physical appearance and perceived imperfections.

The pursuit of aesthetic procedures among individuals with BDD is not only common but is also associated with a range of psychological factors, including perfectionism and obsessive-compulsive symptoms. The literature suggests that BDD is a contraindication for cosmetic procedures because of the risks involved for both patients and clinicians (Crerand et al., 2017). Mental health assessments, including a detailed evaluation of BDD symptoms, motivations, and expectations for cosmetic treatment, are recommended for individuals seeking such procedures.

Body dysmorphic disorder (BDD) is characterised by a distressing and excessive preoccupation with perceived physical defects, often leading to significant psycho-emotional impacts, including marked distress, social anxiety, depression, and impairments in everyday functioning. This disorder is associated with diminished self-esteem and a range of psychological symptoms, with patients often engaging in time-consuming rituals related to their appearance

concerns. Patients with BDD exhibit diverse physical complaints and a higher degree of negative self-evaluation and avoidance due to appearance than those with eating disorders (Figure 3). BDD has been conceptualised as an obsessive-compulsive disorder involving symptoms of obsessions and compulsions, differentiating it from other disorders (Neziroglu & Mancusi, 2012).

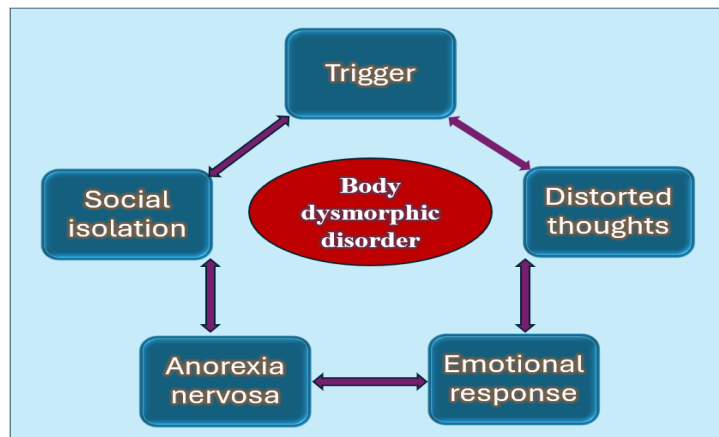


Figure 3. Body dysmorphic disorder (BDD) is associated with negative self-esteem and a range of psychological symptoms.

Body image disturbances are key factors contributing to various mental health disorders, including depression. Several studies have elucidated the different aspects of this connection. A study within the ANTOP trial found a significant association between body image perceptions and symptoms of depression and anxiety in patients with Anorexia Nervosa (AN) throughout treatment (Jenne et al., 2016). Additionally, symptoms of body image disturbance predicted depression and anxiety at follow-up measurements, suggesting that addressing body image disturbances in therapy for AN could potentially alleviate related affective comorbidities. Individuals diagnosed with anorexia nervosa frequently exhibit deficiencies in essential nutrients that are vital for wound healing. These nutrients include vitamins A, C, and E, alongside minerals such as zinc, selenium, and iron, all of which are crucial for cellular proliferation and tissue regeneration. Furthermore, nutraceuticals, such as omega-3 fatty acids, glutamine, arginine, and polyphenols, possess anti-inflammatory and antioxidant properties that facilitate healing and mitigate the risk of infection. Probiotics and other bioactive compounds in nutraceuticals play crucial roles in maintaining microbiota equilibrium, mitigating inflammation, and promoting cellular regeneration (Stanescu et al., 2025). Anorexia nervosa can lead to a weakened immune response and a reduction in collagen production, both of which are critical factors contributing to delayed wound healing (Neale & Hudson, 2020). Malnutrition and carotenoid deficiencies have significant implications for health and wellbeing, as they increase vulnerability to infections and chronic diseases, including cardiovascular diseases, certain cancers, macular degeneration, neurodegenerative disorders, and metabolic syndromes. These conditions ultimately affect the outcomes of aesthetic surgery and have a broad impact on various demographics and aspects of public health worldwide (Stanescu et al., 2025).

Distorted body image in individuals with Anorexia Nervosa is linked to increased psychological pain and depression. This indicates the central role that body image disturbances play in both the persistence and severity of depression within this population (Ciwoniuk et al., 2022). Research involving German children and adolescents has highlighted that body image disturbances are intertwined with behavioural and emotional challenges. These disturbances vary by gender, age, and weight status, further influencing the psychological well-being of youths. For example, adolescents who desire thinner bodies exhibit more emotional problems (Krause et al., 2023).

Women often perceive their bodies as larger, which contributes to depressive symptoms, whereas men frequently experience depressive symptoms related to perceiving themselves as underweight (Silva et al., 2019). While factors such as gender, age, and specific body image

perceptions influence the relationship differently in diverse groups, it remains crucial that mental health interventions integrate strategies to address body image issues to manage depression effectively (Ciwoniuk et al., 2022). Collectively, these studies reveal that body image disturbances significantly contribute to depression across various populations.

Cognitive behavioural therapies have demonstrated efficacy in alleviating the symptoms of Body Dysmorphic Disorder (BDD) and enhancing overall psychological wellbeing. This suggests that psychotherapeutic interventions can effectively mitigate the psycho-emotional impact of BDD (Barnes, 2020).

14.4. The Connection Between Aesthetic Self-esteem and Psychological Health

The relationship between aesthetic self-esteem and psychological health is complex and shaped by various factors, including body image, social influences, and personal development. Aesthetic self-esteem, which relates to how individuals perceive and evaluate their appearance, plays a crucial role in overall self-esteem and in psychological wellbeing.

Body image dissatisfaction is a significant factor affecting self-esteem and psychological health. It is prevalent across different weight groups and affects the quality of life and self-perception. Individuals often seek aesthetic procedures to improve their body image, which can enhance their self-esteem and reduce body dissatisfaction. However, excessive dissatisfaction can lead to psychiatric disorders, such as anorexia nervosa and body dysmorphic disorder, which contraindicate aesthetic treatments (Sarwer & Polonsky, 2016).

Adolescents represent a vulnerable group in which physical appearance and body image can significantly influence self-esteem and mental health. During adolescence, physical activity has been shown to positively impact self-esteem and body image, acting as a protective factor against mental health issues, such as depression and anxiety. As physical activity increases, body image dissatisfaction typically decreases, enhancing self-esteem and psychological wellbeing (Gualdi-Russo et al., 2022).

Across various groups, including adolescents, medical students, and psychiatric patients, self-esteem consistently stands out as a key factor influencing psychological wellbeing. However, we examined four studies that highlighted unique contextual moderators and psychological mechanisms (Table 1).

Guo et al. (2022) examined Chinese medical students. They found that low self-esteem and poor psychological flexibility were strongly associated with mental health symptoms such as obsessive-compulsive disorder, depression, and interpersonal sensitivity among medical students. Notably, psychological flexibility mediated approximately half of the impact of self-esteem on mental health, suggesting that interventions such as Acceptance and Commitment Therapy (ACT) may be effective in this population. This demonstrates the interconnectedness of self-esteem, psychological flexibility, and mental health, highlighting the need for interventions focusing on these aspects to improve students' wellbeing.

Polce-Lynch et al. (2001) focused on US adolescents and revealed gendered patterns in self-esteem development. Girls were more affected by body image concerns and media influence, whereas boys showed increasing emotional suppression with age. Sexual harassment and limited emotional expression were linked to lower self-esteem, particularly among girls. Body image was a key mediator between media exposure and self-esteem.

Veselska et al. (2009) studied Slovak adolescents and emphasised the role of socioeconomic status (SES) in their findings. Adolescents from lower SES backgrounds reported lower self-esteem and higher levels of psychological distress. Personality traits such as optimism and coherence, mental health status, and social support partially mediated the relationship between SES and self-esteem. Social support is a crucial buffer against the adverse effects of low SES.

Macinnes (2006) investigated adult psychiatric patients and differentiated between self-esteem and self-acceptance. While both are related to psychological health, self-acceptance—defined as unconditional self-regard—was a stronger predictor of reduced

psychological distress. This study suggests that therapeutic efforts should prioritise fostering self-acceptance over enhancing self-esteem alone.

In conclusion, aesthetic self-esteem is a critical factor in psychological health that influences how individuals feel about themselves and their mental wellbeing. Addressing aesthetic self-esteem through physical activity, cognitive interventions, and support systems can enhance psychological health and reduce the risk of mental health disorders.

The field of aesthetic rejuvenation is continually evolving, with recent advancements in technology and techniques offering new options for patients seeking aesthetic improvements. Through a comparative analysis of biosemiotics theory, cultural studies, and psychological research, this study presents a comprehensive framework for understanding beauty across disciplines. Empirical evidence supports the safety and efficacy of combining different modalities, suggesting that this approach can improve the quality of life (Briellmann et al., 2021).

Table 1. Integrated Summary of Four Studies on Self-Esteem and Mental Health

Study	Population	Key Predictors	Mental Health Outcomes	Mediators	Gender/Socioeconomic Factors
Guo et al. (2022)	810 Chinese medical students	Self-esteem, psychological flexibility	High prevalence of symptoms (obsessive-compulsiveness, depression, sensitivity)	Psychological flexibility mediates ~50% of self-esteem's effect	Not analysed
Polce-Lynch et al. (2001)	209 US adolescents (93 boys and 116 girls)	Body image, media influence, emotional expression, sexual harassment	Lower self-esteem linked to emotional suppression, harassment, and poor body image	Body image mediates media/self-esteem link	Strong gender differences: girls more affected by media/body image; boys by emotional restriction
Veselska et al. (2009)	3,694 Slovak adolescents (13–17 years)	Personality traits (optimism, coherence), mental health, social support	Lower SES linked to lower self-esteem and more mental health issues	Mental health and personality traits partially mediate SES impact	Socioeconomic status strongly influences self-esteem; social support buffers negative effects
Macinnes (2006)	86 adult psychiatric patients	Self-esteem, self-acceptance	Psychological health significantly correlated with both constructs	Self-acceptance more strongly predicts psychological health than self-esteem	Not analysed

14.5. Reflections from Professional Experience

Based on our clinical and academic expertise in plastic surgery, dermatology, nutrition, and psychological health, we have identified that aesthetic self-esteem frequently plays a crucial role in influencing patients' emotional resilience and social functioning. For example, in our practice with individuals undergoing reconstructive or aesthetic procedures, we have observed that enhancements in perceived appearance can result in increased self-confidence, reduced anxiety, and greater participation in social and professional settings.

In our mentorship of medical students and early-career clinicians, we have observed that discussions concerning body image and aesthetic perception often intersect with broader themes such as identity, mental health, and cultural expectations. These interdisciplinary dialogues have informed our methodology for incorporating aesthetic self-esteem into clinical assessments and patient education strategies.

Our engagement in patient-centred nutritional counselling has demonstrated that aesthetic motivations, such as those related to weight management or skin health, frequently act as initial catalysts for more profound behavioural changes. When these motivations are approached with

empathy and scientific rigour, they can lead to sustainable enhancements in both physical and psychological wellbeing.

Further research would be required to explore the psychoemotional changes present in certain patients who remain eternally dissatisfied with their physical appearance, regardless of how many aesthetic interventions they perform.

Potential areas for further exploration include:

- The cognitive and affective mechanisms involved in beauty judgments
- Individual differences in beauty perception and preference
- The influence of cultural and social factors shape psychological responses to beauty
- The interaction between bottom-up perceptual processes and top-down cognitive influences
- The role of learning and experience in shaping beauty perceptions over time

14.6. Neuroaesthetic and AI Perspectives

Recent advances in neuroaesthetics and artificial intelligence (AI) have provided converging frameworks for understanding aesthetic value as both biologically grounded and computationally tractable. Neuroaesthetics is a discipline dedicated to elucidating the cognitive and neural mechanisms that underpin aesthetic experiences, which involve the interaction between individuals and sensory stimuli within their specific contexts. This approach integrates empirical aesthetics with cognitive neuroscience, offering insights into the neural processing of aesthetic experiences without ascribing inherent value to these experiences (Pearce et al., 2016).

A central challenge within neuroaesthetics is disentangling the perception and appreciation of aesthetics from art, suggesting that aesthetics, in a broader sense, should focus on how sensory stimuli acquire hedonic value and how these values influence decision-making and behavior, which potentially intersects with fields like neuroeconomics (Skov & Nadal, 2020).

In addition, the interdisciplinary collaboration known as computational neuroaesthetics aims to bridge the gap between neuroaesthetics and computational sciences by combining neuroimaging data with machine learning algorithms. This approach enables the analysis of brain connectivity during aesthetic appreciation. It provides predictive models for aesthetic preferences, highlighting the potential for these computational techniques to enhance our understanding of aesthetic processing (Li & Zhang, 2020; Stephanian et al., 2024).

Moreover, the evolving field of neuroinformatics, which combines neuroscience with AI, is unveiling patterns in brain function and structure. This integration enables advancements in brain-computer interfaces and other technologies that enhance cognitive functions and decision-making processes, further illustrating the computational tractability of aesthetic evaluation (Chen & Yadollahpour, 2024).

The neural mechanisms underlying aesthetic judgments of dynamic landscapes involve complex brain networks that differ from those involved in assessing static landscapes. A study using fMRI explored these processes by comparing participants' aesthetic judgments of dynamic and static landscapes. Both types of judgments activated similar brain regions, including the occipital lobe, frontal lobe, supplementary motor area, cingulate cortex, and insula. However, unique to dynamic landscapes were stronger activations in the middle temporal gyrus (MT/V5) and the hippocampus, indicating heightened visual and emotional processing. The perception of movement appears to play a crucial role in the aesthetic appreciation of dynamic landscapes. Research has shown that dynamic stimuli are often perceived as more beautiful than static ones, due to the additional cognitive and emotional engagement required (Zhao et al., 2020). This might be because dynamic landscapes stimulate broader expanses of the high-level visual cortex. However, specific feature- and category-selective regions are not directly influenced by the rated aesthetic appeal. Instead, the observed neural activations reflect transformations from a feature-based visual representation to an affective interpretation (Isik & Vessel, 2021).

Additionally, aesthetic judgments involve both bottom-up sensory processing and top-down cognitive evaluations. The insular cortex, for example, is implicated in integrating sensory input with emotional responses to formulate aesthetic assessment. The neural basis of aesthetic judgment combines perceptual, emotional, and cognitive components in a dynamic interplay, with perceptual anticipation and discrepancy processing being key features driving the experience of beauty in dynamic landscapes (Jacobsen, 2010).

In essence, the fusion of neuroaesthetics and AI presents a promising pathway to understanding aesthetic value through the integration of both biological insights and computational models. However, it also presents challenges that require significant cultural shifts and technological advancements to overcome. This perspective invites future research to explore beauty not only as a human experience but as a semiotic pattern recognizable across biological and artificial systems.

15. Conclusions

Multimodality Aesthetic Skin Rejuvenation (MMASR) is a patient-centred approach that utilises a combination of aesthetic procedures to achieve optimal outcomes in skin rejuvenation. The necessity of embracing diverse and inclusive beauty standards has been emphasised in this article's interdisciplinary analysis. Despite the extensive body of existing knowledge, there remains an absence of a comprehensive framework that effectively integrates these diverse perspectives on beauty. To address this gap in understanding, it is imperative to develop a comprehensive interdisciplinary approach. Beauty has been extensively studied across disciplines, yielding insights into its cultural, historical, philosophical, and biological aspects. Nevertheless, the concept remains subjective and culturally relative, thereby complicating efforts to establish universal standards or definitions.

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