

MUSCLE DYSMORPHIA IN GYM-GOING MEN: THE ROLE OF NARCISSISM
VULNERABILITY AND PERFECTIONISMHasan Emre Kandemir, Annarosa Cipriano, Marco Scotto Rosato,
Bariş Önen Ünsalver, Margherita Stabile, Stefania Cella

Abstract

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Objective: Muscle dysmorphia (MD) refers to a pathological preoccupation with the idea that one's body is not lean and muscular enough. Literature suggests that vulnerable facet of narcissism and perfectionism are strongly related to the risk of developing MD symptoms. However, until now, there is a paucity of research exploring their relationship, which is the primary aim of this study.

Method: Participants were 135 gym-going Turkish males (Mage=24.99, SD=5.38; range=18–43 years) who completed a packet of self-report questionnaires.

Results: Out of the sample, 51 (37.8%) were at risk for MD. A mediation model analysis revealed that vulnerable narcissism has an indirect relationship with the MD risk that is likely to be expressed via perfectionism.

Conclusions: Our results showed a higher risk for MD among gym-going males and provided new insight into MD's understanding. It appears that a narcissistic flaw and perfectionistic traits may be particularly salient factors to consider in both preventing and treating MD symptomatology within high-risk populations.

Key words: muscle dysmorphia, narcissism vulnerability, perfectionism

Hasan Emre Kandemir¹†, Annarosa Cipriano²†, Marco Scotto Rosato², Bariş Önen Ünsalver³, Margherita Stabile² & Stefania Cella²

¹Uskudar University

²Observatory on Eating Disorders, Department of Psychology, University of Campania "Luigi Vanvitelli", Viale Ellittico, Caserta, Italy

³Vocational School of Health Services, Department of Medical Documentation and Secretariat, Uskudar University

† These authors have contributed equally.

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author, SC, upon reasonable request.

Corresponding author

Stefania Cella, Observatory on eating disorders, Department of Psychology, University of Campania "Luigi Vanvitelli", Viale Ellittico, 31 – 81100 – Caserta, Italy.
Phone: +39 0823 274773
Fax: +39 0823 274773
E-mail: stefania.cella@unicampania.it

Introduction

Muscle Dysmorphia (MD) is characterized by an obsessive preoccupation with body appearance, the fear of being insufficiently large and muscular, and the compulsion to excessive physical exercise (Choi, 2002). According to the latest version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), MD is classified as a subtype of Body Dysmorphic Disorder (BDD; American Psychiatric Association, 2013) – despite the controversial nature of such classification (Sandgren & Lavalley, 2018) – and it has been frequently reported among young male adults, with higher rates in athletes, bodybuilders, and anabolic steroid abusers (Babusa & Túry, 2012; Skemp et al., 2013).

First described in 1993 (H. G. Pope et al., 1993), MD is a newly identified syndrome. Although it has been estimated that 100.000 people or more worldwide meet the formal diagnostic criteria in the general population (H. G. Pope et al., 2000), the true prevalence

rate for MD is still unknown. It requires further research since only limited epidemiological studies are available. Research reveals that males typically report far higher levels of symptomatology than females (Tod et al., 2016). More specifically, bodybuilders and weightlifters represent a high-risk population for MD (e.g., Cella et al., 2012), as they are both oriented toward pursuing of hyper-muscularity and leanness. The prevalence of MD within this population is notably elevated, with reported incidence rates ranging from 10 to 17% (e.g., Hildebrandt et al., 2006; H. G. Pope, 1994). Although primarily studied as a “Western male phenomenon” (Tod et al., 2016), a recent systematic review has demonstrated that Middle-East male students and bodybuilders report a higher prevalence of MD symptoms, greater body dissatisfaction, and related psychological problems, such as eating disorders (EDs; Devrim-Lanpir et al., 2023).

However, the available evidence demonstrates that increasingly more people experience concerns over their appearance and body dissatisfaction (Dakanalis

& Riva, 2013; Thompson & Cafri, 2007), suggesting that MD might be a widespread yet understudied phenomenon. Individuals with MD perceive themselves as small and weak despite being physically large and muscular (Skemp et al., 2013), resulting in the adoption of unhealthy behaviors due to anxiety and shame over their perceived appearance flaws, such as excessive exercise, adherence to a rigid dietary regimen, high-protein diet, and the use of nutritional supplements and anabolic steroids (Hale et al., 2010; H. G. Pope, 1994) in order to reduce body fat and increase muscle mass (Hildebrandt et al., 2006). Available evidence suggests that MD condition causes intolerance towards one's body image, strongly impacting on well-being, and marked functioning impairment in psychosocial, educational, and occupational domains in the attempt to maintain exercise and diet routines and avoid body-exposure situations, such as locker room and beach (Hildebrandt et al., 2004; Mitchell, Murray, Hoon, et al., 2017). Also, MD symptomatology increases the risk of showing serious psychological and physiological outcomes, such as elevated rates of substance use (e.g., anabolic steroids), suicidality, and psychiatric comorbidity (e.g., depression, anxiety, EDs; Cafri et al., 2008; Olivardia et al., 2004; C. G. Pope et al., 2005; Rohman, 2009).

Given the harmful consequences accompanying muscle dysmorphia, it would be beneficial to identify the mechanisms that put at higher risk for developing MD.

Even though the American Psychiatric Association classifies MD as a BDD subtype (APA, 2013), its symptomatology closely resembles the anorexic one, suggesting a substitution of the anorexic features, characterized by extreme leanness and the "absence" of adipose tissue, with an emphasis on enormous muscle mass and the "absence" of adipose tissue, so that reverse anorexia (H. G. Pope et al., 1993). In this sense, the anorexia's obsession with thinness is reshaped by the preoccupation of not being muscular enough. Contextualizing this assumption within a psychoanalytic perspective, MD may be attributed to an underlying narcissistic disturbance (Wooldridge, 2022). Specifically, the obsessive preoccupations regarding the body and its appearance are rooted in a distorted sense of self that moves onto the body's badness. In fact, in the Wooldridge conceptualization (2022), the narcissistic wound originates from a father-child relationship involving abuse, dominance, criticism, or rejection. This dynamic, often observed in other body-related conditions (e.g., Cipriano et al., 2020), hinders the separation-individuation process, keeping the child small and vulnerable. Such experiences of shame and vulnerability may predispose the child to develop rigid mental states and an idealized masculine identity of being a big winner (Corbett, 2001). In this sense, the pursuit of a hypertrophic, slender body may serve to keep experiences of vulnerability, rejection, and inadequacy at bay and face the narcissistic wound, precluding vulnerability and dependence (Elise, 2001).

Although research about personality risk factors has suggested a link between narcissism and MD (Boulter & Sandgren, 2022), because of the several similarities between MD and EDs (Murray et al., 2010), data are still limited and reveal ambiguous relationships (Littrell et al., 2021). When considering narcissism as a one-dimensional construct, indeed, research leads to conflicting results: some studies reveal a significant association between narcissism and MD (e.g., Dettore et al., 2020; Rodrigue et al., 2018), while others fail to find any associations

(e.g., Collis et al., 2016). However, according to the extant literature, narcissism must be considered a multidimensional concept accurately represented by two facets: grandiose and vulnerable narcissism (Cain et al., 2008). The grandiosity dimension is characterized by an inflated sense of self-worth, aggression and dominance, while vulnerable narcissism refers to a depleted self-image, extreme modesty, shyness, high anxiety level, shame, interpersonal hypersensitivity and social withdrawal (Pincus et al., 2009). With such a dichotomous categorization, vulnerable narcissism has been found to be associated with MD over and above grandiose narcissism (Boulter & Sandgren, 2022). Furthermore, recent research found that a higher level of vulnerable narcissism was positively related to MD symptomatology (Bégin et al., 2019; Littrell et al., 2021), suggesting that such narcissistic dimension could represent a crucial predisposing factor in the occurrence of MD and calls for further investigation.

A large body of research suggests that perfectionism is a critical psychological characteristic affecting MD individuals. Mitchell, Murray, Cobley and colleagues (2017) have indeed demonstrated that those with severe MD symptomatology show higher perfectionistic traits. Exploring correlates of drive for muscularity among a sample of male college students, perfectionism was found to be a significant predictor of the pursuit of such body ideal (Davis et al., 2005). Perfectionism seems involved in the development of MD both directly and indirectly: a model of potential antecedents of MD shows a direct influence in the attempt to pursue a perfect body, while the indirect influence is through body dissatisfaction (Henson, 2004). Also, perfection exerts a direct influence on MD symptomatology among male students, as well as indirect effects through eating attitudes and orthorexia nervosa, separately (Merhy et al., 2023). The association between perfectionism and MD was further confirmed by prospective evidence suggesting that existing perfectionistic attitudes constitute a predisposing factor for MD (Krebs et al., 2019). Theory and research agree in considering perfectionism to be particularly problematic in narcissism, as perfectionistic traits may serve to hide an imperfect and vulnerable self in an attempt to protect and enhance individual self-image (Morf & Rhodewalt, 2001; Pincus et al., 2014; Ronningstam, 2011). Although perfectionism is related mainly to narcissistic vulnerability (Flett et al., 2014; Stoeber et al., 2015) and there is evidence for the mediating role of perfectionism in the pathway to MD (Dryer et al., 2016), the evidence remains limited and elusive.

The present study

Despite the recent increased interest in MD and its worldwide diffusion, MD is still under-studied and uncharted. A more in-depth understanding of MD and its growing prevalence may serve to increase knowledge and awareness about the disorder. Although supporting evidence indicates that perfectionism plays a mediating role in the pathway leading to MD (Dryer et al., 2016), to our knowledge, no previous studies have systematically examined such role in the relationship between vulnerable narcissism and MD risk. Therefore, the main aims of the present study were: 1) to explore MD risk and characteristics within a sample of gym-going males who trained regularly and 2) to investigate whether perfectionistic traits mediate the pathway from vulnerable narcissism to MD risk.

Materials & Methods

Participants

Participants were 135 gym-going men ($M_{age}=24.99$, $SD=5.38$; range=18–43 years) recruited from gymnasiums in Istanbul. The majority of the participants reported being single ($n=121$, 89.6%) and having earned a bachelor's degree ($n=100$, 74.1%).

Procedure

After receiving approval from the Ethics Committee of the institution involved, participants were approached by research team members and asked whether they would agree to participate in the study. Prospective participants were notified that the study aimed to understand men's eating and exercise behaviors. Information sheets and consent forms were distributed to all individuals. Those who agreed completed a booklet of questionnaires under the supervision of a research team member. The administration took about 20 minutes. To protect confidentiality, a unique code was derived for each individual who participated in the study. All procedures were in accordance with the 1964 Helsinki Declaration and its later amendments (World Medical Association, 2013).

Measures

Participants completed a booklet of questionnaires.

Socio-demographic sheet

Participants completed a socio-demographic sheet collecting age, gender, marital status, and level of education.

Gym practice, diet and supplements

Participants provided information about the type of training and frequency (days and hours per day in a week), competition participation, eating habits (number of daily meals and snacks), and anabolic steroid and nutritional supplement consumption.

Muscle dysmorphia

The Muscle Dysmorphic Disorder Inventory (MDDI; Hildebrandt et al., 2004) is a 13-item measure assessing three muscle dysmorphia symptoms: drive for size (5 items; "I think my chest is too small"), appearance intolerance (4 items; "I wear loose clothing so that people cannot see my body"), and functional impairment (4 items; "I pass up social activities because of my workout schedule"). Items are scored on a 5-point Likert scale from 1 ("Strongly disagree") to 5 ("Strongly agree"). A total score is yielded by summing the three subscales, with higher scores indicating higher muscle dysmorphia. A clinical cut-off of ≥ 39 was found to perform adequately, showing 75.0% specificity and 73.7% sensitivity (Varangis et al., 2012). The measure has demonstrated strong validity and reliability (Hildebrandt et al., 2004). Internal consistency in the current study was $\alpha=.77$.

Narcissism

The Turkey adaptation of the Pathological Narcissism Inventory (Buyukgungor, 2016) is a 40-item measure assessing overt and covert clinical characteristics of grandiose and vulnerable narcissism. The PNI consists of seven factors: Exploitativeness (4

items; "I find it easy to manipulate people"), Contingent Self-Esteem (10 items; "When people don't notice me, I start to feel bad about myself"), Denial of Dependency (9 items; "I hate asking for help"), Grandiose Fantasy (6 items; "I often fantasize about being recognized for my accomplishments"), Entitlement Rage (5 items; "Get mad when people don't notice all that I do for them"), Self-Sacrificing (4 items; "Sacrificing for others makes me the better person"), and Self-Enhancement (2 items; "I feel important when others rely on me"). The total score measures the overall level of pathological narcissism. Items are rated on a 6-point Likert scale from 0 ("Not at all like me") to 5 ("Very much like me"). The factor structure of the PNI adaptation was evaluated through a Confirmatory Factor Analysis (CFA) in *Mplus* (Muthén & Muthén, 2012). The CFA confirmed the two-factor higher order structure ($\chi^2_{(740)}=109.16$; CFI=.94 TLI=.92; RMSEA=.05). The measure has shown good internal consistency and validity (Buyukgungor, 2016). However, since all the factors except Exploitativeness were clustered in the narcissistic vulnerability dimension, the Turkish version of the PNI was evaluated mainly as a tool to measure vulnerable narcissism (Buyukgungor, 2016). In the present study, we used the narcissism vulnerability scale ($\alpha=.94$).

Perfectionism

The Multidimensional Perfectionism Scale, adapted to Turkish (MPS; Oral, 1999), is a 45-item measure assessing three dimensions of perfectionism: self-oriented (SOP, 15 items; "When I am working on something, I cannot relax until it is perfect"); other-oriented (OOP, 15 items; "Everything that others do, must be of top-notch quality"); socially prescribed (SPP, 15 items; "I find it difficult to meet others' expectations of me"). The items are rated on a 7-point Likert scale from 1 ("Strongly disagree") to 7 ("Strongly agree"), with higher scores indicating greater perfectionism. The measure showed good psychometric properties (Oral, 1999). In the present study, the internal reliability coefficients were .89, .53, and .71, respectively, for SOP, OOP, and SPP, and .84 for the total score.

Data analysis

Means, standard deviations, and frequency were computed for all study variables. The Chi-square statistic (χ^2) was used to calculate the association between categorical variables (e.g., competitiveness), whereas independent sample *t*-tests were performed with continuous variables (i.e., age) to assess any significant differences between participants within the groups. A mediational model was performed using the PROCESS macro for SPSS (Model 4; Hayes, 2013) to assess whether the relationship between narcissism vulnerability and MD risk was mediated by perfectionism. As MD risk is a dichotomous variable, we run a series of logistic regression analyses. In such an analysis, a negative coefficient implies that the probability that the event identified by the DV (dependent variable) happens decreases as the value of the IV (independent variable) increases. A value below 1 implies a reduction in the probability that the event will happen. The non-parametric resampling technique of bootstrap was used to calculate the 95% confidence intervals of the indirect effect. The number of bootstraps was set at 5000, and the alpha level was set at 0.05. All analyses were performed using SPSS (v.26; IBM Corp, 2019).

Results

Sample description

Out of the 135 participants, 51 (37.8%) were at risk for muscle dysmorphia (MD group), and 84 (62.2%) were not (no-MD group). On average, participants exercise 4.82 days/week ($SD=1.17$; range=2–7) for about 2 hours ($n=103$, 76.3%). More than 70% ($n=98$) of the sample indicated to practice additional exercise. Regarding meals, participants reported having an average of 3.67 meals/day ($SD=1.34$, range=2–8) and 2.47 snacks/day ($SD=.93$, range=0–3). About 74% of gym practitioners have used nutritional supplements, and fifty-two (38.5%) reported anabolic steroids consumption. More than half of the sample ($n=73$, 54.1%) indicated that they are thinking about using supplements and/or anabolic steroids. When comparing MD-no MD groups, no age differences were found ($t_{(133)}=-1.136$, $p=0.258$), while the MD group was less likely to participate in competition than the no-MD group ($\chi^2_{(1)}=26.402$, $p<.001$). Regarding marital status, the MD group were more likely to be married than no-MD group ($\chi^2_{(1)}=4.669$, $p=.031$). The MD group exercised more days than no-MD group ($t_{(133)}=-5.103$, $p<.001$), and reported to have more main meals/day ($t_{(133)}=-6.461$, $p<.001$). No significant differences emerged for the number of snacks/day ($t_{(133)}=.224$, $p=.823$). Groups did not differ with regard additional exercise ($\chi^2_{(1)}=.151$, $p=.697$), while MS group indicated more anabolic steroids ($\chi^2_{(1)}=35.596$, $p<.001$) and nutritional supplements ($\chi^2_{(1)}=13.956$, $p<.001$)

consumption than no-MS group. Also, MS group was more likely to think about using anabolic steroids than no-MD group ($\chi^2_{(1)}=30.181$, $p<.001$). More details are reported in **table 1**.

Mediation

Figure 1 presents the unstandardized regression coefficients of the mediation model between vulnerable narcissism, perfectionism, and MD risk (0=MD risk, 1=no-MD risk). The model was statistically significant ($LL_{(2)}=166.91$, $p<.001$; Cox & Snell=.11, Nagelkerge=.15). Specifically, vulnerable narcissism significantly predicts the MD risk membership ($B=.016$, $p=.011$), but the relationship became insignificant when perfectionism was included in the model ($B=.010$, $p=.110$). Perfectionism significantly mediated the relationship between narcissistic vulnerability and the risk of MD ($B=-.020$, $p=.004$), as the 95% bootstrap confidence interval did not contain zero ($B=-.005$; 95%CI [-.013, -.002]).

Discussion

To the best of our knowledge, this is the first study investigating the mediating effect of perfectionism in the relationship between vulnerable narcissism and the risk of MD in a sample of gym-going males.

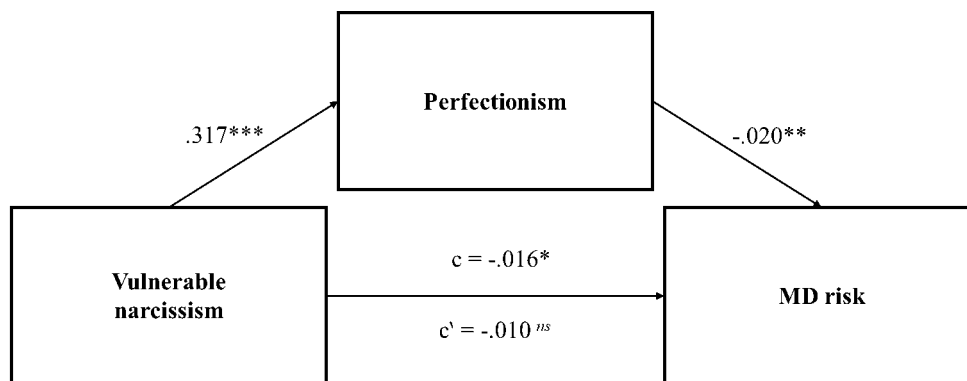
First, we aimed to evaluate the diffusion of MD, exploring the level of risk in a sample of men. Our results showed that 37.8% ($n=51$) of the sample scored above the MDDI cut-off (≥ 39), which turned out to be

Table 1. Characteristics of the MD risk and no MD-risk groups

| Variables | MD risk (n=51) N (%) | No MD risk (n=84) N (%) | χ^2 | p |
|-------------------------------------|----------------------------|-------------------------------|----------|-------------|
| Competitiveness | | | | |
| Yes | 16 (31.4%) | 64 (76.2%) | 26.402 | .000 |
| No | 35 (68.8%) | 20 (23.8%) | | |
| Marital status | | | | |
| Married | 9 (17.6%) | 5 (6%) | 4.669 | .031 |
| Not-married | 42 (82.4%) | 79 (94%) | | |
| Additional exercise | | | | |
| Yes | 38 (74.5%) | 60 (71.4%) | .151 | .697 |
| No | 13 (25.5%) | 24 (28.6%) | | |
| Anabolic steroids use | | | | |
| Yes | 36 (70.6%) | 16 (19%) | 35.596 | .000 |
| No | 15 (29.4%) | 68 (81%) | | |
| Nutritional supplements use | | | | |
| Yes | 47 (92.2%) | 53 (63.1%) | 13.956 | .000 |
| No | 4 (7.8%) | 31 (36.9%) | | |
| Thinking about anabolic steroid use | | | | |
| Yes | 43 (84.3%) | 30 (35.7%) | 30.181 | .000 |
| No | 8 (15.7%) | 54 (64.3%) | | |
| | M (SD) | M (SD) | t | p |
| Age | 25.67 (5.75) | 24.58 (5.13) | -1.136 | .258 |
| Workout days | 5.43 (1.02) | 4.45 (1.11) | -5.103 | .000 |
| Main meals/day | 4.51 (1.42) | 3.17 (.99) | -6.461 | .000 |
| Snacks/day | 2.45 (1.12) | 2.49 (.80) | .224 | .823 |

Note. MD: muscle dysmorphia

Figure 1. Hypothesized model: unstandardized regression coefficients



*** p<.001, ** p<.01; * p<.05

higher than previously found in a population of male gym users (Palazón-Bru et al., 2018; MD risk= 31.9%). Regarding competition participation, the MD risk group was less likely to join, suggesting that those with a pathological preoccupation with a lack of muscular size and leanness are less confident with their physical appearance and avoid performance and competition situations, even if they work out more. In line with previous findings (e.g., Harris et al., 2019), the MD risk group indicated greater use of steroids and nutritional supplements to increase muscle size and definition. Empirical research has demonstrated that a primary motivation behind using such substances was an increase in confidence (self-esteem), body satisfaction, and social acceptance (Greenway & Price, 2018). Thus, MD symptoms would seem to encourage initial use and maintenance due to the secondary reinforcers that, in turn, may create a psychological dependency.

Confirming our initial hypothesis, vulnerable narcissism has an indirect effect on MD risk through perfectionistic traits. The logistic regression results revealed a significant association between vulnerable narcissism and MD risk, even if it turns insignificant when the mediator (perfectionism) is included in the model. Such results are in line with a recent review suggesting that both vulnerable narcissism and perfectionism are associated with MD among males, even in non-Western countries (Devrim-Lanpir et al., 2023).

Being preoccupied with the idea that the body is not lean enough may be rooted in feelings of inadequacy, in which the self is experienced as small, vulnerable, weak and shameful (Wooldridge, 2022). Such experience, stemming from a narcissistic injury, may interfere with the mind-body relationship and lead to perfectionistic tendencies: the inadequacy is moved onto the body and alters the relationship with it and the way it is looked at. In this sense, perfectionism serves to face the distorted self-perception in order to pursue a perfect body and guarantee an admiring, loving gaze (body-for-others). Furthermore, as mistakes and failures are seen as intimately linked to one's own lack of value, being perfect is a kind of obligation to compensate for ego fragility. Striving for perfectionism predisposes, in turn, to the risk of developing MD in the attempt to pursue an (unrealistic) bigness (Brady, 2017).

The indirect relationship between vulnerable narcissism, perfectionism, and MD suggests considering perfectionism as a clinical marker for MD vulnerability,

whereby one believes themselves to be small and weak, often despite well-developed muscularity.

Yet, the data also corroborate current debates questioning the MD classification within obsessive-compulsive disorders (OCD) and link MD to EDs (e.g., Murray et al., 2010). In this sense, our pattern of results further supports that MD and EDs share similar etiological models as they have multiple similarities and vulnerability factors in common (e.g., vulnerable narcissism and perfectionistic traits). Thus, the reanalysis of its nosology in the lens of EDs may help in understanding the male experience of disturbances in eating, shape, and weight. For instance, a multigroup study (Murray et al., 2010) examining the monographic classification of MD demonstrates that MD and EDs share widespread symptomatic similarities in the domain of disturbed body image, disordered eating, and exercise behaviors, even though differences were consistent with the opposing physiques pursued in each condition. Similarly, Devrim-Lanpir and colleagues (2023) have found that MD individuals struggle with disordered eating and body dissatisfaction. Thus, MD should be studied in the same theoretical framework of EDs as a muscularity-oriented manifestation of disordered eating aiming to correct the defect perceived in one's own appearance.

Limitations and future directions

The study presents some limitations that should be mentioned. Firstly, the cross-sectional nature of the study does not allow to draw conclusions regarding the directionality of effects. Therefore, future studies should investigate the pathways between variables using longitudinal designs. A longitudinal study design would also be useful to follow the development and course of MD. Second, data were collected using only self-report measures, which could lead to shared method variance and thus biased estimations. Future research would benefit from moving beyond reliance on self-report data to capture more objective information. Third, our sample is composed of gym-going males, who are considered a high-risk population for MD. Moreover, our findings are gender-limited, as only men were included in the study. Females and no-gym-going males may also develop MD. Thus, the generalization of the study results is limited and cannot be extended to the general population, also due to the

small sample size. The empiric research should expand the exploration of MD symptoms and characteristics in other populations. Fourth, another study limitation is the need to identify MD cases. A high score at MDDI might indicate a greater risk for MD symptoms but it does not constitute a diagnosis. A further examination of the usefulness of the MDDI cut-off score is also needed. Fifth, the other-oriented dimension of perfectionism shows low reliability, so findings should be interpreted with caution until replicated. Finally, our results may be culture-specific and might not be applied to other cultures or ethnic groups.

Implication

The current findings have several clinical implications. First, our results suggest that narcissism and perfectionism are involved in the MD symptomatology. Importantly, the complete mediation of perfectionism suggests that it could be beneficial for prevention and intervention programs targeting and reducing perfectionism to ameliorate risk for MD. Furthermore, understanding predisposing factors and psychological correlates of MD may help practitioners in developing preventive strategies, early identification, and refinement of tailored treatment, as well as improving public health initiatives. Notwithstanding, an investigation of the risk factors and psychological correlates of MD is still needed. Additionally, it would also be important to identify potential protective factors for preventing the disorder.

Conclusions

To conclude, despite the shortcomings mentioned above, the present study provides preliminary evidence of the MD risk prevalence and represents one of the first attempts to explore the role of perfectionism in the relationship between vulnerable narcissism and MD risk. This study offers insight and clarifications about the MD risk among Turkish gym-going males and further elucidates the indirect relationship between the vulnerable facet of narcissism and MD. As such, a disruption in narcissistic functioning may predispose to the risk of developing MD symptoms through the "concreteness" of perfectionistic traits necessary to avoid emotional experiences of weakness, vulnerability, and shame.

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