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Development of a Predictive Model for Cosmetic Surgery based on Health Literacy: Mediating Role of Moral Foundations and Social Competence in Women Applying for Cosmetic Surgery

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ABSTRACT

Objective: The purpose of this research was to formulate a prediction model for cosmetic surgery based on health literacy with the mediating role of moral foundations and social competence in women applying for cosmetic surgery.

Methods: The method of this research in terms of theoretical purpose and in terms of data collection method was descriptive correlation type based on structural equations. The statistical population of this research included all the women applying for cosmetic surgery who referred to cosmetic surgery centers in Tehran in 2023, and 285 people were selected as a sample. The sampling method was purposeful and based on inclusion and exclusion criteria. In order to collect information in the field section, the questionnaires of tendency towards cosmetic surgery by Etamidi Fard and Amani (2013), health literacy of Montazeri (2013), ethical foundations of Haight and Graham (2007) and social competence of Felner (1990) were used. At the inferential level, Pearson's correlation coefficient was used and structural equation method was used to check the presented model.

Results: The results showed that the significance of the regression weights related to the measurement model of variables of health literacy, moral foundations, social competence and tendency to cosmetic surgery is a sign that all indicators are representative for the relevant variables.

Conclusions: These findings provide valuable insights for healthcare professionals and policymakers to develop targeted interventions that enhance health literacy and social skills, ultimately aiding women in making more informed choices about cosmetic surgery.

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Introduction

The primary objective of individuals opting for cosmetic surgery is to attain a surgically enhanced organ that they perceive as being more in alignment with their body, thereby aiming to cultivate a more favorable perception of their physical appearance ([Kam et al., 2022](#)). Health literacy encompasses a form of literacy that empowers individuals to assess their physical and mental well-being ([Amoah, 2018](#); [Kilgour et al., 2015](#)). Individuals possessing health and hygiene literacy are capable of providing insights on health-related matters and identifying suitable remedies in case of health-related issues ([Mahmoudiani & Ghaedi, 2022](#)). Furthermore, health literacy is intertwined with the competencies, preferences, and anticipations of information and healthcare providers ([Kirchhoff et al., 2022](#)). Health-literate individuals engage in behaviors conducive to the preservation of their well-being, exercising caution before undertaking any actions that may impact their health adversely. Those with health literacy possess knowledge encompassing diverse physical and mental ailments, with heightened levels of health literacy enabling the recognition and comprehension of symptoms associated with certain illnesses ([Turhan et al., 2022](#)) ([Zhang et al., 2021](#)).

On a different note, moral foundations emerge as a significant and influential factor in one's life. Undoubtedly, ethics and moral principles wield a substantial influence in shaping an individual's conduct. Ethics are delineated as a framework of values and standards, or a compendium of permissible and acknowledged behaviors and restrictions that steer human conduct and actions across various spheres of life, be it individual or societal ([Mansouri Moradian et al., 2017](#); [Verhaeghen, 2020](#)). Social competence stands out as one of the concepts intertwined with ethics. Typically synonymous with social skills, social competence embodies a collection of cognitive, behavioral, emotional, and motivational aptitudes essential for achieving successful psycho-social adjustment, allowing individuals to consider the objectives and requirements of others while pursuing their own goals and needs ([Fritz, 2020](#); [Javo & Sørli, 2009](#)).

Individuals lacking adequate social competence face adverse outcomes such as social ostracism, diverse psychological maladies, academic underachievement, expulsion from educational institutions, and engagement in delinquent behavior. Attaining social competence necessitates the dismantling of unrealistic expectations, enabling individuals to fulfill their responsibilities effectively. It is imperative for each individual to introspect; if their standing within their family

and social circle has diminished over time, they should recognize that their exceedingly high expectations from others in the past have contributed to this decline in social status ([Darzi et al., 2021](#)).

The investigation conducted by [Kasmaei et al. \(2020\)](#) delved into the multitude of factors influencing the proclivity towards undergoing cosmetic surgery among Iranian students. In the realm of scholarly inquiry, a comprehensive descriptive-analytical study unfolded, encompassing the entirety of students at Guilan University of Medical Sciences with a particular focus on health-related matters. The cohort of participants, numbering 314 in total, was meticulously chosen through the methodical application of census sampling. The acquisition of data transpired through the utilization of a meticulously crafted multi-section questionnaire that encompassed a wide array of variables including socio-demographic indicators, perceptions of body image, levels of body satisfaction, and the underlying inclinations towards cosmetic surgery. Each participant diligently completed the aforementioned questionnaires through a process of self-reporting. The discerned outcomes of the study pointed towards a nexus between certain socio-demographic variables - such as Body Mass Index (BMI), gender, familial income, the occupational status of both parents, marital circumstances, as well as the educational attainment of fathers - and the propensity towards considering cosmetic surgery as a viable option. Furthermore, within the realm of psychological variables, the levels of body satisfaction and self-perception of body image, alongside prevailing attitudes, emerged as significant predictors of the inclination towards cosmetic surgical interventions.

The psychology surrounding the practice of cosmetic surgery remains an area that lacks comprehensive understanding, with limited research focusing on the psychiatric characteristics of individuals seeking such procedures, predominantly relying on clinical observations. Moreover, the escalating number of individuals opting for cosmetic surgery annually raises concerns about potential profound psychological implications, as highlighted by ([Khabbaz Sabet et al., 2022](#); [Vaughan-Turnbull & Lewis, 2015](#)). Consequently, there is a growing recognition of the necessity to conduct more systematic and comprehensive investigations in this domain. Hence, in alignment with the proposed conceptual framework, the forthcoming study aims to address the following inquiries:

1 -Is there a well-suited alignment observed in the model delineating the inclination towards cosmetic surgery, which is grounded in health literacy, incorporating the mediating influences of moral foundations and cognitive proficiency among female candidates undergoing cosmetic procedures?

2- To what extent do moral foundations and social competencies function as mediators in the interplay between health literacy and the decision-making process of women seeking cosmetic surgery interventions?

Material and Methods

In relation to the fundamental purpose and the methodology of data collection, the current study was classified as a descriptive correlational study based on structural equations. Within the proposed model, it was deduced that the inclination towards undergoing cosmetic surgery should be explored through the lens of health literacy, while also considering the mediating effects of moral foundations and social competence. In light of these explanations and the potential attrition of participants, a total of 285 individuals were meticulously selected using a purposive sampling approach. The statistical population under scrutiny within this research encompassed all female individuals seeking cosmetic enhancements and resorting to cosmetic surgery facilities in Tehran in 2023. The sampling methodology was deliberately chosen based on specific inclusion and exclusion criteria. Consequently, the cosmetic surgery facilities in the city of Tehran that expressed willingness to partake in this study were initially identified and subsequently administered with the questionnaires among the selected sample group. To conduct a comprehensive analysis of the gathered data, various conventional techniques in descriptive statistics, structural equations, path analysis, and multiple regression were employed, with the data being meticulously scrutinized utilizing the SPSS version 28 software.

Instruments

The research instruments utilized in the study included the Cosmetic Surgery Orientation Questionnaire and the Health Literacy Questionnaire, both meticulously designed and validated by reputable researchers.

The Cosmetic Surgery Orientation Questionnaire: This scale was developed by [E'temadifard and Amani \(2013\)](#), comprises a total of 24 inquiries structured on a five-point Likert scale ranging

from 1 (strongly disagree) to 5 (strongly agree). The cumulative score derived from this questionnaire ranges from 24 to 120, with higher scores indicating a more pronounced inclination towards cosmetic surgery. The reliability of this questionnaire was ascertained in previous studies, with a Cronbach's alpha coefficient of 0.79 and a confirmatory factor analysis validity coefficient of 0.76.

Health Literacy Questionnaire: This scale was formulated by [Montazeri et al. \(2014\)](#), consists of 33 items categorized into 5 distinct subscales: access (6 items), reading skills (4 items), understanding (7 items), evaluation (4 items), and decision making and utilization of health information (12 items). The responses to questions 1 to 4 are assessed on a Likert scale ranging from 1 (completely difficult) to 5 (quite easy), while questions 5 to 33 are graded based on a Likert spectrum from 1 (never) to 5 (always). The reliability of this questionnaire, assessed through Cronbach's alpha, ranged from 0.72 to 0.89, with its content and face validity being duly established.

The Moral Foundations Questionnaire: This scale was formulated by [Haight et al. \(2017\)](#) encompasses a total of 32 items, delineating five fundamental components of ethical considerations namely care, fairness, loyalty, respect, and purity. Respondents are required to rate these items on a 6-point Likert scale, where the initial 16 questions gauge the degree of importance ranging from 'not at all important' (0) to 'extremely important' (5), while the subsequent 16 questions assess agreement levels from 'strongly disagree' (0) to 'strongly agree' (5). The reliability coefficients for each dimension of the questionnaire as determined by [Haight et al. \(2017\)](#) were computed as follows: care (0.69), fairness (0.65), loyalty (0.71), respect for authority (0.74), and purity (0.84). Furthermore, they substantiated the content and structural validity of this questionnaire. Additionally, the convergent validity of this questionnaire was assessed and validated by its simultaneous administration alongside Schwartz's value finder framework.

The Social Competence Questionnaire: This scale was devised by Fellner et al. (1990) is comprised of 47 items rated on a 7-point Likert scale spanning from 'completely agree' (1) to 'completely disagree' (7). This questionnaire aims to evaluate four distinct dimensions encompassing cognitive skills, behavioral skills, emotional competence, and motivational traits. In the original iteration of the questionnaire, the overall reliability was estimated at 0.76 using

Cronbach's alpha, with the reliability coefficients for cognitive components at 0.87, behavioral aspects at 0.74, emotional facets at 0.73, and motivational traits at 0.64, alongside a reported favorable validity (Hoermann & Goerke, 2014). A study conducted in Iran scrutinized the reliability coefficients using Cronbach's alpha method for the cognitive skills, behavioral skills, emotional competence, and motivational traits subscales, yielding values of 0.85, 0.79, 0.82, and 0.80 respectively, culminating in a total reliability coefficient of 0.89. The validation of the questionnaire involved the utilization of confirmatory factor analysis, revealing substantial correlations between the items and their respective components (Darzi et al., 2021).

Results

1 -Is health literacy able to predict the tendency to cosmetic surgery in women applying for cosmetic surgery?

Table 1. Path coefficient of the direct effect of health literacy on the tendency to cosmetic surgery

Path		Unstandardized coefficient	Standardized coefficient	T value	P	
Health literacy	To	Tendency to cosmetic surgery	-0.343	-0.481	-4.87	0.01

In Table 1, the results related to the path coefficients of the direct effect of health literacy on the tendency to cosmetic surgery are presented. Based on the obtained results, the path coefficients related to the relationship between health literacy and the tendency to cosmetic surgery are negative and significant at the alpha level of 0.05 ($p < 0.05$). Therefore, the hypothesis of the research is confirmed and it is concluded that health literacy is able to predict the tendency to cosmetic surgery in women applying for cosmetic surgery.

2 -Do ethical foundations play a mediating role in the relationship between the tendency to cosmetic surgery and health literacy in women applying for cosmetic surgery?

The bootstrap method was used to determine the statistical significance of the indirect effect of health literacy on the tendency to cosmetic surgery with the mediation of ethical foundations. The results obtained are presented in table 2.

Table 2. The path coefficient of the indirect effect of health literacy on the tendency to cosmetic surgery through the mediating role of moral foundations

Indirect effect			Standardized coefficient	P
Predictor	Mediator	Dependent		
Health literacy	Moral foundations	Tendency to cosmetic surgery	-0.106	0.05

Based on the obtained results, the coefficient related to the indirect effect of health literacy on the tendency to cosmetic surgery through the mediating variable of moral foundations is significant at the alpha level of 0.05 ($p < 0.05$). Therefore, the hypothesis of the research based on the mediating role of moral foundations in the relationship between the tendency to cosmetic surgery and health literacy in women applying for cosmetic surgery is confirmed.

4 -Does social competence play a mediating role in the relationship between the tendency to cosmetic surgery and health literacy in women applying for cosmetic surgery?

The bootstrap method was used to determine the statistical significance of the indirect effect of health literacy on the tendency to cosmetic surgery with the mediation of social competence. The results obtained are presented in table 3.

Table 3. The path coefficient of the indirect effect of health literacy on the tendency to cosmetic surgery through the mediating variable of social competence

Indirect effect			Standardized coefficient	P
Predictor	Mediator	Dependent		
Health literacy	Social competence	Tendency to cosmetic surgery	-0.100	0.05

Discussion

Based on the findings derived from the analysis, it is evident that the coefficient associated with the indirect impact of health literacy on the inclination towards cosmetic surgery, mediated by the variable of social competence, demonstrates statistical significance at the conventional alpha threshold of 0.05 ($p < 0.05$). Consequently, the research hypothesis regarding the mediating function of social competence in the correlation between the propensity for cosmetic surgery and health literacy among female individuals seeking cosmetic enhancements is validated.

No direct investigation has been specifically undertaken to explore the inverse association between health literacy and the proclivity towards cosmetic surgery; nevertheless, it is plausible to draw upon relevant literature within this domain, such as the inquiry conducted by [Azizi et al. \(2008\)](#).

Furthermore, the examination carried out by [Talebi and Nikshenas \(2022\)](#) revealed a noteworthy correlation between health literacy and physical well-being among overweight female students in high school. The competence in health literacy plays a pivotal role in enhancing the overall health status of individuals, including employees. In elucidating the nexus between health literacy and the inclination towards cosmetic surgery, health literacy can be delineated as the capacity to comprehend, interpret, and implement health-related directives, thereby advocating for a healthy way of life to avert health maladies. Both health literacy and lifestyle choices emerge as pivotal determinants of individual health outcomes. Presently, health literacy stands as a pressing global concern due to the myriad adverse health repercussions stemming from inadequate health literacy levels. The primary aim underpinning the enhancement of health literacy revolves around empowering individuals to exert greater autonomy over their health, thereby fostering enhanced functionality and diminishing the predisposition towards resorting to cosmetic procedures.

In light of the outcomes obtained, the coefficient linked to the indirect influence exerted by health literacy on the inclination towards cosmetic surgery through the intermediary construct of moral foundations exhibited statistical significance, thereby substantiating the research hypothesis centered on the mediating function of moral foundations in the linkage between health literacy and the propensity for cosmetic surgery among female candidates seeking cosmetic interventions. An examination of the scholarly literature reveals a dearth of direct investigations addressing this specific research nexus.

In the discourse provided earlier, one may posit that health literacy pertains to the capacity to comprehend, interpret, and act upon health-related information and recommendations. Individuals characterized by inadequate health literacy exhibit a diminished likelihood of comprehending both written and verbal instructions imparted by healthcare professionals, consequently hindering their ability to adhere to prescribed directives. Moreover, such individuals tend to experience inferior health statuses and accrue higher medical expenditures. Consequently, contemporary society perceives insufficient health literacy as a pervasive global menace. Conversely, individuals who possess strong moral foundations typically demonstrate a propensity towards minimal interest in cosmetic surgery, primarily due to their profound respect for the rights of others (linked to the concept of respect). These individuals prioritize the well-being of the collective populace and prioritize group interests (associated with the notion of fairness), thereby adhering to societal

norms and abstaining from behaviors deemed incongruent. In essence, it can be broadly asserted that each facet of moral foundations exerts a discernible influence on individual conduct. The moral foundation subscales, notably sanctity, serve to liberate individuals from ingrained thought patterns, habitual behaviors, and detrimental tendencies, consequently facilitating effective behavioral regulation and enhancing adaptive capacities ([Bespalov et al., 2017](#)). The moral foundations theory endeavors to mitigate various uncertainties inherent in human attitudes, elucidating that individuals characterized by elevated moral standards exhibit diminished proclivities towards cosmetic surgery.

Upon scrutinizing the findings, it becomes evident that the coefficient associated with the indirect impact of health literacy on the inclination towards cosmetic surgery, mediated through the intermediary variable of social competence, holds substantial significance. Hence, the research hypothesis positing the mediating role of social competence in the nexus between the propensity for cosmetic surgery and health literacy among women seeking cosmetic enhancements is duly validated. A critical analysis of the existing literature reveals a notable dearth of direct investigations within this domain.

In the discourse provided earlier, it is conceivable to assert that health literacy stands as a pivotal constituent within the realm of public health. The concept pertains to the aptitude of individuals to obtain, analyze, and comprehend the information and healthcare services requisite for making informed decisions in health-related domains. This phenomenon, termed health literacy, essentially encapsulates the extent to which individuals possess knowledge, comprehend healthcare, and can effectively apply it within the healthcare system, as expounded by [Karimi et al. \(2020\)](#). Health literacy assumes a consequential role in enhancing health promotion behaviors and fostering environmental conduct among members of society. It plays a pivotal and imperative function in the realm of health promotion. By catalyzing alterations in lifestyle choices and behavioral patterns related to the environment, health literacy can empower both individuals and communities to make enlightened decisions concerning matters that impact the attainment and sustenance of health, consequently fostering heightened social adeptness. Social adeptness denotes individuals' capacity to forge positive relationships with others, exhibit precise and developmentally-appropriate social cognition, demonstrate adaptive behaviors, and enact

efficacious social conduct ([Moradi & Chemelnezhad, 2021](#)). The multifaceted construct of social adeptness encompasses dimensions such as self-awareness, social awareness, self-management, relationship management, and responsible decision-making. Self-awareness encompasses competencies related to recognizing and discerning one's strengths and weaknesses. Self-management pertains to the ability to regulate personal motivations and emotions effectively. Social awareness is closely intertwined with empathy and the capability to empathize and share emotional states with others. Responsible decision-making signifies a person's conscientious consideration of ethical, safety, and social factors when navigating decision-making processes, elucidated by [Halberstadt et al. \(2001\)](#).

Conversely, the proliferation of cosmetic surgeries within society, coupled with the concomitant tethering of self-esteem and happiness to facial aesthetics, can be construed as a manifestation of internal conflicts and motivations stemming from individuals' endeavors to grapple with anxiety, feelings of inadequacy, interpersonal conflicts, and other personal challenges. As a transitory and readily accessible recourse, rather than reinforcing individual and interpersonal cognitive competencies to cultivate a fulfilling and contented life, individuals may opt for external interventions, including cosmetic procedures, to enhance their physical appearance. Consequently, the superficial veneer of identity assumes undue prominence, overshadowing other facets of one's being. Essentially, when adaptive strategies fail to restore one's sense of self-worth and self-esteem, individuals might resort to altering their appearance in response to adverse and inaccurate evaluations, with the aim of reclaiming their self-worth and esteem. Simultaneously, they may unwittingly suppress numerous conflicts erroneously attributed to these evaluations. Consequently, not only may the individual's quality of life fail to witness an upsurge, but also an escalation in psychological challenges might transpire. Hence, individuals endowed with social adeptness exhibit diminished inclinations towards pursuing conventional standards of beauty.

In delineating the constraints of the current investigation, it is imperative to underscore the absence of control over demographic variables such as age, gender, socioeconomic status, cultural and ethnic background, alongside the cross-sectional design characterizing the research methodology. In conclusion, it is recommended that future research endeavors incorporate longitudinal studies as a fundamental methodological approach. Moreover, an essential aspect to consider is the exploration and assessment of the impact of demographic factors and cultural-economic factors as

moderating variables. Additionally, to enhance the generalizability of findings, it is imperative to conduct the study across various age groups and in diverse urban settings characterized by distinct cultural norms.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Ethics statement

The studies involving human participants were reviewed and approved by the ethics committee of the Islamic Azad University. The patients/participants provided their written informed consent to participate in this study.

Author contributions

All authors contributed to the study conception and design, material preparation, data collection, and analysis. All authors contributed to the article and approved the submitted version.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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