

Psychological Factors Influencing Appearance Anxiety Among Adolescents: A Systematic Literature Review

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Abstract: Anxiety is a common mental health disorder, with recent studies emphasizing a growing trend of appearance-related concerns among adolescents. Therefore, this study aimed to systematically examine psychological factors related to the prevention and intervention of anxiety disorder. The examination process comprised searching 7 databases for studies investigating psychological factors influencing appearance anxiety among adolescents. The review focused on primary studies published in English between 2014 and 2024, which measured appearance anxiety as a dependent variable. Additionally, a narrative synthesis was conducted on 22 studies that met the inclusion criteria. As a result, the review identified 4 domains of psychological factors influencing appearance anxiety, including 1) personal (eg social media addiction), 2) cognitive (eg value), 3) emotional (eg body shame), and 4) social factors (eg teasing). The findings showed a more complex pattern between these domains, particularly describing the way cognitive and emotional factors mediated the effect of social and personal factors on appearance anxiety. Within each domain, there was considerable homogeneity in the specific factors identified. Consequently, these findings showed the importance of focusing on cognitive and emotional factors in both prevention and intervention strategies for appearance anxiety. Future studies should include other populations, such as young adults and LGBTQ individuals. This is because studies have shown that appearance anxiety is prevalent in the groups, allowing for more generalized findings.

Keywords: adolescents, appearance anxiety, psychological factors, systematic literature review

Introduction

Mental health disorders are characterized by difficulty in interaction and behavior due to disruption in emotion and cognition.¹ Freeman et al,¹ stated that the heart of mental health is recovery concerning thinking, reacting, and behaving differently in problematic situations. However, Erskine et al,² found that expert intervention is not available in most low- and middle-income countries. Based on available data in 2019, 1 out of 8 people, or 970 million people worldwide, including in high-income countries are experiencing mental health disorders with anxiety and depression being the most common.³ Fusar-Poli et al,⁴ mentioned another major problem which is limited reports about mental health promotion. Therefore, treatment including promotion and intervention should receive more attention.

In the United States, a high-income country, anxiety was reported as the most common mental health disorder with a prevalence of 13% stable throughout life and 8% only for 12 months, in adults and adolescents.⁵ In Malaysia, as a middle-income country, anxiety prevalence reached 6–8% out of the general population.⁶ Meanwhile, in African countries, anxiety prevalence ranged from 4.4% to 4.9%.⁷ These data show that anxiety prevalence is mostly higher together with income rates. Leichsenring & Leweke⁵ also found that 1) Anxiety usually develops in early adolescence at 13 years, and mostly easily becomes chronic, 2) The development of anxiety is usually comorbid with major depression. This leads to high suicidal levels, bad social function, such as lower productivity and quality of life, higher school dropouts, and harmful romantic relationships, together with drug use and recurrent avoidance behavior.

From 2016 to 2021, 1 out of 5 adolescents in the world was diagnosed to have a mental health disorder with the most common being anxiety.^{8,9} Previous reports confirm that anxiety can be very harmful and dangerous for adolescents, as it correlates with early mortality and high suicidal levels.^{9,10} This is presumably because adolescence is a period of brain and body development, with puberty being the main characteristic. Puberty is marked by hormonal changes, formulation of self-concept, and behavioral patterns, which are the result of adaptation to a different and more complex environment.^{11–13} Furthermore, puberty predisposes adolescents to internalization problems such as mood and anxiety disorder, which is more prevalent among girls.¹⁴

Based on previous studies, mental health disorders among adolescents are strongly influenced by body image.^{13,15–18} In general, body image is a multi-dimensional construct and consists of 4 main domains namely perceptual (view of the body), affective (feelings about the body), cognitive (thoughts and beliefs about the body), and behavioral (expected behaviors when happy/displeased with the body).¹⁹ The affection domain, specifically anxiety of negative evaluation from others, globally known as appearance anxiety, is especially impactful to adolescents. Elkind²⁰ mentioned the unique trait of egocentrism among adolescents, referring to belief that others constantly observe and judge appearance. Given this characteristic, adolescence can be considered a period vulnerable to appearance anxiety.

Appearance anxiety is a significant predictor and symptom of globally registered body image disturbances such as body dysmorphic and eating disorders.^{15,21} Based on previous studies, adolescents with body dysmorphic and eating disorders often have worse health scores.^{22,23} Several significant negative impacts of appearance anxiety that appear among adolescents include having emotional problems and problematic behavior, poor school attendance, poor relationships with friends or family, and also a history of attempting suicide or self-harm.^{23,24}

Various problematic situations outside controls that could predict appearance anxiety are puberty timing and socio-demographic factors such as age, family finances, and gender.²⁵ Many other factors may not occur but are still felt by adolescents, including pressure from media, family, and peers leading to social comparison, media ideal internalization, and negative body image.^{26,27} These factors are especially more dominant in the era of globalization and technology which facilitates more of the process of internalization and comparison of ideal appearance.²⁸ A previous study by Fioravanti¹¹ has systematically reviewed existing researches on the relationship between social media, beauty ideals and body image. The results consistently showed that exposure to images on social media portraying unattainable beauty ideals—such as thinness, attractiveness, and fitness—negatively impacts body image among young male and female viewers as the process of appearance comparison plays as a key role. From an early age, individuals are taught that appearing flawless in the eyes of peers, and on social media is crucial for achieving success, happiness, as well as garnering love and admiration.²⁹ Consequently, many people strive for perfection and experience dissatisfaction with personal physical appearance.

To provide some context for the current synthesis, there is currently only one published review specific to appearance anxiety as the outcome, consists of an overview of 126 studies published before 2014 that examined predictors of appearance anxiety.³⁰ As such, the current review focuses on providing the latest, comprehensive and integrated synthesis of influencing factors of appearance anxiety. However, at this moment, there are only a few interventions, treatments, and promotions aimed at appearance anxiety for adolescents, as there are only 5 related treatment studies in the last 10 years.^{31–35} It is crucial to synthesize the literature to allow for a specific view, given the limited strategies for adolescents, addressing what are the psychological factors that influence appearance anxiety among adolescents. Therefore, this study aimed to explore psychological factors influencing appearance anxiety among adolescents which could be used as a basis in the treatment for appearance anxiety.

Methods

The review process was carried out in accordance with PRISMA guidelines.³⁶ The review protocol has been previously registered with PROSPERO under the number CRD42024565519.

Search Strategy

The search was carried out by entering key terms with a Boolean strategy related to appearance anxiety (appearance anxiety, physique anxiety, physical anxiety), psychological factors (cognitive factors, affection factors, personal factors, social factors), and age categories (adolescents, teenagers, and youth). The databases include Medline Ultimate through EBSCO, Scopus,

Sage, PubMed, Cambridge, Taylor & Francis, Springer, and Emerald. The initial search was carried out by the first reviewer in April 2024 and updated in May 2024. The full details of the search strategy are provided in [Supplementary Material](#).

Inclusion and Exclusion Criteria

To be included, studies needed to be assessed by the first reviewer based on the second reviewer and third reviewer opinions on the content. The inclusion criteria were studies (a) written in English, (b) include a specific measuring instrument for appearance anxiety as the dependent variable, (c) investigate psychological factors as the independent variable, (d) mixed or quantitative, (e) subjected to peer-review and published since 2014, (f) could be accessed in full-text, (g) participants in the age range 10–19 years old. Exclusion criteria included (a) studies whose participants were part of mental clinical and/or medical patients, (b) have ambiguous meanings of appearance anxiety, (c) correlation studies with no direction, (d) interventional, book chapters, and magazine studies. The full details of the inclusion and exclusion criteria are provided in [Supplementary Material](#).

Study Selection

Search results were transferred to Mendeley, reference manager software, and duplicates were removed. The first reviewer screened the titles and abstracts then independently reviewed the full-text for selection. Disagreements regarding the inclusion or exclusion of studies were resolved by the second and third reviewers.

Data Extraction

A sheet was designed for data extraction to ensure that all important results were captured for data syntheses. The data extracted from each study include author, year of publication, country, study design, sample characteristics (consisting of sample size and ethnicity), key results, factors (coded into personal, cognitive, emotional, and social factors), and risk of bias. The extraction process was then validated by second and third reviewers.

Quality Assessment

Full-text studies that passed the inclusion and exclusion criteria were assessed by Dunne's 12-item quality appraisal tool,³⁷ to evaluate the risk of bias. Generally, items on the checklist included information on the sample included, the statistical analysis, and the appropriate results. Items were marked with either a "yes", "partial", or "no". A score of "2" was given to those marked "yes", a score of "1" was given to items marked "partial" and a score of "0" was given to items marked "no". Studies that scored between 24 and 17 were deemed good quality, 16–9 were deemed acceptable quality, and 8–0 were considered low quality.

Data Synthesis

Differences in study characteristics, including design, sample characteristics, measuring instruments used, and varieties of psychological factors as independent variables produce heterogeneity in results. Due to the heterogeneous nature of the included studies, narrative synthesis was used to bring together diverse sets of narratives. Studies were then grouped based on different categories of psychological factors. Differences in age group (such as early, middle, and late adolescence), race, and gender were used to describe the narrative.

Results

Study Selection

Following the database searches, 1246 studies were identified for possible inclusion in the review including 161 in Medline Ultimate through EBSCO, 822 in Scopus, 36 in Sage, 20 in PubMed, 12 in Cambridge, 28 in Taylor & Francis, 131 in Springer, and 36 in Emerald. During the initial screening, 140 duplicates and 10 abstract-only studies were removed. Subsequently, during the screening of the title-abstracts, 1004 studies that did not meet the inclusion or exclusion criteria were removed, leaving only 92 for full-text review. From these studies, 2 full papers were no longer available for download, then 22 were identified to meet the inclusion and exclusion criteria for review, as shown in [Figure 1](#).

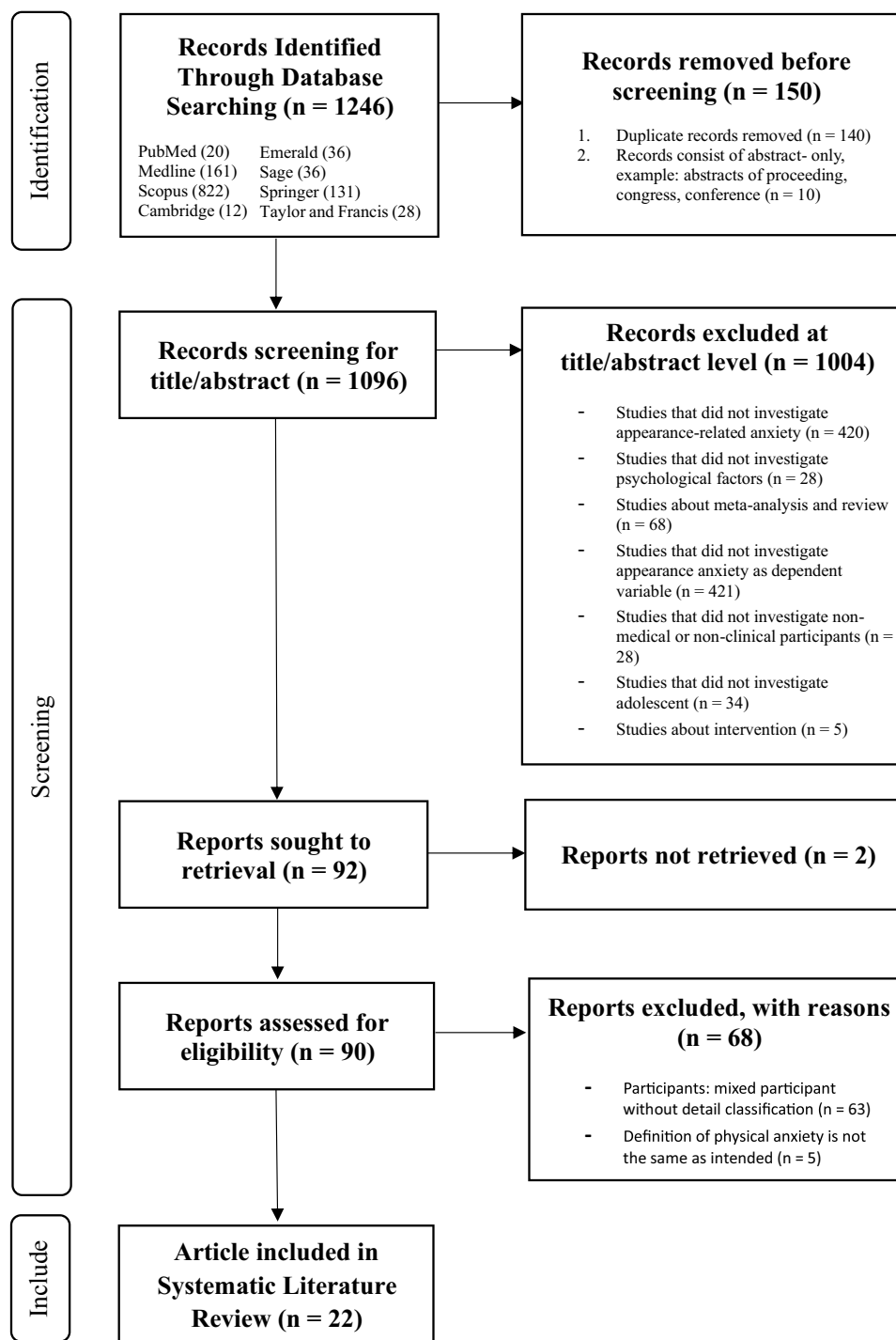


Figure 1 PRISMA 2020: Flow Diagram for Systematic Review. Adapted from Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372. Creative Commons.

Quality Assessment of Risk of Bias

The 22 studies included were either quantitative or mixed-method studies with the majority being quantitative. The risk of bias assessment was carried out using Dunne's 12-item quality appraisal tool. Based on the result, none of the studies showed a score of "Low Quality" with 16 having a score of "Good Quality" while 6 were considered

“Acceptable Quality” as shown in [Table 1](#). The full scores of the quality appraisal process are provided in [Supplementary Material](#).

Study Characteristics

The publication dates ranged from 2014 to 2024 and there was a total of 15,806 participants. Sample sizes ranged from 93 to 3,149, while the designs were mostly cross-sectional ($n = 12$), psychometric analysis ($n = 5$), and longitudinal ($n = 5$). A total of 3 studies had female participants only, while the remaining had a combination of males and females. The results also showed that 4 studies did not report the age range and the remaining reported the age range of 10–19. Study locations varied from USA ($n = 1$), Canada ($n = 1$), Italy ($n = 2$), Australia ($n = 7$), Turkey ($n = 4$), Singapore ($n = 1$), Spain ($n = 4$), Switzerland ($n = 1$), Iran ($n = 1$). Only 12 studies reported ethnicity of the sample including White/Caucasian, Hispanic/Latino, Black/African, American First Nation People/Torres Strait Islander/Pacific Islander, Asian and Anglo-Celtic descent. Summary characteristics are provided in [Table 1](#).

Result of Synthesis

The key results were then categorized into 4 types of psychological factors including Personal, Cognitive, Emotional, and Social.

Personal Factor

Personal factors consist of 1) positive development framework, 2) Addiction such as social media and smartphone usage, 3) social avoidance, 4) maladaptive coping, 5) social desirability, 6) motivation regulation, 7) Quality of Life, and 8) Social Anxiety.

Positive development, quality of Life, and social anxiety are frameworks where personal and social factors interact, providing support for positive development among adolescents. Furthermore, the dimension of positive development consists of connection, confidence, character, competence, and caring. Low positive development could predict high appearance anxiety.²⁹ High appearance anxiety is characterized by a poorer quality of life, underscoring the profound impact of these personal factors on overall well-being.²³ Webb et al,⁴³ also found that high social anxiety directly predicts appearance anxiety.

Addiction in this study points to technological usages such as social media (Instagram and general social media) and smartphones (especially listening to music, website browsing, and watching TV). All these addictions can predict high appearance anxiety.^{29,40,46,49} Some studies further explained that addiction increases social comparison, internalization of media ideals, and victimization.

Social avoidance, maladaptive coping, and social desirability are among behavior tendencies that can predict high appearance anxiety. A previous study⁴² showed that social avoidance and appearance anxiety have 2-way interaction. This implies that social avoidance enhances appearance anxiety and vice versa. Maladaptive coping is a behavior exhibited as a response to distress which is low self-esteem, resulting in high appearance anxiety.⁴⁵ Antonietti et Al⁴⁵ also showed that high social desirability (as a covariate) directly predicts appearance anxiety. Social desirability refers to the willingness of an individual to become socially desirable.

Motivation regulation is also one of the factors that predict appearance anxiety. There are 6 motivation regulations, and a previous study elaborated on 4 regulations with significant effects.⁵⁴ High competence directly predicts low appearance anxiety mediated by integrated, identified, introjected, and low external regulation.

Cognitive Factors

Cognitive Factors consist of 1) self-esteem, 2) visual perspective, 3) social comparison, 4) internalization of media ideal, 5) value, 6) appearance control belief, and 7) body surveillance.

There are 4 cognitive assessment aspects that can predict high appearance anxiety, namely self-esteem, visual perspective, social comparison, and body surveillance. According to 2 studies, low self-esteem can predict high appearance anxiety.^{45,50} A previous study⁴⁸ showed that visual perspective influences the estimation of the body visually to increase or decrease appearance anxiety. Two studies^{46,49} found that social comparison leads to high appearance

Table 1 Included Studies

Authors	Country	Study Design	Sample Characteristic		Key Findings	Factors	Risk of Bias
			Sample Size	Sample Ethnicity			
(Zimmer-Gembeck et al, 2018) ¹³	Australia	Longitudinal	387 (10–13 y/o): 44% Boys 56% Girls	Australia	• High parental and peer teasing predicts both boys' and girls' emergence of appearance anxiety • Lower parental and peer teasing predicts the increase of girls' appearance anxiety over time while high peer teasing predicts the increase of late maturing girls' appearance anxiety over time • High parental and peer teasing predicts the increase of early maturing boys' appearance anxiety over time	• Parental teasing (SF) • Peer teasing (SF)	Good
(Fathirezaie et al, 2024) ³⁸	Iran	Cross-Sectional	318 (15–17 y/o): 100% Girls	Not Reported	High Machiavellianism could predict High appearance anxiety mediated by Low child's perception of parents' supportive attitude of the child's needs	Need-supportive (SF)	Good
(Ekinci & Akat, 2023) ²⁹	Turkey	Cross-sectional	508 (High Schooler): 34.6% Boys 65.4% Girls	Not Reported	There are 4 paths: 1. High Anxious-Ambivalent directly predicts high appearance anxiety 2. High Anxious-Ambivalent predicts high appearance anxiety mediated by low positive youth development framework 3. High Anxious-Ambivalent predicts high appearance anxiety mediated by high Instagram addiction 4. High Anxious-Ambivalent predicts high appearance anxiety mediated by low positive youth development framework and high Instagram Addiction	• Anxious-Ambivalent Attachment (EF) • Positive Youth Development Framework: Connection, Confidence, Competence, Character, Contribution, Caring (PF) • Instagram Addiction (PF)	Good
(Ruiz et al, 2021) ³⁹	Spain	Cross-sectional	439 (13–19 y/o): 35.8% Boys 64.2% Girls	Not Reported	There are 3 paths: 1. High Body Shame predicts low sexting mediated by high appearance anxiety (Higher on Girls) 2. High Body Shame predicts low sexting mediated by high SNS addiction 3. High Body Shame predicts low sexting mediated by high appearance anxiety and high SNS addiction	Body Shame (EF)	Acceptable

(Zimmer-Gembeck et al, 2021) ⁴⁰	Australia	Longitudinal	650 (15–19 y/o): 41% Boys 59% Girls	• 80.1% White/ Caucasian • 14.9% Asian • 1% First Nation People / Torres Strait Islander / Pacific Islander • 4% others	• High face to face and cyber victimization predicts boys' and girls' high appearance anxiety (Higher on girls). • High social media usage only predicts girls' appearance anxiety • High Face to face victimization predicts boys' and girls' increase of appearance anxiety over time (Girls more stable).	• Face to face victimization (SF) • Cyber victimization (SF) • Social media addiction (PF)	Good
(Gardner et al, 2021) ⁴¹	Australia	Cross-sectional	271 high Schooler (14–18 y/o): 48% Boys 52% Girls 485 University Students (14–28 y/o): 37% Male 63% Female	High Schooler: • 80% White/ Caucasian • 15% Asian • <1% First Nation People / Torres Strait Islander / Pacific Islander • 5% others University Students: • 63% White/ Caucasian • 8% Asian • 2% First Nation People / Torres Strait Islander / Pacific Islander • 27% others	High Appearance Rejection Sensitivity shows higher appearance anxiety, both for boys and girls.	Appearance rejection sensitivity (EF)	Good

(Continued)

Table 1 (Continued).

Authors	Country	Study Design	Sample Characteristic		Key Findings	Factors	Risk of Bias
			Sample Size	Sample Ethnicity			
(Dakanalis et al, 2016) ⁴²	Italy	Psychometric	1995 general (11–18 y/o): 50.2% Boys 49.8% Girls 703 Clinical patients (11–18 y/o): 9.9% Boys 90.1% Girls	• 93% White/ Caucasian • 2.2% Hispanic/ Latino • 4.8% other or mixed ethnic heritage	• Result supports previous finding that social avoidance and appearance anxiety have 2-way interaction • Result supports previous finding that feedback related to appearance such as teasing predicts appearance anxiety	• Social avoidance (PF) • Appearance-related feedback: teasing (SF)	Good
(Webb et al, 2015) ⁴³	Australia	Cross-sectional	188 (10–13 y/o): 45.2% Boys 54.8% Girls	• 76.7% white/ Caucasian • 15.9% Asian • 7.4% others	There are 4 paths: 1. High Social Anxiety directly predicts appearance anxiety (Higher in girls) 2. High Cross-sex Peer teasing directly predicts appearance anxiety 3. High Social Anxiety directly predicts appearance anxiety mediated by Appearance Rejection Sensitivity (Higher in girls) 4. High same-sex and cross-sex Peer teasing directly predicts appearance anxiety mediated by Appearance Rejection Sensitivity (Higher in girls)	• Social anxiety (PF) • Cross-sex Peer appearance teasing (SF) • Appearance Rejection Sensitivity (EF)	Good
(Stadulis et al, 2014) ⁴⁴	USA	Psychometric	179 (11–14 y/o): 100% Girls	100% African-American	Initial score of appearance anxiety for black girls are the same with white girls but while BMI increased, the increase of appearance anxiety among black girls remained the same shows that being skinny is not valued that much in their culture	Culture (SF)	Acceptable
(Antonietti et al, 2020) ⁴⁵	Switzerland	Longitudinal	1085 (no age range reported): 46.4% Boys 53.6% Girls	Not reported	There are 3 paths: 1. Low self-esteem directly predicts appearance anxiety 2. High social desirability (as covariate) directly predicts appearance anxiety 3. Low self-esteem directly predicts appearance anxiety mediated by high maladaptive coping	• Self-esteem (CF) • Social desirability (PF) • Maladaptive coping (PF)	Good

(Caner et al, 2022) ⁴⁶	Turkey	Cross-sectional	1363 (no age range reported): 36.2% Boys 63.8% Girls	Not reported	- Girls show higher social media addiction which predicts appearance anxiety - Both boys and girls who follow influencer will do upward comparison and internalization of ideal body image from media, resulting in high appearance anxiety	- Social media addiction (PF) - Social comparison (CF) - Internalization of media ideal (CF)	Good
(Sicilia et al, 2022) ⁴⁷	Spain	Psychometric	1130 (10–14 y/o): 52% Boys 48% Girls	Not reported	- Thin Body Ideal highly predicts appearance anxiety - Muscular Body Ideal have less significant effect on appearance anxiety, mostly because appearance anxiety is higher in girls and girls usually internalized thin as ideal	Internalization of Media Ideal (CF)	Acceptable
(Monthuy-Blanc et al, 2022) ⁴⁸	Canada	Psychometric	93 (14–18 y/o): 28% Boys 72% Girls	100% White/ Caucasian	- Paper based assessment usually resulting in overestimate of body size which predicts higher appearance anxiety while VR negates that effect. - Both girls and boys' results shows the same effect.	Visual perspective (CF)	Good
(Yang et al, 2020) ⁴⁹	Singapore	Cross-sectional	100 (13–18 y/o): 100% Girls	60% Chinese 18% Malay 9% Indian 13% Others	There are 2 paths: 1. High social media and smartphone usage (listening to music, website browsing and watch TV) predicts appearance anxiety mediated by internalization 2. High social media and smartphone usage (listening to music, website browsing and watch TV) predicts appearance anxiety mediated by internalization then social comparison	- Internalization of media ideal (CF) - Social comparison (CF)	Acceptable
(Allen et al, 2020) ⁵⁰	Australia	Cross-sectional	449 (11–17 y/o): 40% Boys 60% Girls	83% Anglo-Celtic descent 17% others	- Higher negative aspect of self-compassion (negative sense of self) highly predicts appearance anxiety (higher in girls) - Lower positive aspects (especially self-focused perspective-taking ability) is insignificant	Self-compassion: Self-focused perspective-taking ability, Self-esteem, Self-efficacy, Negative sense of self (EF)	Acceptable
(Alpkaya, 2019) ⁵¹	Turkey	Cross-sectional	524 (8 th grade): 46.2% Boys 53.8% Girls	Not reported	- Government's physical activity promotion (television and social media program) may have given rise to a desire to derive physiological, psychological, and physical benefits, including decrease in appearance anxiety - Results between boys and girls are the same	Desire to gain favor / benefit (EF)	Good

(Continued)

Table I (Continued).

Authors	Country	Study Design	Sample Characteristic		Key Findings	Factors	Risk of Bias
			Sample Size	Sample Ethnicity			
(Seki & Dilmaç, 2015) ⁵²	Turkey	Cross-sectional	600 (13–18 y/o): 53.6% Boys 46.4% Girls	Not reported	• Higher value predicts low appearance anxiety. • Girls shows more negative value than boys	Value: Responsibility, Friendship, Peacefulness, Respect, Honesty, Tolerance (CF)	Good
(Dakanalis et al, 2015) ⁵³	Italy	Mixed-method (longitudinal interview)	685 (14–15 y/o): 47% Boys 53% Girls	• 94% White/Caucasian • 2% Hispanic/Latino • 4% others or mixed	• There is 1 path: Media-ideal internalization predicts appearance anxiety mediated by self-objectification • Girls shows higher evaluation (self-objectification) even though both boys and girls have high internalization	Self-objectification: Body Surveillance (CF)	Good
(Sicilia et al, 2014) ⁵⁴	Spain	Cross-sectional	398 (12–19 y/o): 55.2% Boys 44.8% Girls	Not reported	• There are 5 paths: 1. High competence need satisfaction directly predicts low appearance anxiety 2. High competence need satisfaction directly predicts low appearance anxiety mediated by high integrated regulation 3. High competence need satisfaction directly predicts high appearance anxiety mediated by high identified regulation 4. High introjected regulation directly predicts high appearance anxiety 5. High competence need satisfaction directly predicts high appearance anxiety mediated by low external regulation • Psychological needs of autonomy and relatedness is not significant predictors. • Motivation (intrinsic motivation and amotivation) is not significant predictors. • Effect of gender is not measured.	• Psychological Need Satisfaction: Competence Satisfaction (EF) • Motivation Regulation: Integrated, Identified, Introjected, External (PF)	Good

(Sicilia et al, 2020) ⁵⁵	Spain	Psychometric	898 (10–14 y/o): 49.1% Boys 50.9% Girls	Not reported	• High body surveillance predicts high appearance anxiety • High body shame predicts high appearance anxiety • Low appearance control belief predicts high appearance anxiety • Differences between gender is not explained	• Body Surveillance (CF) • Body shame (EF) • Appearance control belief (CF)	Good
(Zimmer-Gembeck et al, 2022) ⁵⁶	Australia	Longitudinal	397 (10–16 y/o): 44% Boys 56% Girls	• 79% White/ Caucasian • 15% Asian • 1% First Nation People / Torres Strait Islander / Pacific Islander • 5% Others	• There is a 2-way association between appearance rejection sensitivity and appearance anxiety • Girls' scores for appearance rejection sensitivity and appearance anxiety in each wave is higher than boys'	Appearance rejection sensitivity (EF)	Good
(Schneider et al, 2017) ²³	Australia	Cross-sectional	3149 (12–18 y/o): 63.5% Boys 36.5% Girls	• 35.3% White/ Caucasian • 32.1% First Nation People / Torres Strait Islander / Pacific Islander • 9.4% Asian • 5.6% Others • 17.6% Not Stated	• High appearance anxiety/ subthreshold Body Dysmorphic disorder is characterized with low mental health service use, poorer quality of life and high comorbid symptom yet failed to meet diagnostic standards of all comorbid pathology • Higher prevalence of subthreshold in older sample (15–18 y/o) than (12–14 y/o)	• Mental health service use (SF) • Quality of Life (PF)	Acceptable

Abbreviations: PF, Personal Factor; CF, Cognitive Factor; EF, Emotional Factor; SF, Social Factor.

anxiety. Furthermore, body surveillance which refers to a condition where individuals have concern and preoccupation due to low body esteem can predict high appearance anxiety.^{53,55} Self-perception and tendencies of adolescents for social comparison and self-objectification significantly influence appearance anxiety. Factors including rejection sensitivity and body shaming play crucial roles in the perception of adolescents and appearance in relation to peers.^{41,42}

According to reports, 3 thoughts can predict high appearance anxiety, namely internalization of media ideals, value, and appearance control belief. Several studies found that internalization of media ideal refers to how the ideal body may predict high appearance anxiety.^{46,47,49,53} Cultural contexts shape how appearance anxiety manifests in the minds of adolescents. Studies across various cultures reported that societal norms and media have led to the idealization of thin bodies for girls and muscular bodies for boys, contributing significantly to appearance anxiety.⁴⁷ Value, consisting of ideas about responsibility, friendship, peacefulness, respect, honesty, and tolerance can predict low appearance anxiety.⁵² Finally, appearance control belief, referring to ideas about how to control the body may predict low appearance anxiety.⁵⁵

Emotional Factors

Emotional Factors consist of 1) anxious-ambivalent attachment, 2) body shame, 3) appearance-related rejection sensitivity, 4) self-compassion, 5) desire to gain favor, and 6) psychological needs satisfaction.

Attachment, especially high anxious-ambivalent could predict high appearance anxiety. Ekinci & Akat²⁹ also stated that different psychological frameworks and attachment styles play a crucial role. For example, anxious-ambivalent attachment styles may predispose adolescents to higher appearance anxiety, mediated by factors including social media addiction and positive development frameworks, which can affect girls more than boys.

Body shame is a shameful emotion about the body, leading to high appearance anxiety.^{39,55} Furthermore, appearance-related rejection sensitivity is a tendency to expect rejection regarding appearance, which can directly predict or mediate other factors with high appearance anxiety.^{41,43} Self-compassion consists of self-focused perspective-taking ability, self-esteem, self-efficacy, and a negative sense of self. A higher negative aspect of self-compassion (negative sense of self) highly predicts appearance anxiety (higher in girls), while lower positive aspects (especially self-focused perspective-taking ability) produced an insignificant effect.⁵⁰ The final emotional factor namely desire to gain favor or benefit originates from how health and physical activity promotion by the government decrease appearance anxiety.⁵¹

Social Factors

Social Factors consist of 1) teasing both by parents and peers (same-sex and cross-sex), 2) victimization such as face-to-face victimization and cyber victimization, 3) perceived supportive attitude from parents to child's needs, 4) mental health service use, and 5) culture.

Teasing about an appearance by parents and peers, especially cross-sex peers, can predict high appearance anxiety.^{13,42,43} Both genders experienced varying levels of appearance anxiety based on interactions with peers and parents. For instance, high levels of teasing, whether from peers or parents, can significantly contribute to heightened appearance anxiety over time,^{42,43} particularly among girls.¹³

Victimization, especially face-to-face, is more significant than cyber victimization in predicting high appearance anxiety.⁴⁰ Both genders are affected by online interactions, but girls tend to exhibit higher levels of appearance anxiety related to social media use and victimization.^{39,40} This reflects the impact of digital environments on body image and self-esteem during adolescence.

Additionally, high Machiavellianism could predict high appearance anxiety mediated by a low perceived of parents' supportive attitude toward the child's needs.³⁸ Then infrequent use of mental health services by individuals experiencing high appearance anxiety or subthreshold Body Dysmorphic Disorder (BDD) because they failed to be diagnosed as one, further complicates the issue.²³ The last factor is culture, especially black people's culture, which interestingly does not value thinness as much as other ethnicities.⁴⁴

Regarding differences between gender, age and race, there were several interesting findings. Instability that male gender has when compared to females. In contrast to women whose appearance anxiety does not decrease or increase much due to psychological factors, appearance anxiety of men are very easy to increase and decrease.^{13,40} African-Americans' appearance anxiety was on average lower than Caucasians and Asians, even the increase of appearance

anxiety did not in line with the raise of BMI. This showed that the culture there did not value thin ideal that much and there are not much teasing and victimization among African-American women.⁴⁴ Previous review regarding race, ethnic and body image⁵⁷ showed that African-Americans particularly preadolescents, and Pacific Islanders are the primary groups that report a preference for a larger body size. Native Australians, on the other hand, expressed more thin and fit ideal concerns than America Caucasians while Hispanic about the same as America Caucasians. The findings for Asians and middle eastern were highly inconsistent as males have less concerns than Caucasians while females have higher concerns than Caucasians. For age, it is found that older adolescents had higher appearance anxiety than early adolescent which shows that appearance anxiety increase together with age.^{13,23,40}

Discussion

This review aimed to explore psychological factors influencing appearance anxiety among adolescents. In total, 22 studies with various factors were grouped into 4 domains. These groups included (1) personal factors, which consist of positive youth development framework, addiction such as social media and smartphone usage, social avoidance, maladaptive coping, social desirability, motivation regulation, quality of life, as well as social anxiety. 2) Cognitive factors, including self-esteem, visual perspective, social comparison, internalization of media ideal, value, appearance control belief, and body surveillance. 3) Emotional factors consisted of anxious-ambivalent attachment, body shame, appearance-related rejection sensitivity, self-compassion, desire to get favor, and psychological needs satisfaction. 4) social factors, which included teasing both by parents and peers (same-sex and cross-sex), victimization such as face-to-face and cyber victimization, perceived supportive attitude from parents to needs of a child, mental health service use, as well as culture. Following this discussion, all these identified domains predicted appearance anxiety.

The findings from all countries concerned in this investigation showed that Australia had the most comprehensive finding, with the following factors: 1) 5 social factors consisting of parental appearance teasing, peer appearance teasing, face-to-face victimization, cyber victimization, and mental health service usage.^{13,23,40,43} 2) 3 personal factors, including social media addiction, social anxiety, and quality of life.^{23,40,43} 3) 2 emotional factors, which consisted of appearance rejection sensitivity and self-compassion.^{41,43,50,56} Following this discussion, Turkey also had significant findings, including 1) 2 personal factors consisting of positive youth development framework and social media addiction.^{29,46} 2) 3 cognitive factors including social comparison, internalization of media ideal, and value.^{46,52} 3) 2 emotional factors consisted of anxious-ambivalent attachment and a desire to achieve favor/benefit.^{29,51} The following country was Spain, with 1) 1 personal factors of motivation regulation.⁵⁴ 2) 3 cognitive factors included internalizing media ideal, body surveillance, and appearance control belief.^{47,55} 3) 2 emotional factors included competence satisfaction and body shame.^{39,54,55} From these data, the study showed that high-income countries paid considerable attention to appearance anxiety, followed by Upper middle-income countries. The investigation supported a previous study stating that LMIC did not consider mental health a significant problem.²

Cognitive and emotional factors were the most commonly found among the various psychological factors. In cognitive domain, the following findings were found including 1) 3 studies showed how internalization of media ideal influenced appearance anxiety.^{46,47,49} 2) 2 studies discovered how social comparison influenced the disorder.^{46,49} This problem has become a trend on social media over the past decade.⁵⁸ A systematic review in 2019⁵⁸ showed the exceptional features of social media compared to traditional media, particularly in its capacity for real-time, authentic sharing of posts and images. However, this review also described some similarities between the two media forms, especially in the presentation of idealized content. For instance, social media frequently showed images that were edited, posed, and far from reality. This constant flow of unrealistic visuals facilitated social comparisons and contributed to body dissatisfaction among users. Despite the similarities, some differences could be observed in the source of the images. For example, traditional media primarily showed celebrities and models, but social media was dominated by images of peers. This shift in focus allowed for more impactful personal comparisons. The combination of factors suggested that social media might have a more detrimental impact on body image than traditional media.

Other factors included emotional factors consisting of 1) 3 studies showed how appearance rejection sensitivity influenced appearance anxiety.^{41,43,56} 2) 2 studies discovered how body shame influenced this disorder.^{39,55} Kollei and colleagues⁵⁹ found that unwanted and intrusive thoughts usually symbolized the emotional aspect of body image. The

investigation explained that individuals with factors usually felt shameful toward personal appearance and always expected to receive rejection from others. This action led to questioning the thoughts and grouping the person in each emotion. Negative emotions might arise uncontrollably but could be managed through a thought control strategy. These findings showed that emotional factors were a primary condition and treatment possible for appearance anxiety.

The study found that cognitive and emotional factors partially mediated some personal as well as social factors. The first example of this action was how social anxiety and teasing were mediated by appearance rejection sensitivity.⁴³ In addition, the finding was supported by previous studies conducted among college students.^{60,61} The second example was how social media and smartphone addiction were mediated by internalizing media ideal, social comparison, and self-objectification.^{46,49,53} The findings were supported by previously reviewed article on how SNS adopted influenced body image disturbance mediated by these factors among young adults or college students and working adults.^{11,62} Moreover, the investigations signified that the process of appearance anxiety was similar both for adolescents and adults.

The findings showed that focusing on cognitive and emotional factors in building intervention as well as promotion to overcome appearance anxiety was important. Additional studies about body image disturbance also stressed the importance of these factors in building interventions for adults, such as cognitive self-regulation and empowerment for cognitive factors.^{63,64} Other interventions included desire for self-protection, self-respect, and compassion for emotional factors.⁶⁵⁻⁶⁷ This study also showed that treatment concerning differences between gender, age, and race, which included 1) treatment for boys would be easier as well as less complicated compared to girls. 2) Addressing appearance anxiety issues for older adolescents and among Caucasians, Hispanics as well as Asians were more urgent because individuals from these regions were more prone to the disorder.

The psychological factors could be a reference for forming interventions and promotion to overcome appearance anxiety among psychologists, educators, parents and governments, which was different from biological as well as sociodemographic characteristics. This study not only focuses on risk factors but also highlights protective factors, such as value as one of cognitive factors and the role of self-compassion as part of emotional factors. It is suggested from previous appearance anxiety review,³⁰ that enhancing these positive protective factors in various methods and medias may help alleviate body-related concerns such as appearance anxiety. Future research could examine the role of educators, parents and governments in shaping positive beliefs and emotions about physical self-perception and performance, through positive physical education curriculum, positive value cultivation since early age and positive media contents.

Given that appearance anxiety is often negatively associated with having emotional, social and behavioral problems,^{23,24} there is a clear need for clinical intervention by mental health practitioners aimed at reducing appearance anxiety. Many benefits to overcoming and preventing appearance anxiety psychologically included reduced rates of suicide, depression, social anxiety, and eating disorders. Among 5 treatments dedicated to children and teenagers in the last 10 years, 2 treatments were already feasible.^{33,35} However, these findings showed that depression and suicide control were needed because the treatment had significant effect on eating behavior and anxiety of the patients. Following the discussion, combining depression and appearance anxiety for future treatment should be implemented.

Drawing from broader body image literature, several intervention strategies have shown effectiveness in reducing body image concerns: 1) experiential psycho-therapy,⁶⁸ 2) psycho-dynamic approaches,⁶⁹ and 3) cognitive-behavioral therapy (CBT),⁷⁰ with CBT demonstrating the most promising results. CBT techniques, such as psycho-education, self-monitoring and cognitive dissonance training, have already been adapted for use in clinical settings but many other techniques have not yet been tested.^{70,71} Previous researchers have also applied self-determination theory and stress-coping models to explain positive body-related emotions but other theoretical models also need to be explored and tested.^{72,73} Several limitations were identified in the course of this study. First, the review focused on adolescents in general and excluded participants with medical and clinical conditions such as injuries, depression, anxiety, and deformities. Second, participants from LGBTQ sexual orientation groups were not included. Therefore, future studies could explore different populations of adolescents, particularly those in developing and middle adulthood as well as sexual minority groups. The finding should be performed because high levels of body image disturbance, such as eating

disorders were commonly found in these groups. Third, the review was limited to literature published in English, excluding studies in other languages, which might offer additional understanding.

Conclusion

In conclusion, the systematic review identified a small number of psychological aspects that could influence the occurrence of appearance anxiety among adolescents. This review has also shown a lack of evidence of efficacy for interventions for children aged 10 years and above compared to adults. Some studies with significant favorable findings were unnoticed in the last 10 years as no treatment was based on those investigations for adolescents and children. Additionally, this review identified a few psychological factors, and many studies relied on different measures that could not be generalized. More investigation is needed to rigorously evaluate interventions that aim to improve positive body image in children and adolescents using validated as well as general measures. Future studies should also consider how the content of interventions may be adapted to be more relevant and impacting for girls, Caucasians, Asians, and older adolescents, as well as to focus on promoting positive body image in young children.

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